

**PROPOSAL,
CONTRACT DOCUMENTS
AND SPECIFICATIONS**

for
AUBURN-LEWISTON MUNICIPAL AIRPORT
AUBURN, MAINE

CONSTRUCT NEW T-HANGER AND TAXILANE

FAA AIP No. 3-23-0002-xxx-2024
MJ PROJECT No. 19186.01

Bid Documents

November 2024

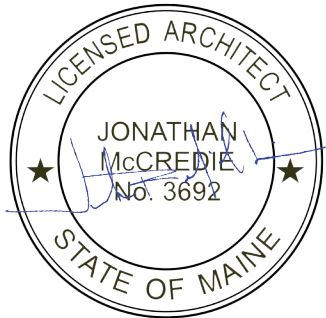
Prepared By:



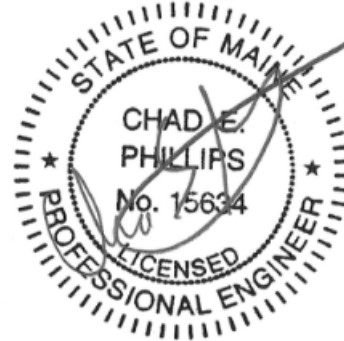
McFarland Johnson

53 Regional Drive
Concord, NH 03301
Phone: (603) 225-2978
Fax: (603) 225-0095
www.mjinc.com

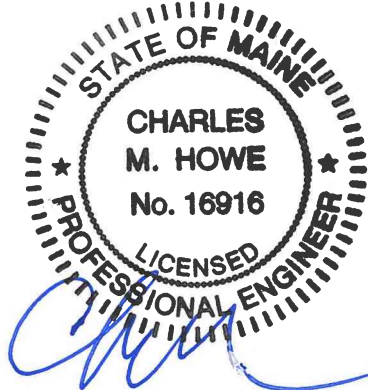
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SEALS PAGE**AUBURN-LEWISTON MUNICIPAL AIRPORT
CONSTRUCT NEW T-HANGAR AND TAXILANE**

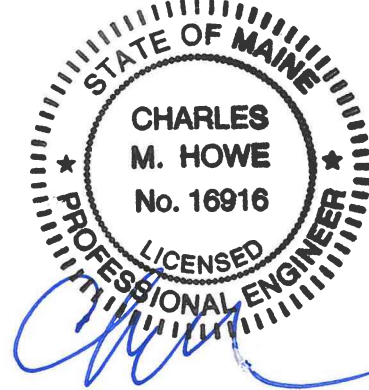
Fennick|McCredie Architecture, Ltd.
Architect of Record



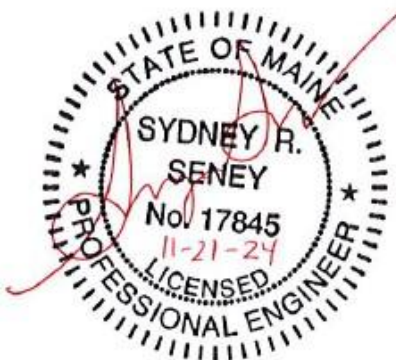
McFarland Johnson, Inc.
Structural Engineer



McFarland Johnson, Inc.
Electrical Engineer



McFarland Johnson, Inc.
Plumbing Engineer



McFarland Johnson, Inc.
Civil Engineer

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INVITATION TO BID**Auburn-Lewiston Municipal Airport
Construct New T-Hangar and Taxilane
AIP No. 3-23-0002-XXX-2024**

The SPONSOR invites sealed bids for the above referenced project at the **Auburn-Lewiston Municipal Airport, Auburn, Maine**. The name of the Bidding Documents will be for the above referenced project.

Sealed bid Proposals for the above referenced project at the Auburn-Lewiston Municipal Airport will be accepted at the **Terminal Building Office, Auburn-Lewiston Municipal Airport, 80 Airport Drive, Auburn, ME, 04210**, until **11:00 a.m.** (prevailing time) on **Friday, December 20, 2024** at which time, all bids received will be publicly opened and read aloud. Bids received after this time will not be accepted. The time of receiving and opening bids may be postponed due to emergencies and unforeseen conditions.

Bids must be submitted in a SEALED envelope, clearly marked with the following information:

Construct New T-Hangar and Taxilane
Auburn Lewiston Municipal Airport
AIP No. 3-23-0002-xxx-2024

<Bidder's Company Name>
<Bidder's Address>

80 Airport Drive
Auburn Lewiston Municipal Airport
Auburn, ME 04210

Bids submitted by FedEx, UPS, or other parcel delivery service shall have the SEALED envelope containing the Bid Proposal placed inside the shipping carton.

PHYSICAL LOCATION: Terminal Building Office, Auburn-Lewiston Municipal Airport, 80 Airport Drive, Auburn, ME 04210

TYPE OF CONSTRUCTION:

This project includes the construction of a new 10-bay t-hangar, related utilities, adjacent apron pavement, and a taxilane. The project also includes an alternative additive for a motorized gate. Construction will include erosion control best management practices, construction safety and phasing, unclassified excavation, paving, marking, lighting, signage, drainage, and other ancillary items as required.

CONTRACT TIME:

The contract time is **150 calendar days**.

Contract time restrictions exist for work in particular work areas as described in the Construction Safety and Phasing Plans and Construction Safety on Airports in Division 2 - Special Provisions of the Contract Documents.

PROPOSAL SURETY: All bids must be accompanied by a Proposal Surety (cash, certified check, treasurer's or cashier's check, Bid Bond, or other instrument as described in the Instructions to Bidders).

Proposal Surety of the three (3) lowest responsible Bidders that have submitted proposals that comply with all the provisions required to render them formal will be retained until the Contract and Bonds have been signed by all parties. Proposal Surety of all other bidders will be returned or released as soon as it is practical.

COST OF PLANS: Plans, Specifications, and Sample Proposals in Adobe Acrobat (PDF) format may be downloaded for free as outlined below.

PLANS, SPECIFICATIONS, AND PROPOSALS:

Documents may be OBTAINED for no cost at: <http://bidportal.mjinc.com/index>
(No Hard Copies, only digital copies available)

Copies of the Contract Documents including Plans, Specifications, Proposals, and addendums (if issued) will be available for examination and downloading after **November 21, 2024**, at the above noted website. Under the Project Name: **“Construct New T-Hangar and Taxilane”**

Addendums and other additional or revised Contract Documents will be available on the website **ONLY** and it is the Bidder’s sole responsibility to check the website for additions or revisions up to 24 hours prior to the due date for Proposals listed above. Addendums and other additional or revised Contract Documents will not be transmitted directly to Bidders or Plan Holders.

QUESTIONS AND CONTACT WITH THE OWNER: From the time of advertising until the actual bid opening for this Contract, all prospective Bidders, Contractors, Subcontractors, and Suppliers shall direct all inquiries related to this project solely to Sydney Seney, PE, McFarland Johnson, 273 Corporate Drive – Suite 200, Portsmouth, New Hampshire 03801, sseney@mjinc.com **in writing**. The deadline for submitting inquiries related to this project is **December 17, 2024**.

BIDDING PROCEDURES: The Sealed Bidding Procedures as outlined in the Instructions to Bidders.

PRE-BID CONFERENCE: A Pre-Bid Conference will be held at the Auburn-Lewiston Municipal Airport on **Wednesday, December 4, 2024, at 10:00 a.m.** at the Please notify Sydney Seney, PE at sseney@mjinc.com at least one day prior to the meeting if you plan to attend.

CONTRACT BONDS: A successful Bidder entering into a contract for any portion of the work included in a proposal shall provide the Owner sufficient surety in the form of 100% Performance and Payment Bonds as outlined in the Supplemental General Provisions.

FEDERAL CONTRACT PROVISIONS: In this bid process and the resulting Contract, if executed, all Bidders and Contractors must fully comply with the *Contact Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects*, Appendix A – Contract Provisions and as outlined within the Contract Documents in Division 1 – Contract and Contract Forms.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY:

1. The Offeror’s or Bidder’s attention is called to the “Equal Opportunity Clause” and the “Standard Federal Equal Employment Opportunity Construction Contract Specifications” set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor’s aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade:	0.5%
Goals for female participation in each trade:	6.9%

These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is **State of Maine, Oxford County.**

FAA BUY AMERICAN PREFERENCE: The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

GENERAL CIVIL RIGHTS: In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

TITLE VI SOLICITATION NOTICE: The Auburn Lewiston Municipal Airport in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, select businesses or disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

NONDISCRIMINATION IN CONTRACTS: The Auburn-Lewiston Municipal Airport will not discriminate against any bidder on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

MINIMUM LABOR RATES (DAVIS-BACON WAGE): All work under this project must comply with Davis-Bacon Act regulations as described in the Contract Documents. Federal Wage Rates are included in the Contract Documents.

CERTIFICATE REGARDING DEBARMENT AND SUSPENSION: By submitting a proposal under this solicitation, the bidder certifies that at the time the bidder submits its proposal that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

A bidder must submit the appropriate Certificate Regarding Debarment and Suspension (Form MJ-102) contained in the Proposal with the bid for this project. Bids or offers that are not accompanied by a completed Certificate Regarding Debarment and Suspension will be rejected as nonresponsive.

DISADVANTAGED BUSINESS ENTERPRISE (DBE):

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the Auburn-Lewiston Municipal Airport to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

The Contractor must comply with the Federal DBE, Small Business, Equal Employment Opportunity (EEO), and Affirmative Action Requirements contained within the Contract Documents.

The Auburn-Lewiston Municipal Airport has elected to utilize a **DBE Race-Neutral Goal**. The Airport has an **overall DBE goal of 1.1%**. A Good Faith Effort Documentation is still required to be submitted as part of the Bid Certifications and is considered to be part of the bid responsiveness.

FEDERAL FAIR LABOR STANDARDS: All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

LOBBYING AND INFLUENCING FEDERAL EMPLOYEES: Contractors that bid on this project must certify that they will not and have not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or another award covered by 31 USC 1352. Each Contractor and Subcontractor must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award.

PROCUREMENT OF RECOVERED MATERIALS: Contractors and subcontractors that bid on this project agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247 as defined in the Contract Documents.

TRADE RESTRICTION CLAUSE: The Contractor or Subcontractor, by submission of an offer and/or execution of a contract, must certify compliance with the Foreign Trade Restriction Clause. Unless waived by the Secretary of Transportation, sponsors may not use AIP funds on a product or service from a foreign country included in the current list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR).

DRUG FREE WORKPLACE: The Auburn-Lewiston Municipal Airport complies with the Drug Free Workplace requirements in 49 CFR Part 29.

QUANTITIES: The estimated quantities in the Proposal are not guaranteed but are given as a basis for the comparison of bids.

BID VALID PERIOD: No bids may be withdrawn by the Bidder prior to May 15, 2025.

PROPOSAL FORMS: The proposal section includes a Bidder's Certification Checklist. If all the forms and documents listed in the Bidder's Certification Checklist for inclusion in the Proposal are not included with the Bidder's Proposal and correctly executed, the Proposal may be considered non-responsive.

The right is reserved by the Auburn Lewiston Municipal Airport to reject any or all bids, to waive any formality and any and all technicalities in bids and to accept such bids as may be deemed in the best interest of the awarding agency.

AWARDING AUTHORITY

Auburn Lewiston Municipal Airport

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INSTRUCTIONS TO BIDDERS

1. GENERAL:

This project is to be financed in part by grants from the United States under the Airport Improvement Program, the Bipartisan Infrastructure Law and Congressionally Directed Spending; matching funds from the Maine Department of Transportation; and funds from the cities of Auburn and Lewiston Maine acting through the Auburn-Lewiston Municipal Airport. Award of Contract is subject to the approval of the Federal Aviation Administration, the Maine Department of Transportation and Auburn-Lewiston Municipal Airport (Owner).

2. SEALED BID BIDDING INSTRUCTIONS:

ELECTRONIC BID SUBMISSION IS NOT APPLICABLE FOR THIS PROJECT. ONLY BIDDING DOCUMENTS WILL BE DISTRIBUTED DIGITALLY, BUT SEALED HARD COPIES OF THE BID PROPOSAL AND FORMS WILL BE ACCEPTED AT THE LOCATION IDENTIFIED IN THE INVITATION TO BID.

A. BIDDERS' REGISTRATION FOR CONTRACT DOCUMENTS.

All bidders must obtain the bidding documents from the Bid Portal identified in the Invitation to Bid. As part of this Bid Documents procurement process, the prospective bidder must register with Bid Portal, but there is no cost to register or obtain the Bid Documents. The registration is used in order to track the plan holders.

B. FORMS AND BID PREPARATION

Bids shall be submitted on hard copies from the "**Bidding Requirements and Proposal Forms**" Section from the Contract Documents obtained from Bid Portal location identified in the Invitation to Bid, as appropriate, and available at no cost. The forms enclosed in the Project Manual are to be used for the sealed bid submission.

NO entries of the sealed bid proposal and forms shall be made online or via email submission.

Sums shall be expressed in both words and figures in the space indicated on the bid form. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.

3. GENERAL PROPOSAL SURETY REQUIREMENT(S):

The Proposal Surety shall be as specified in the Invitation to Bid and as further described in the Division 2, Special Provision/Supplemental General Provisions, Part A, Item 18.

4. INSURANCE REQUIREMENTS:

Insurance Requirements shall be as specified in the sample CONTRACT FORM.

5. EXAMINATION OF CONDITIONS AFFECTING WORK:

Prior to submitting a Proposal, each bidder shall examine and thoroughly familiarize himself with all existing conditions, including all applicable laws, codes, ordinances, rules, and regulations that

will affect his work. Bidders shall visit the site, examine the grounds and all existing buildings, utilities, and roads, and shall ascertain all conditions that will in any manner affect work. Bidders shall ask the Engineer, in writing, for any additional information deemed necessary for them to be fully informed as to exactly what is to be expected prior to submitting a Proposal.

When boring data and/or subsurface utility data is/are provided in the Contract Documents, neither its accuracy nor its completeness is guaranteed; the Contractor shall assume the responsibility for any conclusions they may draw from such data. They may employ their own consultants to obtain information and analyze available information and shall be responsible for any conclusions drawn from that information.

6. INTERPRETATIONS:

Each Bidder shall carefully examine the plans and the Contract Documents and all Addenda or other revisions and thoroughly familiarize themselves with the detailed requirements prior to submitting a Proposal. Should a Bidder find discrepancies or ambiguities in, or omission from, the Contract Documents, or should they be in doubt as to their meaning, they shall at once notify the Engineer in writing who will send written Addenda to all Bidders where necessary. Bidders must make this notification not later than three (3) calendar days prior to submission of Proposal, if known. Bidders shall not be entitled to rely upon any oral instructions or interpretations by the Engineer. All Addenda sent to Bidders will become a part of the Contract Documents. All inquiries shall be directed as specified in the Invitation to Bid.

7. SUBSTITUTIONS:

- A. The materials, products, and equipment described in the Contract Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitutions.
- B. No substitutions will be considered prior to submission of Proposal unless written request for approval has been submitted in the proper format not less than three (3) calendar days prior to the submission of Proposal. The burden of proof of the merit of the proposed substitution is upon the Bidder. The Engineer's final decision of Approval or Disapproval of a proposed substitution is final.
- C. In making requests for substitutions, the Bidder shall list the particular system, product, or material he wishes to substitute, and the justification for such a request. Requests submitted shall include any and all adjustments of that and any other work affected thereby.
- D. If the Engineer approves any proposed substitution prior to the submission of Proposal, such approval will be set forth in an Addenda. Bidders shall not rely on approvals made in any other manner.
- E. No substitutions will be considered after the submission of Proposal except as specifically provided for in the Contract Documents.

8. ADDENDA:

Addenda (if issued) will be available for examination and downloading as specified in the Invitation to Bid.

Addenda will be posted no later than twenty-four (24) hours prior to the time of bid opening. Bidders must return delivery receipts for Addenda if requested by the Engineer and must acknowledge the receipt of Addenda on the Bid Proposal Form in the spaces provided.

It shall be understood that all addendum (or addenda) will be posted on the "BID PORTAL" for bidder download. It shall be the bidder's responsibility to check the "BID PORTAL" for addendum (or addenda) that have been posted. The Owner and McFarland Johnson assume no liability for bidder's failure to check the "BID PORTAL" for any addendum (or addenda).

It is the bidder's sole responsibility to check and verify that they have downloaded and acknowledge all posted addenda prior to submitting their bid.

9. CONTRACT DOCUMENTS:

- A. Complete sets of the Contract Documents can be obtained from the issuing office designated in the "Invitation to Bid" <http://bidportal.mjinc.com/index>. There is no cost to download the Contract Documents.
- B. Bidders are expected to use complete sets of Contract Documents in preparing bid Proposals; neither the Owner nor the Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.

10. ACCEPTANCE OF PROPOSAL FORMS:

The Owner reserves the right to refuse to accept a Bid Package and Proposal Form from a prospective Bidder, should such Bidder be determined by the Owner to be non-responsible. Among the criteria which the Owner may use in making such determination are the following:

- A. If pre-qualification procedures are utilized, failure to comply with any pre-qualification requirements of the Owner, including failure to supply such information as the Owner may require in evaluating the qualifications of the Bidders or failure to supply the Owner with such documents or information as the Owner may request to assist the Owner in evaluating the responsibility and qualifications of prospective Bidders.
- B. Past performance of the Bidder or any affiliated or related entity.
- C. Failure of the Bidder or any affiliated or related entity to pay or satisfactorily settle all bills for labor and material on any former contract with the Owner.
- D. The outstanding obligations of the Bidder, whether previously assumed or to be assumed in the future.
- E. Unsatisfactory, defective, or non-conforming work on any previous contract with the Owner by the Bidder or any affiliated or related entity.
- F. The present relationship between the Owner and the Bidder (or any affiliated or related entity) including the existence of any unresolved disputes arising out of past projects.
- G. Unbalanced pricing within the Proposal Form where the cost of bid item(s) is in the opinion of the Owner substantially higher compared to values from all the Proposal Forms received.

The acceptance of a Bid Package and Proposal Form from a particular Bidder shall not prevent or preclude the Owner from determining at a later date that a particular Bidder or entity is non-responsible or otherwise not qualified. The Owner at all times reserves the right to refrain from accepting a Bid Package or awarding this Contract to a non-responsible entity or to any affiliated or related entity, or such Owner, as well as any successor, assignee, transferee, or majority interest holder of any non-responsible entity.

11. BIDDER'S QUALIFICATIONS:

The Owner reserves the right to investigate and determine the responsibility and qualifications of

the Bidders before and after bid Proposals are received. The Owner shall not award Contract to any Bidder determined by Owner to be non-responsible. Among the criteria which Owner may use in making such determination are the following:

- A. Failure to comply with any qualification requirements of the Owner, including failure to supply such accurate information as the Owner may require in evaluating the qualifications of Bidders or failure to supply the Owner with such documents or information as the Owner may request to assist the Owner in evaluating the responsibility and qualifications of prospective Bidders.
- B. Past performance of the Bidder, one or more of the listed Subcontractors, or any affiliated or related entity.
- C. Failure of Bidders or any affiliated or related entity to pay or satisfactorily settle all bills for labor and materials on any former contract with the Owner.
- D. The outstanding obligations of the Bidder, whether previously assumed or to be assumed in the future.
- E. Unsatisfactory, defective, or non-conforming work on any previous contract with the Owner by the Bidder, one or more of the listed subcontractors, or any affiliated or related entity.
- F. The present relationship between the Owner and the Bidder (or any affiliated or related entity), including the existence of any unresolved disputes arising out of past projects.
- G. The financial condition of the Bidder.
- H. Experience of the Bidder and/or his listed Subcontractors in performing work of this nature.

12. PREPARATION AND SUBMISSION OF PROPOSAL:

- A. Proposals for the construction of the Project generally described herein will be received until the time and date stated in the "Invitation to Bid". Late bids will be rejected.
- B. The Proposal shall be on the "Proposal Form" provided; no other form is acceptable.
- C. The Bidder must submit his Proposal on the forms furnished by the Owner. All blank spaces in the Proposal forms must be correctly filled in where indicated, and the Bidder must state the price(s) (written in ink) both in words and numerals. The words, unless obviously incorrect, will govern.
- D. Due to the allocation of funds, successful Bidders will be required to provide verified breakdown of costs of work in a manner acceptable to the Engineer and Owner.
- E. Proposals shall be submitted as indicated in the "Proposal Form" and shall be signed in ink by an official of the firm submitting the Proposal.
- F. The Bidder must supply all information list on the "Bidder's Certification Checklist".
- G. Erasures or other changes in a Proposal shall be explained or noted over the signature of the Bidder.
- H. Proposals containing reservations, conditions, omissions, unexplained erasures or alterations, items not required in the bid, or irregularities of any kind may be rejected by the Owner.
- I. Each Proposal shall indicate the full business name and address of the Bidder and shall be signed by him with his usual signature.
- J. A Proposal submitted by a partnership shall list the names of all partners and shall be signed in the partnership name by one of the members of the partnership.

- K. A Proposal submitted by a corporation shall be executed in the legal name of the corporation and signed by the President or Vice President. The name of each person signing the Proposal shall be typed or printed below the signature.
- L. When requested by the Owner, a Power of Attorney or other satisfactory evidence of the authority of the officer signing in behalf of the corporation shall be furnished for the Owner's records.
- M. The Proposal must be accompanied by Proposal Surety as described above under "General Proposal Surety Requirement(s)". If a Bidder withdraws its Proposal within the period specified in the Invitation to Bid for the bids to remain valid, or if a Bidder is awarded the Contract but fails, refuses, or neglects to execute the Contract or to furnish acceptable Insurance Documents and the required Certificates of Insurance, Payment and Performance Bonds within five (5) days after receipt of written Notice of Award, then the amount of this Proposal Surety shall be paid to, or retained by, the Owner as liquidated damages.
- N. Each Bidder shall present his Proposal in a sealed opaque envelope. The outside of the envelope shall be labeled as described within the "Invitation to Bid". The envelope shall contain the signed original (as applicable by document) of all items listed on the "Bidder's Certification Checklist".
- O. When sent by mail, the sealed Proposal marked as indicated in the "Invitation to Bid" shall be enclosed in an additional envelope and sent by Federal Express, UPS, or registered mail with return receipt requested. No Proposal will be considered unless received on or before the time and at the place designated in the "Invitation to Bid". The Owner will in no way be responsible for delays caused by the U.S. Postal Service or any other deliverer of the Proposal, or for delay caused by any other occurrence.

13. MODIFICATIONS AND/OR WITHDRAWAL OF PROPOSALS:

- A. A Bidder may withdraw or refuse (by withdrawal of one Proposal and submission of another) a Proposal, provided that Bidder's Request for Withdrawal is received by the Owner in writing before the time specified for opening bid Proposals. Revised Proposals must be received at the place specified in the advertisement before the time specified for opening all bid Proposals. Modifications shall not reveal original amount of bids. Proposal Bonds must reflect modifications.
- B. Negligence on the part of the Bidder in the preparation of his Proposal shall not be grounds for modification or withdrawal of the Proposal after the time set for bid Proposal opening.

14. REJECTION OF PROPOSALS:

- A. Proposals containing any omission, alteration of form, additions or conditions not called for, conditional or alternate bids unless called for, incomplete bids, or Proposals otherwise regular which are not accompanied by the appropriate Proposal Surety will be considered irregular and may be rejected.
- B. The Owner reserves the right to reject any or all bid Proposals, to waive any formalities, technicalities, or irregularities therein, to award or refrain from awarding a contract for work, and to readvertise for bid Proposals.
- C. Proposals may be considered irregular for the following reasons:
 - (1) If the Proposal is on a form other than that furnished by the Owner or provided by the online bidding website, or if the Owner's form is altered, or if any part of the Proposal Form is detached.
 - (2) If there are unauthorized additions, conditional or alternative pay items, or irregularities of

any kind which made the Proposal incomplete, indefinite, or otherwise ambiguous.

- (3) If the Proposal does not contain a unit price for each pay item listed in the Proposal.
- (4) If the Proposal contains unit prices that are obviously unbalanced in the opinion of the Owner.
- (5) If the Proposal is not accompanied by the Proposal Surety, as specified by the Owner.
- (6) If Bidder's qualifications are not submitted as required.

15. ESTIMATED QUANTITIES AND BID FORM:

Estimated quantities for unit price items are approximate only, being given as a basis for the uniform comparison of Bids. The Owner does not expressly nor by implication agree that the actual amount of work will correspond therewith.

The Owner reserves the right, as a condition for awarding the Contract, to increase or diminish the amount of any classes or portion of the work or to omit construction in certain locations, as may be determined by the Owner.

The Bid Form, which follows, consists of items of work for which Bid unit prices are requested and/or items of work for which Bid lump sum prices are requested. Each Bid shall state a unit price for each unit price item and a lump sum price for each lump sum item (if applicable). Each unit price shall be multiplied by the quantity of the item and the result stated as the total amount for the item. All such total amounts shall be added together with the sum of all lump sum prices and the grand total of the Bid when correctly calculated will be used in the comparison of Bids received.

16. REGISTERED TO DO BUSINESS IN MAINE:

All Bidders shall be registered to do business within the State of Maine. Registration can be obtained through the Maine Department of the Secretary of State, Bureau of Corporations, Elections, & Commission's office at <http://www.maine.gov/sos/cec/corp/>

The two (2) lowest Bidders shall provide proof of registration within twenty-four (24) hours of the Bid Opening.

17. NON-DISCRIMINATION AND SEGREGATED FACILITIES:

Bidders must comply with the President's Executive Order No. 11246, which prohibits discrimination in employment regarding race, creed, color, sex, or national origin. Bidders shall comply with the Prohibition of Segregated Facilities requirements contained in Division 1 – Project Contract Specifications and Division 2 – Special Provisions of these Contract Documents.

Each Bidder shall complete, sign, and include in their bid Proposal a Certificate of Prohibition of Segregated Facilities. When a determination has been made to award a Contract to a specific contractor, such contractor shall, prior to award, furnish such other pertinent information regarding his own employment policies and practices, as well as those of his proposed subcontractors as the FAA, the Sponsor, or the Secretary of Labor may require. All such information required of a subcontractor shall be furnished by the Contractor.

The Equal Employment Opportunity Report Statement, Certification of Prohibition of Segregated Facilities, and all other EEO Requirements shall be included in all non-exempt subcontracts entered into by the Contractor. Subcontracts entered into by Contractor shall also include all other applicable labor provisions. No subcontract shall be awarded to a non-complying subcontractor.

In addition, the Contractor will also insert in each of his subcontracts a clause requiring the

subcontractor to include these provisions in any lower tier subcontracts which they may enter into, together with the clause requiring this insertion in any further subcontracts that may in turn be made.

18. EQUAL EMPLOYMENT OPPORTUNITY (EEO) AND AFFIRMATIVE ACTION:

Bidders and Contractors must comply with the provisions of the Equal Opportunity Clause, Specifications, and regulations and Affirmative Action regulations as described in the Division 1 – Project Contract Specifications and Division 2 – Special Provisions of the Contract Documents.

The Affirmative Action and EEO goals for minorities and women are listed in the Invitation to Bid.

19. COMPLIANCE WITH LAW:

Bidders must comply with all rules, laws and regulations as described in the Required Federal Contract Provisions for AIP Obligated Sponsors in Division 1 - Project Contract Specifications of these Specifications.

The Contractor covenants and agrees that they and their agents and employees will comply with all municipal, State of Maine, and federal laws, applicable national and local codes, City of Auburn, and Auburn-Lewiston Municipal Airport rules and regulations applicable to the work to be conducted under this Agreement.

20. OSHA:

Bidder certifies that all material, equipment, etc., contained in their bid Proposal meets all OSHA requirements.

21. DEBARMENT AND SUSPENSION:

Bidders and Contractors must comply with the provisions of the Debarment and Suspension regulations as described in Sections Division 1 – Project Contract Specifications and Division 2 – Special Provisions of the Contract Documents.

22. FOREIGN TRADE RESTRICTIONS:

Bidders and Contractors must comply with the provisions of the Trade Restriction regulations as described in Division 1 – Project Contract Specifications and Division 2 – Special Provisions of the Contract Documents.

23. DISADVANTAGE BUSINESS ENTERPRISE AND SMALL BUSINESS PARTICIPATION:

The contractor's attention is called to the contract definitions and requirements as described in Division 1 – Project Contract Specifications and Division 2 – Special Provisions Sections of the Contract Documents.

See Invitation for Bid for DBE goal requirements for this project.

All Contractors and Subcontractors are **required** to make good-faith efforts, as defined in Appendix A, 49 CFR Part 26 (refer to Division 1 – Referenced Documents) that will allow all DBE's and Small Businesses the maximum opportunity to work with them on this project.

The bidder/offeror will be required to submit the following information: (1) the names and addresses of DBE firms that will participate in the contract; (2) a description of the work that each DBE firm will perform; (3) the dollar amount of the participation of each DBE firm participating;

(4) Written documentation of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet the contract goal; (5) Written confirmation from the DBE that it is participating in the contract as provided in the commitment made under (4); and (6) a list of DBE's and Small Businesses contacted, or who provided quotes as subcontractors under this bid.

24. DAVIS-BACON ACT:

Bidders and Contractors must comply with the provisions of the Davis-Bacon Act and regulations as described in Division 1 – Project Contract Specifications and Division 2 – Special Provisions of the Contract Documents.

By submitting a Bid for this project, the Bidder certifies that the Bid is based on the payment of federal and State prevailing wages (if applicable). If applicable and in the event of a conflict between Davis-Bacon Wage Rates and the State Prevailing Wage Rates, the higher of the two rates shall govern.

25. PAYMENT OF STATE PREVAILING WAGES (AS APPLICABLE):

If applicable, Bidders and Contractors must comply with the provisions of a State Prevailing Wage Act and regulations as described in Division 1 – Project Contract Specifications and Division 2 – Special Provisions of the Contract Documents.

26. BUY AMERICAN PREFERENCES:

Title 49 United States Code Chapter 501 provides that preference be given to steel and manufactured products produced in the United States when funds are expended pursuant to a grant issued by the United States through the Federal Aviation Administration. This is called the Buy American Program or Buy American Preferences. Appendix X of the *Airport Improvement Program Handbook*, as referenced in Division 1 and Division 2 of the Contract Documents, provides guidance on the Buy American Preferences.

In accepting AIP funding, grant recipients are certifying that they will not acquire (or permit any Contractor or Subcontractor) to use any steel or manufactured products produced outside the United States on any portion of the project for which funds are provided, unless otherwise approved by the FAA. Therefore, for the AIP funded portion of a project, grant recipients must either:

1. Certify, in writing, all products are wholly produced in the US of US materials, or
2. Certify that all equipment that is being used on the project is on the Nationwide Buy American conformance list, or
3. Request a waiver to use non-US produced products (It shall be the sole right of the Owner to determine whether or not to request a waiver on a particular piece of equipment).

The AIP funded portion of a project includes the grant recipient's local share.

Refer to Division 1, FAA Required Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Project Programs of the Contract Documents which provides additional documentation on Buy American requirements. All Bidders shall read and understand the Buy American requirements prior to submitting their Bid.

The successful Bidder, their Subcontractors and all the Subcontractors below them will be required to deliver only steel and manufactured products wholly produced in the US of US materials, or products for which the Owner receives a Buy American waiver from the FAA, or products listed on the current Nationwide Buy American conformance list (Available electronically at:

https://www.faa.gov/airports/aip/buy_american/media/nationwide-buy-american-waivers-issued.pdf

Bidders or manufacturers may request Buy American Waivers, but these waivers take months to process and are frequently denied. Bidders should not assume a waiver not listed on the FAA's current Nationwide Buy American Waiver list will be issued when preparing their bid.

27. AWARD OF CONTRACT:

See section entitled Award of Contract and Execution of Contract Bonds in Contract and Contract Execution Section AC for information on Award of Contracts.

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PROPOSAL DOCUMENTS

for

CONSTRUCT NEW T-HANGAR AND TAXILANE

**AUBURN-LEWISTON MUNICIPAL AIRPORT
AUBURN, MAINE**

**AIP No. 3-23-0002-xxx-2024
MJ# 19186.01**

PREPARED FOR:

**AUBURN-LEWISTON MUNICIPAL AIRPORT
AUBURN, MAINE**

PREPARED BY:



**53 Regional Drive
Concord, NH 03301
Phone: (603) 225-2978
Fax: (603) 225-0095**

NOVEMBER 2024

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PROPOSAL FORM

CONSTRUCT NEW T-HANGAR AND TAXILANE

AUBURN-LEWISTON MUNICIPAL AIRPORT AUBURN, MAINE

AIP No. 3-23-0002-XXX-2024
MJ# 19186.01

Date: _____

To: AUBURN-LEWISTON MUNICIPAL AIRPORT

The undersigned (hereinafter called the Contractor) proposes to furnish all labor, equipment and materials required for **“CONSTRUCT NEW T-HANGAR AND TAXILANE”** in accordance with the accompanying Contract Documents as defined in the Supplemental General Provisions and prepared by McFarland Johnson, Inc., for the amounts listed below, subject to additions and deductions in accordance with the terms of the Specifications. It being understood that the Owner will be the sole judge as to acceptance of Bids and award of the Contract.

Bidder agrees to complete the work under this Contract within the time specified in the Invitation to Bid.

B. This Bid includes addenda:

<u>Number</u>	<u>Date</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

C. Bidders agree to perform all of the work described in the Contract Documents and tabulated below for the following unit and lump sum prices.

It is understood that the quantities given in this Bid Form are approximate only and are given as a basis for comparison of Bids. The Owner does not expressly or by implication agree that the actual amount of work will even approximately correspond herewith, but reserves the right to increase or decrease the amount of any item of the work listed, and the unit prices quoted in the Bid shall apply without change to such variation in the quantity of each of the items, except as further clarified herein. The Owner further reserves the right to delete any item of work in whole or in part, in order to meet the available funding.

**SCHEDULE A BASE BID (T-HANGAR SITE PLAN WITHOUT RESTROOM, WATER
AND SEWER) PROPOSAL FORM**

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
B-001-5.1	1 LS	<u>T-Hangar Building - Architectural</u> for the Lump Sum of: _____ _____ dollars and _____ cents.				
B-001-5.2	1 LS	<u>T-Hangar – Foundation and Slab</u> for the Lump Sum of: _____ _____ dollars and _____ cents.				
B-001-5.3	1 LS	<u>T-Hangar - Electrical</u> for the Lump Sum of: _____ _____ dollars and _____ cents.				
B-001-5.4	1 LS	<u>T-Hangar – General Bid</u> for the Lump Sum of: _____ _____ dollars and _____ cents.				
C-105	1 LS	<u>Mobilization (10% Maximum)</u> for the Lump Sum Price of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
M-150-1	1 LS	<u>Field Survey and Stakeout</u> for the Lump Sum Price of: _____ _____ dollars and _____ cents.				
M-200-1	1 LS	<u>Maintenance and Protection of Traffic</u> for the Lump Sum Price of: _____ _____ dollars and _____ cents.				
M-300-1	1,600 SF	<u>Grassed Soil Filter System</u> for the unit price per Square Feet of: _____ _____ dollars and _____ cents.				
C-100	1 LS	<u>Contractors Quality Control Program</u> for the Lump Sum Price of: _____ _____ dollars and _____ cents.				
C-102-5.1a	1 EA	<u>Installation and Removal of Pipe Inlet Protection</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
C-102-5.1b	3,920 LF	<u>Installation and Removal of Erosion Control Barrier</u> for the unit price per Linear Feet of: _____ _____ dollars and _____ cents.				
C-102-5.1c	6 EA	<u>Installation and Removal of Check Dam</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				
C-102-5.1d	3,600 SY	<u>Installation of Erosion Control Matting</u> for the unit price per Square Yard of: _____ _____ dollars and _____ cents.				
C-102-5.1e	7 EA	<u>Installation and Removal of Inlet Protection</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				
C-102-5.1f	110 CY	<u>Installation of Stone Slope with Geotextile</u> for the unit price per Cubic Yard of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-101-5.1	800 SY	<u>Pavement Removal</u> for the unit price per Square Yard of: _____ dollars and _____ cents.				
P-101-5.6	225 SY	<u>Cold Milling (0-4")</u> for the unit price per Square Yard of: _____ dollars and _____ cents.				
P-151-4.1	0.10 AC	<u>Clearing</u> for the unit price per Acre of: _____ dollars and _____ cents.				
P-151-4.2	5 EA	<u>Remove Utility Poles</u> for the unit price Each of: _____ dollars and _____ cents.				
P-152-4.1	5,100 CY	<u>Unclassified Excavation</u> for the unit price per Cubic Yard of: _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-152-4.2	4,000 CY	<u>Embankment In Place</u> for the unit price per cubic yard of: _____ _____ dollars and _____ cents.				
P-154-5.1	4,270 CY	<u>Subbase Course</u> for the unit price per cubic yard of: _____ _____ dollars and _____ cents.				
P-209-5.1	1,120 CY	<u>Crushed Aggregate Base Course – 6” Depth</u> for the unit price per cubic yard of: _____ _____ dollars and _____ cents.				
P-403-8.1	1,300 TON	<u>Asphalt Mixture Surface Course</u> for the unit price per ton of: _____ _____ dollars and _____ cents.				
P-602-5.1	1,910 GAL	<u>Emulsified Asphalt Prime Coat</u> for the unit price per gallon of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-603-5.1	470 GAL	<u>Emulsified Asphalt Tack Coat</u> for the unit price per gallon of: _____ dollars and _____ cents.				
P-605-5.1	350 LF	<u>Joint Sealing Filler</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
P-620-5.1	810 SF	<u>Markings</u> for the unit price per square foot of: _____ dollars and _____ cents.				
P-620-5.2	50 LB	<u>Reflective Media</u> for the unit price per pound of: _____ dollars and _____ cents.				
F-162-5.1	770 LF	<u>Remove Chain Link Fence</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
F-162-5.2	910 LF	<u>Chain Link Fence</u> for the unit price per Linear Foot of: _____ _____ dollars and _____ cents.				
T-901-5.1	90 KSF	<u>Seeding</u> for the unit price per Kilo- Square Foot of: _____ _____ dollars and _____ cents.				
T-905-5.1	1,000 CY	<u>Topsoil (Obtained on Site or Removed from Stockpile)</u> for the unit price per cubic yard of: _____ _____ dollars and _____ cents.				
T-908-5.1	10,000 SY	<u>Mulching</u> for the unit price per square yard of: _____ _____ dollars and _____ cents.				
D-701-5.1a	35 LF	<u>6 Inch PVC Pipe</u> for the unit price per Linear Foot of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
D-701-5.1b	90 LF	<u>12 Inch Reinforced Concrete Pipe</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
D-705-5.2	2 EA	<u>Cut and Cap Underdrain Cleanout</u> for the unit price Each of: _____ dollars and _____ cents.				
D-752-5.1	1 EA	<u>Headwall</u> for the unit price Each of: _____ dollars and _____ cents.				
D-752-5.2	1 EA	<u>Flared End Section</u> for the unit price Each of: _____ dollars and _____ cents.				
L-108-5.1	1,400 LF	<u>No. 8 AWG 5kV L-824 Type C Cable Installed in Trench or Duct Bank</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
L-108-5.2	2,800 LF	<u>No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in trench including connections/terminations</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
L-108-5.3	4,100 LF	<u>No. 1/0 AWG 600V Thwn-2 Type C Cable, installed in duct bank or conduit</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
L-108-5.4	1,400 LF	<u>No. 1/0 AWG, Stranded, Equipment Ground, Installed in Duct Bank or Conduit</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
L-108-5.5	9 EA	<u>Additional Ground Rods</u> for the unit price per Each of: _____ dollars and _____ cents.				
L-110-5.1	920 LF	<u>Non-Encased Electrical Duct Bank, 1-way 2-inch</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
L-110-5.2	100 LF	<u>Concrete Encased Electrical Duct Bank, 4-way 4-inch</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
L-110-5.3a	1,500 LF	<u>Removal and Disposal of Direct Buried Cable</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
L-110-5.3b	600 LF	<u>Removal and Disposal of Conduit</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
L-115-5.1	2 EA	<u>Remove Existing Electric Handhole</u> for the unit price Each of: _____ dollars and _____ cents.				
L-115-5.2	1 EA	<u>Remove and Dispose Duct Marker</u> for the unit price Each of: _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
L-115-5.3	2 EA	<u>Install L-867E Electric Handhole in Turf</u> for the unit price Each of: _____ _____ dollars and _____ cents.				
L-115-5.4	2 EA	<u>Install 4'x4' Concrete Junction Structure in Turf</u> for the unit price Each of: _____ _____ dollars and _____ cents.				
L-115-5.5	1 EA	<u>Install 4'x4' Load Rated Concrete Junction Structure in Proposed Pavement</u> for the unit price Each of: _____ _____ dollars and _____ cents.				
L-125-5.1	2 EA	<u>Airfield Signage (L-858 LED, Size 2) With Foundation with L-830 Transformer</u> for the unit price Each of: _____ _____ dollars and _____ cents.				
L-125-5.2	9 EA	<u>Base Mounted Taxiway Edge Lights (L861T LED) With L-830 Transformer</u> for the unit price Each of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
L-125-5.3	4 EA	<u>Remove and Relocate Existing Base-Mounted Taxiway Edge Light and Base</u> for the unit price Each of: _____ dollars and _____ cents.				
L-125-5.4	28 EA	<u>Retroreflective Taxiway Edge Marker (L-853)</u> for the unit price Each of: _____ dollars and _____ cents.				
33 4100-1	800 LF	<u>Underdrain Pipe and Fittings</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
X-400-1	540 LF	<u>Communication Conduit (4" PVC)</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				
X-500-1	380 LF	<u>Electric Service Conduit (2" PVC)</u> for the unit price per Linear Foot of: _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
X-600-1	1 ALL	<u>Replace Unknown Communication and Electric Cables</u> for the Allowance of: Two thousand _____ dollars and _____ Zero _____ cents.	\$2,000	00	\$2,000	00
X-600-2	1 ALL	<u>Investigate depth of Gas Line</u> for the Allowance of: One thousand five hundred _____ dollars and _____ Zero _____ cents	\$1,500	00	\$1,500	00
X-600-3	1 ALL	<u>Service Connection Coordination with CMP (Taxilane & Service Road)</u> for the Allowance of: One thousand _____ dollars and _____ Zero _____ cents	\$1,000	00	\$1,000	00
X-600-4	1 ALL	<u>Service Connection Coordination with CMP (T-Hangar)</u> for the Allowance of: One thousand _____ dollars and _____ Zero _____ cents	\$1,000	00	\$1,000	00
X-600-5	1 ALL	<u>Service Connection Coordination with Comm Provider (Taxilane & Service Road)</u> for the Allowance of: One thousand _____ dollars and _____ Zero _____ cents	\$1,000	00	\$1,000	00
X-800-1	1 EA	<u>Permanent Vehicle Traffic Sign</u> for the unit price Each of: _____ _____ dollars and _____ cents.				

**SCHEDULE A PROPOSAL BASE BID (SITE PLAN WITHOUT RESTROOM,
WATER AND SEWER) SUBTOTAL**

SCHEDULE A BASE BID SUBTOTAL: _____

(Words)

_____ dollars and

_____ cents (\$ _____).

(Figures)

Note: Also record this Bid amount on the Bid Summary Sheet (page P-25)

SCHEDULE A ADDITIVE ALTERNATE #1 (MOTORIZED VEHICLE GATE)
PROPOSAL FORM

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
C-105	1 LS	<u>Mobilization (10% Maximum)</u> for the Lump Sum Price of: _____ dollars and _____ cents.				
P-101-5.1	100 SY	<u>Pavement Removal</u> for the unit price per Square Yard of: _____ dollars and _____ cents.				
P-101-5.6	110 SY	<u>Cold Milling (0-4")</u> for the unit price per Square Yard of: _____ dollars and _____ cents.				
P-403-8.1	20 TON	<u>Asphalt Mixture Surface Course</u> for the unit price per Ton of: _____ dollars and _____ cents.				
P-603-5.1	10 GAL	<u>Emulsified Asphalt Tack Coat</u> for the unit price per Gallon of: _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-605-5.1	40 LF	<u>Joint Sealing Filler</u> for the unit price per Linear Foot of: _____ _____ dollars and _____ cents.				
F-162-5.3	1 EA	<u>Vehicle Gate</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				

SCHEDULE A ADDITIVE ALTERNATE #1 (MOTORIZED VEHICLE GATE)
PROPOSAL SUBTOTAL

SCHEDULE A ADDITIVE ALTERNATE #1 SUBTOTAL: _____

(Words)

_____ dollars and

_____ cents (\$ _____).

(Figures)

Note: Also record this Bid amount on the Bid Summary Sheet (page P-25).

SCHEDULE B BASE BID (RESTROOM, WATER AND SEWER) PROPOSAL FORM

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
C-105	1 LS	<u>Mobilization (10% Maximum)</u> for the Lump Sum Price of: _____ _____ dollars and _____ cents.				
B-001-5.5	1 LS	<u>Restroom Architectural</u> for the Lump Sum of: _____ _____ dollars and _____ cents.				
B-001-5.6	1 LS	<u>Restroom Plumbing</u> for the Lump Sum of: _____ _____ dollars and _____ cents.				
B-001-5.7	1 LS	<u>Restroom Electrical</u> for the Lump Sum of: _____ _____ dollars and _____ cents.				
B-001-5.8	1 LS	<u>Restroom General Bid</u> for the Lump Sum of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
31 2316.26	3 CY	<u>Trench Rock Removal</u> for the unit price per Cubic Yard of _____ _____ dollars and _____ cents.				
33 3113-1	280 LF	<u>Sewer Pipe and Fittings (4" PVC)</u> for the unit price per Linear Foot of _____ _____ dollars and _____ cents.				
33 3113-2	2 EA	<u>Sewer Cleanouts</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				
33 3113-3	1 EA	<u>Sewer Manhole Connection</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				
33 3113-4	1 ALL	<u>Sewer Connection Fee</u> for the unit price per Allowance of: _____ _____ dollars and _____ cents				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
33 0561-1	1 EA	<u>Concrete Manholes(Sewer)</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				
33 1416-1	180 LF	<u>Water Pipe and Fittings(1")</u> for the unit price per Linear Foot of: _____ _____ dollars and _____ cents.				
33 1416-2	1 EA	<u>Water Valves(water curb stop with box)</u> for the unit price per Each of: _____ _____ dollars and _____ cents.				
33 1416-3	1 ALL	<u>Municipal Water Connection Fee</u> for the unit price per Allowance of: _____ <u>One thousand</u> _____ dollars and _____ <u>Zero</u> _____ cents	\$1,000	00	\$1,000	00
P-403-8.1	4 TON	<u>Asphalt Mixture Surface Course (3" depth) (Flight Line Drive Utilities)</u> for the unit price per Ton of: _____ _____ dollars and _____ cents.				

ITEM NO.	ESTIMATED QUANTITY	ITEM DESCRIPTION WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		AMOUNT	
			Dollars	Cents	Dollars	Cents
P-209-5.1	5 CY	<u>Crushed Aggregate Base Course (6" depth) (Flight Line Drive Utilities)</u> for the unit price per Cubic Yard of: _____ dollars and _____ cents.				
P-154-5.1	8 CY	<u>Subbase Course (12" depth) (Flight Line Drive Utilities)</u> for the unit price per Cubic Yard of: _____ dollars and _____ cents.				

SCHEDULE B BASE BID (RESTROOM, WATER, AND SEWER) PROPOSAL
SUBTOTAL

SCHEDULE B BASE BID SUBTOTAL: _____

(Words)

_____ dollars and

_____ cents (\$ _____).

(Figures)

Note: Also record this Bid amount on the Bid Summary Sheet (page P-25).

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BID SUMMARY SHEET

SCHEDULE A BASE BID SUBTOTAL AMOUNT: \$ _____
(FROM PAGE P-17)

SCHEDULE A ADDITIVE ALTERNATE #1 SUBTOTAL AMOUNT: \$ _____
(FROM PAGE P-19)

SCHEDULE B BASE BID SUBTOTAL AMOUNT: \$ _____
(FROM PAGE P-23)

TOTAL BID AMOUNT: \$ _____
(Schedule A, Schedule A Additive Alternate #1, Schedule B_

The Owner reserves the right to award the project in accordance with Specification entitled Award of Contract and Execution of Contract Bonds.

The Owner reserves the right to delete any item of work in whole or in part, in order to meet the available funding.

Amounts are to be shown in both words and figures. In case of Discrepancy, the amount shown in words will govern.

The above unit prices shall include all labor, materials, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

Bidder proposes to provide all labor and materials to complete the work, as specified in the Contract Documents, and as is reasonably expected due to the existing conditions and required construction.

Bidder understands that the Owner reserves the right to reject any or all Bids and to waive any informalities in the Bidding. The Bidder agrees that this Bid shall be good and may not be withdrawn for the period as specified in the Invitation to Bid.

The undersigned further certifies under the penalties of perjury that this Bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

The undersigned hereby certifies that they are able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed on the work, and that they will comply fully with all laws and regulations applicable to award of this contract.

The undersigned agrees that if they are selected as the Contractor they will, within five (5) calendar days, after presentation thereof by the Owner, unless otherwise directed in writing by the Owner, execute a Contract in accordance with the terms of this General Bid and furnish a Performance Bond for 100% of the Contract Price and Payment Bond for 100% of the Contract Price, each of a Surety company meeting the requirements contained in the Contract Documents and satisfactory to the Owner, the premiums of which are to be paid by the Contractor and are included in the Contract amount.

The undersigned agrees to guarantee all of the work performed under this Contract to be done in accordance with the Contract Documents in a good and workmanlike manner and to renew or repair any work which may be rejected, due to defective materials or workmanship, prior to final completion and acceptance of the work.

The Bid Security attached in the sum of \$_____ is to become the property of the Owner, in the event the Contract and Bond are not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner causes thereby.

Respectively Submitted By:

Company Name

Address

Name of Authorized Signature

Signature

Title

Date

(SEAL - if Bid is by a corporation)

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BID BOND

(Not to be filled in if a Cashier's Check is submitted)

KNOW ALL MEN BY THESE PRESENTS That the undersigned Bidder,

_____, as Principal, and

_____, as Surety, are held

and firmly bound unto the **Auburn Lewiston Municipal Airport** in the sum of _____
dollars (\$ _____) for the payment of
which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors,
administrators, successors, and assigns.

THE CONDITION OF THIS OBLIGATION is such that if Principal:

1. Does not withdraw the attached Proposal of _____
dollars (\$ _____) for the project to: **Construct New T-Hangar and Taxilane, Auburn Lewiston
Municipal Airport**; and

2. Enters into the written Contract and furnishes the required Certificates of Insurance, Payment and
Performance Bonds, with Surety or Sureties acceptable to the **Auburn Lewiston Municipal Airport** within
Five (5) days after Notice that the said Proposal is accepted, then this obligation shall be void; otherwise, the
same shall be in full force and the full amount of this Proposal.

Bond shall be paid to the **Auburn Lewiston Municipal Airport** as stipulated herein as liquidated damages.
Signed this _____ day of _____, 2024.

(PRINCIPAL MUST INDICATE
WHETHER CORPORATION, PARTNERSHIP
COMPANY, OR INDIVIDUAL)

Principal

THE PERSON SIGNING FOR THE
PRINCIPAL SHALL, IN THEIR OWN
HANDWRITING, SIGN THE PRINCIPAL'S
NAME, THEIR OWN NAME, AND THEIR
TITLE. WHERE THE PERSON SIGNING FOR
CORPORATION IS OTHER THAN THE
PRESIDENT OR VICE PRESIDENT, THEY
MUST FURNISH A CORPORATE RESOLUTION
SHOWING THEIR AUTHORITY TO BIND THE
CORPORATION.

(Affix Surety's Corporate Seal)

Surety

SURETY'S BOND AFFIDAVIT

STATE OF _____)

SS

COUNTY OF _____)

BEFORE ME, THE UNDERSIGNED AUTHORITY, PERSONALLY APPEARED _____
_____ WHO, BEING DULY SWORN, DEPOSES AND SAYS THAT
THE UNDERSIGNED IS A DULY AUTHORIZED (RESIDENT) (NON-RESIDENT) INSURANCE
AGENT, PROPERLY LICENSED UNDER THE LAWS OF THE STATE OF _____
_____, OF _____, A COMPANY AUTHORIZED TO MAKE
CORPORATE SURETY BONDS UNDER THE LAWS OF THE STATE OF MAINE

SAID _____ FURTHER CERTIFIES THAT AS
ATTORNEY-IN-FACT FOR THE SAID _____, THEY HAVE
SIGNED THE ATTACHED BOND IN THE SUM OF _____ DOLLARS
(U.S. \$ _____) ON BEHALF OF _____
FOR:

**AUBURN LEWISTON MUNICIPAL AIRPORT, COVERING PROJECT: CONSTRUCT NEW T-
HANGAR AND TAXILANE, AUBURN LEWISTON MUNICIPAL AIRPORT.**

COUNTERSIGNED:

MAINE RESIDENT AGENT

AGENT AND ATTORNEY-IN-FACT

ACKNOWLEDGEMENT FOR ATTORNEY-IN-FACT

SWORN TO AND SUBSCRIBED BEFORE ME THIS
_____ DAY OF _____, 20____.

NOTARY PUBLIC,
MY COMMISSION EXPIRES: _____

This signature page is included in this Proposal Document to provide assistance to all Bidders in the form of a checklist and to stipulate that if any of the items mentioned below, but not limited to, are incomplete or otherwise incorrect, the Owner may reject the bid.

I. REQUIRED FORMS AND SIGNATURE

- A. Bid Certification Checklist Form with Signaturepage BC1-1
- B. Bid Proposal with Acknowledgement of Addenda, Bid Form & SummaryP section
- C. Bidders QualificationsBC2 section
- D. Affirmative Action Certification.....Form MJ-100
- E. Certificate of Buy American Compliance for Construction ProductsForm MJ-101
- F. Certificate of Offeror/Bidder Regarding DebarmentForm MJ-102
- G. FAA Proposed DBE and SB Utilization – Race Neutral ProjectsForm MJ 103A
- H. Subcontractor/Supplier DBE and SB Letter of Intent.....Form 104
- I. Prime Contractor – DBE/SB Reporting Information FormForm 105
- J. Subcontractor/Supplier – DBE/SB Reporting Information Form.....Form 106
- K. Certification Regarding LobbyingForm 107
- L. Prohibition of Segregated FacilitiesForm 108
- M. Certificate of Offeror/Bidder Regarding Tax Delinquency & Felony ConvictionForm 109
- N. Trade Restriction CertificationForm 110
- O. Non-Collusion Affidavit (Bidder/Offeror).....Form 111

II. PROPOSAL SECTION

Unit Price Bids will be considered to be incomplete if any of the following conditions exist:

- A. Unit price in words is omitted
- B. Unit Price in figures is omitted
- C. A zero, N/A, or blank is to be used as a bid price in the Bid Form.

III. MISCELLANEOUS

- A. All written words and figures shall be in **BLUE** or **BLACK INK** or **TYPED**
- B. All documents provided with the proposal form are considered a part thereof and must not be altered when the proposal is submitted.

IV. CERTIFICATION SUMMARY

I hereby certify that I have read all of the above requirements and understand that it affects the acceptability of my bid.

Contractor Signature

Date

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BIDDERS'S QUALIFICATIONS AND CERTIFICATION

NOTE: **This section is to be notarized.**

The undersigned submits answers to the following questions to enable the Owner to judge his or her experience and ability in, and facilities for, the work proposed to be done.

1. The work, if awarded to you, will have the resident personal supervision of whom? State their special qualifications.

2. Describe equipment you propose to use. State whether you own or rent it.

(Attach additional sheets as necessary.)

3. How many years has your organization been in business as a Contractor under the name in which you propose to execute this Contract?

4. What projects has your present organization completed of character similar to that proposed? Give the information indicated by the following tabulation:

[illegible]

(Attach additional sheets as necessary)

5. Has your present organization ever failed to complete any work awarded to it? If so, state when, where and why.

6. Give below, the name of one or more banks which have information that would enable them to advise regarding the financial ability of your company.

Name of Bank:	Address:	Telephone No.
---------------	----------	---------------

<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>
<hr/>	<hr/>	<hr/>

7. The names and residences of all persons and parties interested in this proposal as principals are as follows:

NOTE: In case of a corporation, give names of officers and directors; in case of a partnership, give names of all partners.

Dated at _____ this
day of _____, 2024.

Name of Bidder: _____

By: _____

Title: _____

State of _____ ss.

County of _____

Being duly sworn, deposes and says that he/she is

(Title)

of _____ and that the answers to the
(name of organization)

foregoing questions and statements contained therein are true and correct.

Sworn to before me this _____ day of

_____ 2024.

My commission expires: _____

Notary Public

**CERTIFICATE AS TO CORPORATE PRINCIPAL
FOR PROPOSAL****(IF A CORPORATION)**

State of _____)

County of _____)

On this _____ day of _____, 2024

before me personally came _____

to me known, who being by me duly sworn, did depose and say as follows:

That they reside at _____

and are the _____

of _____

the corporation described in and which executed the foregoing instrument; that they know

the corporate seal of said corporation; that the seal affixed to the foregoing instrument is such corporate seal

and it was so affixed by order to the Board of Directors of said corporation; and that by the like order they

signed thereto their name and official designation.

Notary Public (Seal)

My Commission expires: _____

**PARTNERSHIP CERTIFICATE
FOR PROPOSAL**

(IF A PARTNERSHIP)

State of _____)

County of _____)

On this _____ day of _____, 2024

before me personally appeared _____

known to me and known by me to be the person who executed the above instrument, who, being by me first duly sworn, did depose and say that they are a general partner in the firm of

_____;

and that said firm consists of themselves and _____

_____, and that they executed the foregoing instrument on behalf of said firm for the uses and purposes stated herein.

Notary Public (Seal)

My commission expires:

**INDIVIDUAL CERTIFICATE
FOR PROPOSAL****(IF AN INDIVIDUAL)**

State of _____)

County of _____)

On this _____ day of _____, 2024

before me personally appeared _____

known to me and known by me to be the person who executed the above instrument, who, being by me first
duly sworn, did depose and say that they are the owner of the

firm _____;

and that they executed the foregoing instrument on behalf of said firm for the uses and purposes stated
herein.

Notary Public (Seal)

My commission expires:

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BIDDER'S PROPOSED LIST OF SUBCONTRACTORS & SUPPLIERS

The Bidder advises herein that the following Subcontractors and Suppliers are proposed for the item of work listed. Subcontractors are subject to review per the requirements of the Contract Documents and the technical requirements specified. List only subcontracting firms that will supply labor at the site AND significantly large, or Disadvantaged Business Enterprise, equipment/material suppliers.

Failure to provide this information may result in the bid being considered non-responsive.

	<u>SUBCONTRACTOR OR SUPPLIER NAME</u>	<u>DBE (Y/N)</u>	<u>TRADE</u>	<u>CONTRACT WORK ITEM TO BE PERFORMED</u>	<u>VALUE (\$)</u>
1.	_____				
2.	_____				
3.	_____				
4.	_____				
5.	_____				
6.	_____				
7.	_____				
8.	_____				
9.	_____				
10.	_____				
11.	_____				
12.	_____				
13.	_____				
14.	_____				
15.	_____				

RESPECTFULLY SUBMITTED:

(Bidder)

By: _____

Title: _____

Date: _____

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**AFFIRMATIVE ACTION CERTIFICATION
EQUAL EMPLOYMENT OPPORTUNITY REPORT STATEMENT
as required by 41 CFR 60-1.7(b)**

(see "Required Federal Contract Provisions for AIP and Obligated Sponsors")

The Bidder (Proposer) shall complete the following statement by checking the appropriate boxes. Failure to complete these blanks may be grounds for rejection of the bid Proposal.

1. The Bidder (Proposer) has ☐ has not ☐ developed and has on file at each establishment Affirmative Action Programs pursuant to 41 CFR 60-1.4 and 41 CFR 60-2.
2. The Bidder (Proposer) has ☐ has not ☐ participated in any previous Contract or Subcontract subject to the Equal Opportunity Clause prescribed by Executive Order 11246, as amended.
3. The Bidder (Proposer) has ☐ has not ☐ filed with the Joint Reporting Committee the Annual Compliance Report on Standard Form 100 (EEO-1 Report).
4. The Bidder (Proposer) does ☐ does not ☐ employ fifty (50) or more employees.

(Name of Bidder)

By: _____
Signature *

Title: _____

Date: _____

*Must be same signature on bid Proposal.

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Certificate of Buy American Compliance – Equipment/Building Projects

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101, and other Made in America Laws, U.S. statutes, guidance, and FAA policies by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter “X”.

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:

- a) Only installing steel and manufactured products produced in the United States;
- b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
- c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
- d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- a) To provide to the Airport Sponsor or FAA evidence that documents the source and origin of the steel and manufactured product.
- b) To faithfully comply with providing U.S. domestic product.
- c) To furnish U.S. domestic product for any waiver request that the FAA rejects.
- d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for a Type 3 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

- a) To submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
- b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
- c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
- d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
- c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of the item components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “item”. The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
- b) Listing of all product components and subcomponents that are not comprised of 100 percent U.S. domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108 (products of unknown origin must be considered as non-domestic products in their entirety).
- c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
- d) Percentage of non-domestic component and subcomponent cost as compared to total “item” component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials, would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bidders and/or offerors;
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
- d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date

Signature

Company Name

Title

CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a “covered transaction”, must verify each lower tier participant of a “covered transaction” under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: <http://www.sam.gov>.
2. Collecting a certification statement similar to the Certification of Offerer /Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

Name and Title (Please Print or Type)

Signature

Date

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FEDERAL AVIATION ADMINISTRATION

**PROPOSED DISADVANTAGED BUSINESS ENTERPRISE (DBE)
AND SMALL BUSINESS UTILIZATION
RACE NEUTRAL PROJECTS**

**CONSTRUCT NEW T-HANGAR AND TAXILANE
AIP No. 3-23-0002-xxx-2024**

The undersigned Bidder/Offeror has made a good faith effort to make subcontracting and supplier opportunities available to all firms including, but not limited to, DBE's and small businesses as defined in 49 CFR 26. As a result of these efforts:

- The Bidder/Offeror is committed to a minimum of _____% **DBE** utilization on this Contract.
- The Bidder/Offeror is committed to a minimum of _____% **Small Business** utilization on this Contract (Include Small Businesses that are also DBE's in this percentage as well as Small Businesses that are not DBE's).

Name of Bidder/Offeror's firm: _____

By: _____
Signature Title

DBE / Small Business Subcontractor / Supplier

Name of Firm: _____

☐ DBE ☐ Small Business (Check One or Both)

Proposed Work: _____
(Be brief, i.e. electrical or excavation)

Dollar Amount of Work: _____

☐ Letter of Intent attached ☐ Firm is a Supplier.

(Attach additional sheets as needed for additional firms)

FEDERAL AVIATION ADMINISTRATION

**PROPOSED DISADVANTAGED BUSINESS ENTERPRISE (DBE)
AND SMALL BUSINESS UTILIZATION
RACE NEUTRAL PROJECT**

DBE / Small Business Subcontractor / Supplier

Name of Firm: _____

☐ DBE ☐ Small Business (Check One)

Proposed Work: _____
(Be brief, i.e. electrical or excavation)

Dollar Amount of Work: _____

☐ Letter of Intent attached ☐ Firm is a Supplier.

DBE / Small Business Subcontractor / Supplier

Name of Firm: _____

☐ DBE ☐ Small Business (Check One)

Proposed Work: _____
(Be brief, i.e. electrical or excavation)

Dollar Amount of Work: _____

☐ Letter of Intent attached ☐ Firm is a Supplier.

DBE / Small Business Subcontractor / Supplier

Name of Firm: _____

☐ DBE ☐ Small Business (Check One)

Proposed Work: _____
(Be brief, i.e. electrical or excavation)

Dollar Amount of Work: _____

☐ Letter of Intent attached ☐ Firm is a Supplier.

(Attach additional sheets as needed for additional firms)

**SUBCONTRACTOR / SUPPLIER
DISADVANTAGED BUSINESS ENTERPRISE (DBE)
AND SMALL BUSINESS
LETTER OF INTENT**

(To be filled out by the Contractor and the Subcontractor / Supplier
and submitted with the Bid)

Project Name: CONSTRUCT NEW T-HANGAR AND TAXILANE

Airport: AUBURN-LEWISTON MUNICIPAL AIRPORT

AIP Number: 3-23-0002-xx-2024

Prime Contractor

Company Name: _____

Subcontractor / Supplier Contractor

Company Name: _____

DBE Status:	<input type="checkbox"/> Non-DBE <input type="checkbox"/> Certified DBE (Check one)
Small Business Status:	<input type="checkbox"/> Non-Small Business <input type="checkbox"/> Small Business (Check one)

(Check Here) ☐ **Form MJ-105 or MJ-106 is attached (required)**

1. The undersigned DBE or Small Business firm intends to perform work in connection with the above referenced project as:

(Check One)

☐ an individual ☐ a partnership ☐ a corporation

☐ a joint venture with _____

☐ other _____
attach other sheets if necessary

2. If a DBE, the undersigned affirms that they are a duly authorized official representing the proposed Disadvantaged Business Enterprise and affirms that its certification has not expired nor been revoked (Attach a copy of certification letter)
3. If the bidder is awarded the Contract, the undersigned intend to enter into a Subcontract to perform the work described on the following sheet for the prices indicated.

LETTER OF INTENT/SCHEDULE OF PARTICIPATION

(Attach Additional Sheets if Needed)

Contract Item No.	Description of Work To Be Performed by DBE / Small Business Contractor / Subcontractor / Supplier	Estimated Quantity	Unit Price	Item Subtotal
Total Amount Credited to DBE / Small Business:				
Total Project Bid Amount:				
Percent of DBE / Small Business:				

The undersigned certifies that they will enter into a formal agreement upon execution of the Contract for the above referenced project pursuant to all conditions noted in the attached Contract Documents, swearing and affirming under the pains and penalties of perjury, that the foregoing information and appropriate attachments are true to the best of their knowledge.

NAME OF SUBCONTRACTOR / SUPPLIER:

AUTHORIZED SIGNATURE:

PRINTED NAME AND TITLE:

DATE:

NAME OF PRIME CONTRACTOR:

AUTHORIZED SIGNATURE:

PRINTED NAME AND TITLE:

DATE:

Note: If the Prime Contractor is a DBE or Small Business, the Prime Contractor should fill out and submit a copy of this form listing themselves as the Prime Contractor and the Subcontractor / Supplier. If the bidder/offeror does not receive award of the prime contract, any and all representations in this letter of Intent and Affirmation shall be null and void. (Submit this form for each DBE subcontractor.)

**PRIME CONTRACTOR
DBE / SMALL BUSINESS REPORTING INFORMATION FORM**

(To be filled out by the bidder and submitted with their bid package)

Project Name: _____
Airport: _____
AIP Number: _____

Prime Contractor Information

Company Name: _____
Contact Person: _____
Address 1: _____
Address 2: _____
Address 3: _____
City / Town: _____
State: _____
Zip Code: _____
Phone: _____
Fax: _____
E-Mail: _____
NAICS Code: _____

DBE Status:	<input type="checkbox"/> Non-DBE <input type="checkbox"/> Certified DBE (Check one)
Small Business Status:	<input type="checkbox"/> Non-Small Business <input type="checkbox"/> Small Business (Check one)

If Prime Contractor is a DBE or a Small Business, complete the following section:

States you are DBE Certified in:	(If not a DBE leave blank)
Age of Firm:	_____ Years
Annual Gross Receipts (Avg. over last 3 years per SBA regs.):	<input type="checkbox"/> less than \$500,000 (Check one) <input type="checkbox"/> \$500,000 to \$999,999 <input type="checkbox"/> \$1,000,000 to \$1,999,999 <input type="checkbox"/> \$2,000,000 to \$4,999,999 <input type="checkbox"/> \$5,000,000 to \$9,999,999 <input type="checkbox"/> \$10,000,000 to \$14,999,999 <input type="checkbox"/> \$15,000,000 to \$19,999,999 <input type="checkbox"/> \$20,000,000 to \$23,980,000 <input type="checkbox"/> more than \$23,980,000

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**SUBCONTRACTOR / SUPPLIER
DBE / SMALL BUSINESS REPORTING INFORMATION FORM**

**(To be filled out by the Subcontractor / Supplier and submitted with the bid package
and the Request for Consent to Sublet package)**

Project Name: _____
Airport: _____
AIP Number: _____

Subcontractor / Supplier Information

Company Name: _____
Contact Person: _____
Address 1: _____
Address 2: _____
Address 3: _____
City / Town: _____
State: _____
Zip Code: _____
Phone: _____
Fax: _____
E-Mail: _____
NAICS Code: _____

DBE Status:	<input type="checkbox"/> Non-DBE <input type="checkbox"/> Certified DBE (Check one)
Small Business Status:	<input type="checkbox"/> Non-Small Business <input type="checkbox"/> Small Business (Check one)
Project Role:	<input type="checkbox"/> Subcontractor <input type="checkbox"/> Supplier <input type="checkbox"/> Other _____ (Check one)

If Subcontractor / Supplier is a DBE or a Small Business, complete the following section:

States you are DBE Certified in:	(If not a DBE leave blank)
Age of Firm:	_____ Years
Annual Gross Receipts (Avg. over last 3 years per SBA regs.):	<input type="checkbox"/> less than \$500,000 (Check one) <input type="checkbox"/> \$500,000 to \$999,999 <input type="checkbox"/> \$1,000,000 to \$1,999,999 <input type="checkbox"/> \$2,000,000 to \$4,999,999 <input type="checkbox"/> \$5,000,000 to \$9,999,999 <input type="checkbox"/> \$10,000,000 to \$14,999,999 <input type="checkbox"/> \$15,000,000 to \$19,999,999 <input type="checkbox"/> \$20,000,000 to \$23,980,000 <input type="checkbox"/> more than \$23,980,000

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CERTIFICATION REGARDING LOBBYING

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Name and Title (Please Print or Type)

Signature

Date

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PROHIBITION OF SEGREGATED FACILITIES

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Employment Opportunity clause in this contract.

(b) "Segregated facilities," as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Employment Opportunity clause of this contract.

Signed and submitted on this date: _____

By this (circle one): Contractor, Subcontractor, or Supplier

Business Name: _____

Address: _____

Telephone Number: _____

Fax Number: _____

E-mail Address: _____

Name and Title (Printed): _____

Owner or Authorized Signature: _____

Note to Subcontractors and Suppliers: This form shall be returned to the Prime Contractor who will forward it to the Engineer.

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CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

Federal Certification

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

- 1) The applicant represents that it is () is not () (CHECK ONE) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 1) The applicant represents that it is () is not () (CHECK ONE) is not a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note: If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

State Certification:

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

Certifications

- 2) The applicant represents that it is () is not () (CHECK ONE) a corporation that has any unpaid State tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 3) The applicant represents that it is () is not () (CHECK ONE) is not a corporation that was convicted of a criminal violation under any State law within the preceding 24 months.

Note: If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify MassDOT - AD, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal or State law and includes conviction of an offense defined in a section of the Commonwealth of Massachusetts code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony.

Tax Delinquency: A tax delinquency is any unpaid Federal or State tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

NAME OF APPLICANT'S FIRM _____

FEDERAL I.D. NO. _____

SIGNATURE: _____

BY (PRINTED NAME): _____

TITLE: _____

DATED: _____

TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

- 1) is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR);
- 2) has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the USTR; and
- 3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18 USC Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

- 1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR or
- 2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list or
- 3) who incorporates in the public works project any product of a foreign country on such USTR list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The Contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by USTR, unless the Offeror has knowledge that the certification is erroneous.

TRADE RESTRICTION CERTIFICATION

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration (FAA) may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

Date

Signature

Company Name

Title

NON-COLLUSION AFFIDAVIT (BIDDER OR OFFEROR)

I, (enter full legal name) _____,

representing (name of person, firm, association, or corporation) _____

_____ of (Town or City and State) _____

certify under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph, the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

Name of Individual, Partnership, or Corporation (Please Print or Type)

Signature of Official Authorized to Sign Contracts and Agreements

Name of Individual Signing Affidavit

Title of Individual Signing Affidavit

Sworn to before me this _____ day of _____, 20____

(Notary Public)

My Commission Expires _____

NON-COLLUSION AFFIDAVIT (BIDDER OR OFFEROR)

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AWARD OF CONTRACT AND EXECUTION OF CONTRACT BONDS**1. Consideration of Proposals and Award of Contract**

The award of the Contract, if it is awarded, will be to the lowest responsive and responsible Bidder as described in the Method of Award below whose qualifications indicate the award will be in the best interest of the Owner and whose Proposal complies with all the prescribed requirements. No award will be made until the Owner has concluded such investigations as it deems necessary to establish the responsibility, qualifications, and financial ability of the Bidders to do the work in accordance with the Contract Documents to the satisfaction of the Owner within the time prescribed. The Owner reserves the right to reject the bid Proposal of any Bidder who does not pass such investigation to the Owner's satisfaction. If the Contract is awarded, the Owner will give the successful Bidder written notice of the award by the Bid Valid Period date specified in the Invitation to Bid. Until the final award of the Contract, the Owner reserves the right to reject any or all Proposals, or to proceed to do the work otherwise when the best interests of the Owner will be promoted thereby.

The Method of Award for the Bid Proposal will be as follows:

Award will be to the Bidder with the lowest bid price based on the sum of Schedule A and Additive Alternate #1.

If the sum of Schedule A and Additive Alternate #1 exceeds available funding, award will be considered to the Bidder with the lowest bid price for Schedule A.

If the bid prices for Schedule A exceed available funding, the Owner may elect to cancel the entire bid.

Schedule B will be evaluated separately based on the criteria as follows:

- The Owner may elect to award Schedule B to the Bidder with the lowest Schedule A and/or Additive Alternate #1 bid price based on the above criteria.
- Or the Owner may elect to award to the Bidder with the lowest summed value of bid prices provided in Schedule B if it is in the best interest of the Owner. In this case, the Owner will award separate contracts to both the successful Schedule A and/or Additive Alternate #1 Bidder and the successful Schedule B Bidder.
- If the bid prices for Schedule B exceed available funding, the Owner may elect to cancel the Schedule B work.

Bidder's must complete Schedule A, Schedule B and Additive Alternate #1 in order to be considered responsive.

2. Return of Proposal Surety

As soon as the Proposals have been compared, the Owner may, at its discretion, return the Proposal Surety accompanying those Proposals which, in its judgment, would not be considered in making the award. When award is made, the successful Bidder's Proposal Surety and that of the next low Bidder will be retained until the Contract has been executed and acceptable Contract Surety received, after which it will be returned to the Bidders. Should the award be delayed beyond the Bid Valid Period date specified in the Invitation to Bid, all Bidder's Proposal Surety will be returned, unless such delay is from causes beyond the control of the Owner. See Division 2 – Special Provision/Supplemental General Provisions, Part A Item 18 for additional information on Proposal and Contract Surety.

3. Requirements of Contract Surety

Contract Surety shall include a good and sufficient Performance Bond and labor and material Payment Bond, each in the sum of one-hundred percent (100%) of the awarded Contract amount, along with appropriate Power of Attorney. Contract Surety shall be delivered to the within fifteen (15) calendar days from the date of Notice of Award, simultaneously with Contractor's execution of the Contract. See Division 2 – Special Provision/Supplemental General Provisions, Part A Item 18 for additional information on Proposal and Contract Surety.

4. Execution of Contract

The successful Bidder shall sign (execute) the Contract and associated documents and return them to the Owner, along with the fully executed Contract Surety and required insurance certificates, if applicable, within 15 calendar days from the date on the Notice of Award by the Owner. If the Contract is mailed, special handling is recommended.

5. Approval of Contract

Upon receipt of acceptable insurance certificates, Contract, Contract Surety, and associated documentation that have been executed by the successful Bidder, the Owner shall complete the execution of the Contract in accordance with local laws or ordinances and return the fully executed Contract documents to the Contractor. The Contract is not binding upon the Owner until it has been executed by the Owner and delivered to the Contractor.

6. Failure to Execute Contract

Failure of the successful Bidder to execute the Contract and furnish acceptable insurance certificates, Contract Surety and other required Contract documents within the fifteen (15) calendar day period after receiving Notice of Award shall be just cause for cancellation of the award and forfeiture of the Proposal Surety, not as a penalty, but as liquidation of damages to the Owner. Award may then be made to the next best qualified Bidder, or the work re-advertised, or handled as the Owner may elect.

7. Maintenance Bond

The Bidder to whom the Contract is awarded must deposit with the Owner at the date of substantial completion of the Contract a Maintenance Surety Bond as described in Division 2 – Special Provision/Supplemental General Provisions, Part A Item 18.

END OF AWARD OF CONTRACT AND EXECUTION OF CONTRACT BONDS

CONTRACT

This Agreement, made and entered into this _____ day of _____, 2024, by and between _____, _____, _____ hereinafter referred to as the **CONTRACTOR**, and the **AUBURN-LEWISTON MUNICIPAL AIRPORT**, hereinafter referred to as the **OWNER**.

WITNESSETH:

That the **CONTRACTOR**, for the consideration hereinafter fully set out hereby agrees with the **OWNER** as follows:

1. That the **CONTRACTOR** shall provide the materials and labor specified and perform, in a first-class manner, all work in connection with:

**CONSTRUCT NEW T-HANGAR AND TAXILANE
AUBURN-LEWISTON MUNICIPAL AIRPORT
FAA AIP No. 3-23-0002-xx-2024**

in the manner and form as provided by the following Contract Documents, which are incorporated by reference and made part hereof, as if fully contained herein: Contract Documents, including Bidding Documents and Specifications entitled:

**CONSTRUCT NEW T-HANGAR AND TAXILANE
FAA AIP No. 3-23-0002-xx-2024**

Contract to include:

Addendum No. ____ to Addendum No. _____, inclusive.

2. That the **CONTRACTOR** shall commence the work within ten (10) days of the date set by the **OWNER** in a written Notice to Proceed. The time of total completion will be based on the following:

150 Calendar Days

The Notice to Proceed shall be issued after the **CONTRACTOR** has provided all necessary and required Contract information, contract bonds, and insurance documentation.

3. The **OWNER** hereby agrees to pay to the **CONTRACTOR** for the said work the sum of

(\$ _____) at the time and manner set forth in the Contract Documents.

4. As part of the Contract, the **CONTRACTOR** further understands and agrees to the following additional condition

a. This Contract shall be deemed executory only to the extent that monies are appropriated and available for the purpose of the Contract, and no liability on account thereof shall be incurred by the **OWNER** beyond the amount of such monies. It is understood that neither this Contract nor any representation by any public employee or officer creates any legal or moral obligation to request, appropriate, or make available monies for the purpose of the contract.

5. Payment to the **CONTRACTOR** by the **OWNER** shall be made at the unit prices and lump sums specified for the various items in the Proposal Section submitted by the **CONTRACTOR**, as provided in

the Specifications upon presentation of the proper certificates to the **OWNER**, and upon terms set forth in the Contract Documents. It is understood that the amount to be paid to the **CONTRACTOR** shall be totally based on the said unit prices and lump sums contained in said Proposal and made a part of this Contract for the work actually done rather than the estimated sum hereinabove specified which is based upon estimated quantities.

6. The **CONTRACTOR** agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision binds the **CONTRACTOR** and subcontractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

Failure by the **CONTRACTOR** to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

7. Compliance with FAA Required Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects

Refer to contract provisions outlined in Division 1, FAA Required Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects of the Contract Documents which will be considered to be a part of this Contract. The **CONTRACTOR** shall adhere to all of the provisions outlined within these required FAA Contract Provisions.

8. The **CONTRACTOR** agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than thirty (30) calendar days from the receipt of each payment the prime contractor receives from the **OWNER**. The prime contractor agrees further to return retainage payments to each subcontractor within thirty (30) calendar days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the **OWNER**. This clause applies to both DBE and non-DBE subcontractors.

9. It is mutually agreed between the parties hereto that time is of the essence on this Contract, and in the event the construction is not completed within the time herein specified, it is agreed that from any Liquidated Damages money due or to become due the **CONTRACTOR** or their Surety, the **OWNER** may retain the sum of **Five Hundred Dollars (\$500.00)**, unless otherwise specified in the contract documents, for each calendar day thereafter, Sundays and holidays included, that the work remains incomplete, not as a penalty, but as liquidation of a reasonable portion of damages that will be incurred by the **OWNER** by failure of the **CONTRACTOR** to complete the work within the time stipulated. In addition to these liquidated damages, other liquidated damages associated with each phase or sub-phase of work are identified within the Supplemental General Provisions.

10. It is mutually agreed between parties hereto that in addition to liquidated damages specified above, to pay the **OWNER** the actual costs to the **OWNER** for any inspector or inspectors necessarily employed by the **OWNER** on the Work and the actual costs to the **OWNER** for the Engineer's observation of construction and project representative services including all travel and subsistence expenses after the date specified for completion until the Work is completed and ready for final payment.

Further, the **CONTRACTOR** agrees that the sums to be paid the **OWNER** may be deducted from the sum due the **CONTRACTOR** for work performed as provided in Section 90 of the FAA General Provisions.

11. It is further mutually agreed between the parties hereto that if, any time after the execution of this Agreement, (including the various guarantee periods thereunder) and the Surety Bonds hereto attached, the **OWNER** shall deem the Surety or Sureties upon such Bond or Bonds to be unsatisfactory, or if, for any reason, such Bond or Bonds cease to be adequate to cover the performance of the work or the prompt payment for said labor, materials, supplies, and services, the **CONTRACTOR** shall, at their own expense within five (5) calendar days from the date of written notice from the **OWNER** to do so, furnish additional Bond or Bonds in such form and amount, and with such Surety or Sureties, as shall be satisfactory to the **OWNER**. In such event, no further payment to the **CONTRACTOR** shall be deemed due under this Agreement until such new or additional Bond or Bonds are furnished in a manner and form satisfactory to the **OWNER**.

13. Notwithstanding any other provision contained in this Agreement, the **CONTRACTOR** agrees to make no monetary claim for delays, interferences, or hindrances of any kind in the performance of this Contract occasioned by any act or omission to act of the **OWNER** or any of its Representatives or Agents and agrees that any such claim shall be fully compensated for by an extension of time to complete performance of the work.

IN WITNESS WHEREOF, the parties to the Agreement have hereunto set their hands and seals and have executed this Agreement the day and year first above written in two counterparts, each of which shall without proof of accounting for the other counterpart, be deemed in original Contract.

SIGNED, SEALED, AND DELIVERED TO AUBURN-LEWISTON MUNICIPAL AIRPORT

IN THE PRESENCE OF

AUBURN-LEWISTON MUNICIPAL AIRPORT

(SEAL)

By: _____

CONTRACTOR:

(SEAL)

By: _____

(ACKNOWLEDGEMENT OF OFFICER OR OWNER ATTESTING CONTRACT)

STATE OF _____)

SS

COUNTY OF _____)

On this _____ day of _____, 20____, before me personally came and appeared _____
_____ to me known, who, being by me duly sworn, did depose and say that they are the _____
_____ of the _____ described in and executed the
foregoing instrument, that they know the seal of said owner; that one of the impressions appearing on said
instrument is a true and correct impression of such seal; and that they affixed it thereto and attest the same
over their signature by virtue of the authority in them vested.

Notary Public**(ACKNOWLEDGEMENT OF CONTRACTOR, IF A CORPORATION)**

STATE OF _____)

SS

COUNTY OF _____)

On this _____ day of _____, 20____, before me personally came and appeared _____
_____ to me known, who, being by me duly sworn, did depose and say that they resides at _____
_____; that they are the _____
of _____, the corporation described in which executed the
foregoing instrument; that he knows the seal of said Corporation; that one of the seals affixed to said
instrument is such seal; that it was so affixed by order of the Directors of said corporation, and that they
signed their name thereto by like order.

Notary Public

(ACKNOWLEDGEMENT OF CONTRACTOR, IF A PARTNERSHIP)

STATE OF _____)

SS

COUNTY OF _____)

On this _____ day of _____, 20__, before me personally came and appeared _____
_____ to me known and known to me to be one of the members of the firm of _____
_____ described in and who executed the foregoing
instrument, and he acknowledged to me that they executed the same as and for the act and deed of said
firm.

Notary Public**(ACKNOWLEDGEMENT OF CONTRACTOR, IF AN INDIVIDUAL)**

STATE OF _____)

SS

COUNTY OF _____)

On this _____ day of _____, 20__, before me personally came and appeared _____
_____ to me known and known to me to be the person described in and who executed the foregoing
instrument and they acknowledged that they executed the same.

Notary Public

INSURANCE SPECIAL PROVISIONS

GENERAL. The _____ (hereinafter referred to as the **CONTRACTOR**) shall procure and maintain at their own expense, and without additional cost to the **AUBURN-LEWISTON MUNICIPAL AIRPORT** (hereinafter referred to as the **OWNER**), until final acceptance of the work covered by this Contract, insurance for liability for damages imposed by law, of the kinds and in the amounts as hereinafter provided. The **CONTRACTOR** shall provide signed, valid, and enforceable certificate(s) of insurance complying with this Section and approved by the **OWNER**. All insurance must be procured from insurance companies licensed or approved to do business in the State of Maine by the State of Maine, Department of Business Regulation, Bureau of Insurance. The Contractor shall pay all premiums and take all other actions necessary to keep required insurances in effect for the duration of the Contract obligations, excluding warranty obligations. Insurance shall cover all operations under the Contract whether performed by the **CONTRACTOR** or by its Subcontractors. Before commencement of work, the **CONTRACTOR** shall furnish to the Engineer, certificates (in six copies) of insurance in forms satisfactory to the **OWNER**, and indicating compliance with the requirements of this Section.

The **CONTRACTOR** SHALL FURNISH A COPY OF THIS SPECIAL PROVISION TO ITS INSURANCE BROKER in order to assure that the policies to be furnished conform exactly to the requirements, kinds and amounts of insurance, as required solely by the **OWNER** in accordance with the **OWNER's** direction as stated below.

ENDORSEMENTS. Policies listed in this Contract must be endorsed, as specified for each policy, as follows, unless such coverage is provided for in the policy:

1. To remove explosion, collapse, and underground hazards exclusion.
2. It is understood and agreed that, if during the course of the work employees of the **OWNER** are loaned or assigned to the **CONTRACTOR** to perform work in connection with the Contract, such employees are to be considered as employees of the **CONTRACTOR** for the purpose of this insurance.
3. Whereby, the coverage provided under these policies must not be affected if **OWNER** performs work in connection with the project, of which the Contract may be only a part, by means of its own employees or if the **OWNER** directs or supervises the work to be performed by the **CONTRACTOR**, but any work which may be performed on the project by the **OWNER** by its own forces under its supervision shall not be covered under these policies.
4. To provide that the policies shall not be changed or cancelled until twenty (20) days written notice has been given to the **OWNER**.

INSURANCE COVERAGE TO BE PROVIDED.

1. WORKER'S COMPENSATION INSURANCE

- A. For all operations performed by the **CONTRACTOR** and any Subcontractor, the **CONTRACTOR** and each Subcontractor shall carry Workers' Compensation Insurance or shall qualify as a self-insurer with the State of Maine Workers' Compensation Board in accordance with the

requirements of the laws of the State of Maine. If maritime exposures exist, coverage shall include United States Long Shore and Harbor Workers coverage.

B. This policy must be endorsed in accordance with Endorsement 4 as recited above.

2. COMMERCIAL GENERAL LIABILITY

A. With respect to all operations performed by the **CONTRACTOR** and any Subcontractors, the **CONTRACTOR** and any Subcontractors shall carry commercial general liability insurance in an amount not less than **\$1,000,000.00** per occurrence and **\$2,000,000.00** in the Aggregate. The coverage must include products, completed operations, and Contractual liability coverages. The Contractual liability insurance shall cover the Contractor's obligations to indemnify the **OWNER** as provided in this Contract.

B. The coverage shall also include protection against damage claims due to use of explosives, collapse, and underground coverage if the Work involves such exposures. When the work to be performed entails the use of barges, tugboats, work boats, supply boats, etc., Protection and Indemnity coverage shall be provided at the limits called for under Commercial General Liability insurance.

C. This policy must be endorsed in accordance with Endorsements 1, 2, 3, and 4 as recited above.

3. AUTOMOBILE LIABILITY

A. The **CONTRACTOR** shall carry Automobile Liability Insurance covering the operation of all motor vehicles including any that are rented, leased, borrowed, or otherwise used in connection with the Project. The minimum limit of liability under this Section shall be **\$1,000,000.00** per occurrence.

B. This policy must be endorsed in accordance with Endorsement 4 as recited above.

4. BUILDERS RISK INSURANCE.

A. The **OWNER** does not require the **CONTRACTOR** to carry Builders Risk Insurance. However, the Contractor is advised of its risks for damage to the Work. Regardless of whether such insurance is carried by the Contractor, the Contractor is responsible for managing and insuring these risks as it deems appropriate.

5. POLLUTION LIABILITY

A. The **CONTRACTOR** to carry Pollution Liability insurance to cover the risk of sudden or accidental discharge of pollutants during the prosecution of the Work. Regardless of whether such insurance is carried by the Contractor, the Contractor is responsible for managing these risks as it deems appropriate. The minimum limit under this Section shall be **\$1,000,000** per occurrence.

6. EXCESS GENERAL AND AUTOMOBILE LIABILITY.

A. The **CONTRACTOR** shall carry Umbrella Liability Insurance shall be provided in a minimum amount of **\$2,000,000**.

7. ADMINISTRATIVE & GENERAL PROVISIONS

A. Additional Insured. Each policy with the exception of Workers' Compensation insurance shall list the **Auburn-Lewiston Municipal Airport, Federal Aviation Administration, State of Maine, and McFarland Johnson, Inc.** as additional insured.

- B. Defense of Claims. Each insurance policy shall include a provision requiring the carrier to investigate, defend, indemnify, and hold harmless all named insureds against any and all claims for death, bodily injury, or property damage, even if groundless.
- C. Primary Insurance. The insurance coverage provided by the **CONTRACTOR** shall be primary insurance with respect to the **OWNER**, its officers, agents, and employees. Any insurance or self-insurance maintained by the **OWNER** for its officers, agents, and employees is in excess of the Agent's insurance and shall not contribute with it.
- D. Reporting. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the **OWNER**, its officers, agents, and employees.
- E. Separate Application. The insurance provided by the **CONTRACTOR** shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

8. INDEMNIFICATION

- A. The **CONTRACTOR** agrees to indemnify, defend, and hold harmless the Auburn-Lewiston Municipal Airport, and McFarland-Johnson, Inc. and its officers, directors, employees, agents and consultants from and against all claims, actions, torts, costs, losses, and damages for bodily injury (including sickness, disease, or death), property damage, or other damages arising out of or relating to this Contract or the performance of Work by the **CONTRACTOR**, its Subcontractors, subconsultants, Engineers, suppliers, any individuals or entities directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, excepting only claims directly and solely caused by the negligence of the Auburn-Lewiston Municipal Airport or McFarland-Johnson, Inc. Damages covered include, but are not limited to, all dispute resolution costs including court costs, attorney's fees, and the fees of engineers and consultants, arbitrators, and other professionals related to dispute defense and preparation.
- B. This indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor, subconsultant, Engineer, supplier, or other individual or entity under Workers' Compensation acts, disability benefit acts, or other employee benefit acts.

FOR MAINE: Nothing in this document constitutes a waiver of any defense, immunity or limitation of liability that may be available to the **OWNER**, or its officers, agents or employees under the Maine Tort Claims Act (Title 14 M.R.S.A. 8101 st. seq.) and shall not constitute a waiver of other privileges or immunities that may be available to the **OWNER**.

All the aforesaid insurance policies the insurers named therein shall be subject to the approval of **OWNER**.

END OF INSURANCE SPECIAL PROVISIONS

PERFORMANCE BOND**PROJECT:**

Construct New T-hangar and Taxilane

Auburn-Lewiston Municipal Airport
Auburn, Maine

AIP No. 3-23-0002-xxx-2024
MJ# 19186.01

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, _____,
organized under the Laws of the State of _____,
and having a usual place of business in _____,
as Principal and _____,
organized under the Laws of the State of _____,
and having a usual place of business at _____,

as surety, are holden and stand firmly bound and obligated unto the **OWNER**, as obligee, and
USDA Rural Development as a co-obligee, in the sum of

(\$ _____) Dollars, lawful money of the United States of America, to and
for the true payment, whereof, we hereby bind ourselves, and each of us, our heirs, executors,
administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has, by means of a written Agreement dated _____
entered into a Contract with the same obligee, a copy of which Agreement is attached hereto and
by reference made a part hereof.

NOW, the condition of this obligation is such

THAT, if the said principal, their heirs, administrators, successors, or assigns, shall well
and truly keep and perform all the agreements, terms and conditions of said agreement on their part

to be kept and performed, including the guarantee in the General Conditions, then this obligation shall be void - otherwise, it shall remain in full force and virtue.

AND, the said surety, for value received, hereby stipulates and agrees that no change in, or extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or to the specifications accompanying the same shall in any way affect their obligations on this bond and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to the specifications. IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, in the year _____.

PRINCIPAL -

(Seal)

By: _____

SURETY -

(Seal)

By: _____

IMPORTANT - Attach herewith proof of Authority of Officers or agents to sign bonds.

PERFORMANCE BOND
CERTIFICATE AS TO CORPORATE PRINCIPAL
(IF A CORPORATION)

State of _____)
County of _____) SS

On this _____ day of _____, 20_____

before me personally came _____

to me known, who being by me duly sworn, did depose and say as follows:

That they reside at _____

and is the _____

of _____

the corporation described in, and which executed the foregoing instrument; that they know the corporate seal of said corporation; that the seal affixed to the foregoing instrument is such corporate seal and it was so affixed by order to the Board of Directors of said corporation; and that by the like order they signed thereto their name and official designation.

Notary Public (Seal)

My Commission expires: _____

PERFORMANCE BOND
PARTNERSHIP CERTIFICATE
(IF A PARTNERSHIP)

State of _____)
County of _____) SS

On this _____ day of _____, 20_____

before me personally appeared _____ known to me
and known by me to be the person who executed the above instrument, who, being by me first duly
sworn, did depose and say that they is a general partner in the firm of _____
_____; and that said firm consists of themselves and
_____, and that they executed the
foregoing instrument on behalf of said firm for the uses and purposes stated herein.

Notary Public (Seal)

My Commission expires: _____

PERFORMANCE BOND
INDIVIDUAL CERTIFICATE
(IF AN INDIVIDUAL)

State of _____)
County of _____) SS

On this _____ day of _____, 20____

before me personally appeared _____ known to me
and known by me to be the person who executed the above instrument, who, being by me first duly
sworn, did depose and say that they are the owner of the firm
_____; and that they
executed the foregoing instrument on behalf of said firm for the uses and purposes stated herein.

Notary Public (Seal)

My Commission expires: _____

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PAYMENT BOND**PROJECT:**

Construct New T-hangar and Taxilane

Auburn-Lewiston Municipal Airport
Auburn, Maine

AIP No. 3-23-0002-xxx-2024
MJ# 19186.01

KNOW ALL MEN BY THESE PRESENTS:

THAT WE, _____,
organized under the Laws of the State of _____,
and having a usual place of business in _____,
as Principal and _____,
organized under the Laws of the State of _____,
and having a usual place of business at _____,

as surety, are holden and stand firmly bound and obligated unto **OWNER** as obligee, and USDA Rural Development as a co-obligee, in the sum of

(\$_____) Dollars, lawful money of the United States of America, to and for the true payment, whereof, we hereby bind ourselves, and each of us, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has, by means of a written Agreement dated _____ entered into a Contract with the same obligee, a copy of which Agreement is attached hereto and by reference made a part hereof.

NOW, the condition of this obligation is such

THAT, if the said principal, their heirs, administrators, successors, or assigns, shall pay for all labor performed or furnished, all materials, including materials so employed which is not incorporated in the construction or repair work and is not wholly or necessarily consumed or made so worthless as to lose its identity but only to the extent of its purchase price less its fair salvage value, and for the retail or hire of vehicles, power shovels, rollers, concrete mixers, tools and other appliances and equipment employed in the work, all persons who contract with the Principal for labor and materials, all insurance premiums on said work, and the use of all patent rights, used or employed in the carrying out of said Agreement, then this obligation shall be void - otherwise it shall remain in full force and virtue. The obligation shall be in accordance with the Maine State Law.

AND, the said surety, for value received, hereby stipulates and agrees that no change in, or extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder, or to the specifications accompanying the same shall in any way affect their obligations on this bond and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or to the work or to be specifications.

AND that no final settlement between the **OWNER** and the principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, in the year _____.

PRINCIPAL -

(Seal)

By: _____

SURETY -

(Seal)

By: _____

IMPORTANT - Attach herewith proof of Authority of Officers or agents to sign bonds.

PAYMENT BOND
CERTIFICATE AS TO CORPORATE PRINCIPAL
(IF A CORPORATION)

State of _____) SS
County of _____)

On this _____ day of _____, 20____

before me personally came _____

to me known, who being by me duly sworn, did depose and say as follows:

That they resides at _____

and is the _____

of _____

the corporation described in and which executed the foregoing instrument; that they know the corporate seal of said corporation; that the seal affixed to the foregoing instrument is such corporate seal and it was so affixed by order to the Board of Directors of said corporation; and that by the like order they signed thereto their name and official designation.

Notary Public (Seal)

My Commission expires: _____

PAYMENT BOND
PARTNERSHIP CERTIFICATE
(IF A PARTNERSHIP)

State of _____)
County of _____) SS

On this _____ day of _____, 20____

before me personally appeared _____ known to me
and known by me to be the person who executed the above instrument, who, being by me first duly
sworn, did depose and say that they is a general partner in the firm of _____
_____; and that said firm consists of themselves and
_____, and that they executed the
foregoing instrument on behalf of said firm for the uses and purposes stated herein.

Notary Public (Seal)

My Commission expires: _____

PAYMENT BOND
INDIVIDUAL CERTIFICATE
(IF AN INDIVIDUAL)

State of _____)
County of _____) SS

On this _____ day of _____, 20____

before me personally appeared _____ known to me
and known by me to be the person who executed the above instrument, who, being by me first duly
sworn, did depose and say that they are the owner of the firm

_____; and that
they executed the foregoing instrument on behalf of said firm for the uses and purposes stated
herein.

Notary Public (Seal)

My Commission expires: _____

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NOTICE OF AWARD

Construct New T-hangar and Taxilane

Auburn-Lewiston Municipal Airport
Auburn, MaineAIP No. 3-23-0002-xxx-2024
MJ# 19186.01

Issued to: **Company Name** _____
 Company Address _____
 Company City/State/Zip _____

Project Title Construct New T-hangar and Taxilane

Advertisement Date 11/21/2024 **Bid Opening Date** 12/20/2024

OWNER has considered your bid submitted for the above-entitled project, or a portion thereof as detailed on any attachment to this notice. You are hereby notified that your BID has been accepted for the BASE BID only in the amount of:

Amount of Contract Award in Words

(\$ x,xxx,xxx.xx)

You are required to execute the Agreement and furnish any required Performance BOND, Payment BOND, and certificate of insurance within fifteen (15) calendar days from the date of this Notice. If you fail to execute said Agreement and to furnish said BONDS within fifteen (15) calendar days from the date of this Notice, **OWNER** will be entitled to consider all your rights arising out of the acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The **OWNER** will be entitled to such other rights as may be granted by law or described herein. **You are required to return an acknowledged copy of this NOTICE OF AWARD within five (5) calendar days to:**

Owner: Auburn-Lewiston Municipal Airport

80 Airport Dr.	Auburn	Maine	04210
Street Address	City	State	Zip Code

(207) 786-0631
Telephone

By: _____
Printed Name/Title: Jonathan LaBonté, Airport Director

DATED the _____ day of _____, 20____.

ACCEPTANCE OF NOTICE OF AWARD

Construct New T-hangar and Taxilane

Auburn-Lewiston Municipal Airport
Auburn, Maine

AIP No. 3-23-0002-xxx-2024
MJ# 19186.01

NOTICE OF AWARD is hereby acknowledged and accepted.

By: _____
Authorized Signature Printed Name/Title

For: _____
Organization

DATED the _____ day of _____, 20____.

NOTICE TO PROCEED

Construct New T-hangar and Taxilane

Auburn-Lewiston Municipal Airport
Auburn, MaineAIP No. 3-23-0002-xxx-2024
MJ# 19186.01

Issued to: **Company Name** _____
 Company Address _____
 Company City/State/Zip _____

Project Title Construct New T-Hangar and Taxilane**Advertisement Date** 11/21/2024 **Bid Opening Date** 12/20/2024

PLEASE BE ADVISED that work may begin on the above Contract on Month XX, 2025
and shall be Substantial Completion of all work shall be completed within one hundred fifty
(150) calendar days of the date of this Notice To Proceed. The completion date is: Month XX,
2025.

Owner's Representative: McFarland Johnson, Sydney Seney**Telephone:** (603) 380-9151 **Email:** sseney@mjinc.com

**You are required to return an acknowledged copy of this NOTICE TO PROCEED within
five (5) calendar days of the date of this Notice to:**

Owner: Auburn-Lewiston Municipal Airport

80 Airport Dr.	Auburn	Maine	04210
Street Address	City	State	Zip Code

(207) 786-0631
Telephone

By: _____
Printed Name/Title: Jonathan LaBonté, Airport Director

DATED the _____ day of _____, 20____.

ACCEPTANCE OF NOTICE TO PROCEED

Construct New T-hangar and Taxi lane

Auburn-Lewiston Municipal Airport
Auburn, Maine

AIP No. 3-23-0002-xxx-2024
MJ# 19186.01

NOTICE TO PROCEED is hereby acknowledged and accepted.

By: _____
Authorized Signature Printed Name/Title

For: _____
Organization

DATED the _____ day of _____, 20____.

CONTRACTOR'S GUARANTY

WHEREAS _____
(Contractor)

of _____
(Address)

hereinafter called **CONTRACTOR** has completed construction of the following project:

Owner: Auburn Lewiston Municipal Airport, 80 Airport Dr, Auburn, Maine 04210

Telephone: (207) 786-0631

Email: j.labonte@auburnmaine.gov

hereinafter called the **OWNER**.

Title of Project: **CONSTRUCT NEW T-HANGAR AND TAXILANE
AUBURN-LEWISTON MUNICIPAL AIRPORT
AUBURN, MAINE**

Project Number(s): **AIP No. 3-23-0002-XXX-2024**

Location: **AUBURN LEWISTON MUNICIPAL AIRPORT, AUBURN, MAINE**

Date of Completion: _____

Date Guarantee Expires: _____

WHEREAS, at the inception of such work the **CONTRACTOR** agreed to guarantee the construction against faulty materials or workmanship for a limited period and subject to the conditions set forth:

NOW, THEREFORE, the **CONTRACTOR** hereby guarantees, subject to the conditions herein set forth, that during a period of one (1) year from the date of completion of said construction (four (4) years for LED light fixtures), they will, at their own cost and expense, following receipt of written notice, make or cause to be made such repairs to said construction resulting solely from faulty construction or defects in materials or workmanship applied by or through the **CONTRACTOR** as may be necessary to maintain the construction in defect-free condition.

This **CONTRACTOR GUARANTY** is made subject to the following conditions:

1. Specifically excluded from this guarantee is any and all damage caused by the following: lightning, windstorm greater than 110 mph, hailstorm or other acts of God; or fire. If the construction is damaged by reason of any of the foregoing, this guarantee shall thereupon become null and void for the balance of the

guarantee period unless such damage is repaired by the **CONTRACTOR** at the expense of the party requesting such repairs.

2. This CONTRACTOR GUARANTY shall not be or become effective unless and until the **CONTRACTOR** has been paid in full for all their work.

3. This CONTRACTOR GUARANTY runs in favor of **OWNER** only and is not transferable.

4. Additional Conditions: This CONTRACTOR GUARANTY is in addition to all other legal and specified Warranties and Guaranties required on the Project's Contract Documents for materials, systems, and performance of the manufacturer or supplier.

In Witness Whereof, this instrument has been duly executed this

_____ day of _____, 20__.

(Company Name)

By: _____

(Authorized Signature)

(Seal)

Title: _____

NOTE: Form shall bear seal if Contractor is a Corporation.

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) CERTIFICATION

PROJECT: **CONSTRUCT NEW T-HANGAR AND TAXILANE**
 AIP No. 3-23-0002-xxx-2024

LOCATION: **AUBURN-LEWISTON MUNICIPAL AIRPORT, AUBURN, MAINE**

- I. I hereby certify that I have reviewed the safety plans and fully understand the requirements set forth in the Construction Safety Phasing Plan (CSPP) as contained within the Contract Documents.
- II. I agree that prior to the issuance of the Notice to Proceed (NTP), I will provide as part of the Safety Plan Compliance Document (SPCD), a detailed plan as to how the CSPP will be complied with. The detail plan will included but not be limited to: specific equipment that will be utilized on site; construction equipment heights; contractor’s points of contacts; work area plan (including a work sequencing plan); verification of material stock pile areas and heights; understanding of haul route restrictions; safety procedures; and other information as needed.
- III. I agree that I will follow the CSPP and approved SPCD and will not deviate from the plan without prior authorization from the Owner. I further acknowledge that requested revisions to the CSPP may require approval from the Federal Aviation Administration (FAA) and the review process requires at least 45 to 60 days. I further agree to reimburse the Owner for any and all costs resulting from a requested change or revision to the CSPP.
- IV. ☐ Check box if SPCD document is attached.

Date: _____

Signature of Authorized
Representative of Contractor

Printed Name of Authorized Rep.

Corporate Seal

Signature of Witness

NOTE: (Form to be executed and submitted with the Contract.)

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ANNUAL CONTRACTOR ASSURANCES AIP FUNDED CONTRACTS

(All participants of FAA Airport Improvement Program (AIP) funded contracts
are required to submit this form annually)

_____(Contractor), hereinafter referred to as the
“PARTICIPANT,” Hereby agrees that as a condition of receiving payment in connection with work
performed on any FAA Airport Improvement Program (AIP) assisted contract it will comply with
the FAA Contract Provision Guidelines of Obligated Sponsors and Airport Improvement Projects
and the provisions therein referenced, and all requirements imposed by the FAA, the State
Department of Transportation, or the Owner pursuant to the implementing regulations, applicable
U.S. Department laws, and other pertinent directives, to that end the PARTICIPANT HEREBY
GIVES THE FOLLOWING SPECIFIC ASSURANCES with respect to its participation in the FAA
Airport Improvement Program:

Initial Next to Each



1. ____ That the PARTICIPANT shall submit weekly certified payrolls, showing that each employee has been properly classified and paid for the time worked in each classification according to the minimum hourly wage(s) stipulated by the Wage Decision applicable to each of its contracts. The PARTICIPANT shall also be responsible for ensuring compliance of the same for any subcontractor or lower-tier subcontractor with which it holds an agreement under a Federal-aid contract.
2. ____ That the PARTICIPANT shall review the Wage Decision in each of its contracts and submit an Additional Work Classification Request for each classification that does not appear in the applicable Wage Decision; this shall be accomplished before the start of work for each project, regardless of any prior approval for another project in the same county.
3. ____ That the PARTICIPANT shall not sublet, assign or otherwise dispose of any portion of the contract without approval from the Owner and acknowledge that any work performed by an unapproved subcontractor or lower-tier subcontractor shall not be paid for by the Owner.
4. ____ That the PARTICIPANT is in full compliance with the Immigration Reform and Control Act of 1986 and has fulfilled all Form I-9 requirements by verifying identification and authorization to work for each employee reported on the payroll.
5. ____ That the PARTICIPANT acknowledges that any work performed or services provided under an FAA Airport Improvement Program contract shall be considered *satisfactorily completed* and payable only after the PARTICIPANT has fulfilled the contract requirements of the Owner and funding agencies, including the submission of all documentation required by the specifications and the subcontract. Satisfactory Completion is when the Engineer finds the work completed in accordance with the contract, plans and specifications. The determination of whether work meets the standards of satisfactory completion is the responsibility of the Engineer and not the prime contractor. The PARTICIPANT shall not disperse payment for an item of work under the contract without first obtaining certified payrolls from its subcontractors

or lower-tier subcontractors, verifying the payment of wages according to paragraph “1.” above.

6. ____ The PARTICIPANT acknowledges that if found to be in violation of the FAA requirements it shall be required to take corrective action before participating in future projects funded by the FAA. Corrective action shall include, but is not limited to, the submission of certified payrolls or other records and reports necessary to verify compliance with the Provisions.
7. ____ Not used.
8. ____ That the PARTICIPANT, in order to participate in any public project, shall register its business name with the Maine Department of the Secretary of State, Bureau of Corporations, Elections, & Commissions and shall remain in *good standing* throughout the period of participation.
9. ____ That the PARTICIPANT shall maintain detailed pay records and other records documenting its compliance, and all efforts to comply, with the nondiscrimination and payroll requirements of the FAA requirements, and shall make these records available for inspection by authorized representatives of the Owner, the state, The U.S. Department of Labor, and the FAA at reasonable times and places for a period of 3 years following the completion of the contract work.
10. ____ That the PARTICIPANT is fully aware that it may seek compliance assistance and training for itself, its subcontractors, or lower-tier subcontractors by contacting the Owner.
11. ____ That the PARTICIPANT acknowledges that a breach of any of the stipulations contained in the FAA requirements shall be sufficient grounds for termination of its contract with the Owner. Where the violator is a subcontractor or lower-tier subcontractor, the prime contractor shall be required to terminate its contract and any related contract.

THESE ASSURANCES are given in consideration of and for the purpose of obtaining any and all contracts funded through the Owner under the FAA Airport Improvement Program. The person whose signature appears below is an executive officer or owner of

Name of Firm

Printed Name & Title

Date: _____

Signature

EEO OFFICER NOTIFICATION AND PROGRAM COMPLIANCE CERTIFICATION

(This form is required **annually** by companies that perform federally funded contract work
in the amount of **\$10,000 or more annually**)

FROM (Name of Company): _____

Date

TO (Name of Airport Owner): _____

In accordance with the FAA Required Federal Contract Provisions for Obligated Sponsors and Airport Improvement Program Projects contained in the Division 1 of the Contract Documents, the following information is furnished:

Initial Next to Each

THIS IS TO CERTIFY:

_____ This company has accepted the following statement as our operating policy: "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, national origin, sexual orientation, gender identity, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

_____ Periodic meetings with supervisory and personnel office employees were conducted before the start of work and will be accomplished once every six (6) months.

_____ All new supervisory or personnel office employees were given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within 30 days following their employment start date.

_____ All personnel who are engaged in direct recruitment for the project were instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

_____ This company's EEO policy was reviewed and reaffirmed within the last 12 months and was brought to the attention of all our employees by the following means (check as applicable):

☐ Meetings/Briefings ☐ Employee Handbook ☐ Other: _____

_____ A written record was made of the above meetings/briefings, person's attending, and the subject matter that was discussed. Signed acknowledgements of attendance at EEO meetings/training are on file.

_____ I have **attached** a copy of this company's **EEO Appointment Letter** and **Policy Statement**.

***SIGNED CERTIFICATION AND NAME OF CORPORATE EEO OFFICER:**

Signed & Printed Name

Title or Position in Firm

Address (Include Zip Code)

Telephone (Include Area Code)

Email Address: _____

* Named individual must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

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**CONTRACTOR ACKNOWLEDGEMENT CERTIFICATION
(SUBCONTRACT and/or MATERIAL SUPPLIER)**

From: _____ (Name of Firm) **Date:** _____

To: _____ (Name of Firm)
☐ Subcontractor ☐ Lower-tier Subcontractor ☐ Material Supplier

Re: Construct New T-hangar and Taxilane – AIP No. 3-23-0002-xxx-2024 _____
Project Name, and Project Number County

ITEMS 1 – 4 BELOW APPLY, UNLESS OTHERWISE INDICATED

PRIME CONTRACTOR CERTIFICATION: I hereby certify the below documentation (as checked) was included in, and made part of, the subcontractor agreement entered into with the firm named above.

- ☐ 1. Contact Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects with Appendix Y – AIP Handbook (Refer to Div. 1 – FAA Required Contract Provisions & Ref. Documents)
- ☐ 2. 41 CFR 60-4.2-3 (Solicitations and Equal Opportunity Clauses)* (Refer to Div. 1 – Reference Documents)
- ☐ 3. Disadvantaged Business Enterprise (DBE) Policy and DBE Program Requirements (Refer to Division 1)
- ☐ 4. Davis-Bacon Wage Rates (Refer to Division 1)**

*Applicable only to contracts or subcontracts in excess of \$10,000

**Does not apply to Material Suppliers, unless performing work on-site

Printed Name (Prime): _____ **Signature:** _____

.....
SUBCONTRACTOR CERTIFICATION: As an authorized official of this company, I certify that the documents selected above were made part of our agreement/contract and give assurance that this company will comply with the *Contact Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects*, and will properly obtain approval, before the start of work, for any portion of work sublet to a lower-tier Subcontractor or Material Supplier. I further certify that:

1. This company is in full compliance with applicable Federal and State Laws: (Not required of Material Suppliers)
☐ This company is properly registered and is in *good standing* with the Secretary of State's Office.
2. ☐ This company has attached a Form MJ-201, "Annual Contractor Assurances – AIP Funded Contracts," unless submitted in the past 12 months, in which case a copy of the previously submitted form is attached.
3. This company [check one] ☐ does, ☐ does not, anticipate performing work on this contract in the amount of \$10,000 or more annually. **Companies that perform \$10,000 or more of contract work must file a Form MJ-201 annually.**
4. This company [check one] ☐ has, ☐ has no, outstanding compliance matters from a previous Federally Funded project contract.

Firm: _____

Address: _____

Telephone No.: _____

Federal ID No.: _____

Estimated Start Date.: _____

Estimated Completion Date: _____

Printed Name and Title

Signature

Date

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TRANSMITTAL REQUEST FOR CONSENT TO SUBLET:

- ☐ SUBCONTRACTOR
- ☐ LOWER TIER SUBCONTRACTOR
- ☐ MATERIAL SUPPLIER (MS)

REQUEST TO:
McFarland Johnson
53 Regional Drive
Concord, NH 03301
Telephone (603) 225-2978

**** ☐ THIS COMPANY IS A DISADVANTAGE BUSINESS ENTERPRISE (DBE)****

Prime Contractor: _____
(Name and Address)

Subcontractor/MS: _____
(Name and Address)

Lower-tier Subcontractor/MS: _____
(Name and Address)

Project Name and AIP No: _____

All contract items sublet are to be shown in the following tabulation. Estimated or agreed dollar amounts must be shown individually in the appropriate **PARTIAL** or **COMPLETE** column.

ITEM NUMBER	DESCRIPTION OF ACTUAL WORK TO BE PERFORMED (Use a separate spreadsheet if needed and list total below)	PARTIAL WORK ON ITEM	COMPLETE ITEM

TOTAL SUBCONTRACT AMOUNT: \$ _____

By: _____
Signature and Title of Prime Contractors Agent **Date**

Signatory agrees and understands that subcontracts will contain, by inclusion or reference, all the pertinent provisions of the Prime Contract. It is further agreed and understood that consent to sublet shall not under any circumstance relieve the Prime Contractor or surety of any of their obligations under the Contract or bonds as specified in the Project Specifications.

FOR ENGINEER / OWNER OFFICE USE ONLY

Effective Date:	Recommended by Engineer:
Total Sublet to Date:	
Percent Sublet to Date:	
DBE Commitment % to Date:	Approved by Owner:
Consent Number:	
Company Code:	

Copy to (check): ☐ RESIDENT ENGINEER ☐ HIGHER TIER SUB / MS ☐ OTHER: _____

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Submittal Number: _____

Revision Number: _____

CONTRACTOR / SUBCONTRACTOR / SUPPLIER
BUY AMERICAN CERTIFICATION
(Attach to all Shop Drawing Submittals)

Job Name: _____ Construct New T-hangar and Taxilane _____

Airport: _____ Auburn-Lewiston Municipal Airport _____

AIP No. _____ 3-23-0002-xxx-2024 _____ MJ Job No. _____ 19186.01 _____

Contractor / Subcontractor / Supplier: _____

Address: _____

Contractor's Contact: _____ Phone Number: _____

Reviewed By: _____ Date Submitted: _____

Item No.: _____

Specification Section and Paragraph: _____

Description: _____

The undersigned certifies that (check the item that applies):

- ☐ 1. The above referenced products or materials are wholly produced in the United States of America (US) of US produced materials.
- ☐ 2. A waiver for the use of non-US produced products or production outside of the US has been granted by the FAA for this product or material and a copy of the waiver is attached.
- ☐ 3. All the above referenced products or materials being used on the project are on the Nationwide Buy American conformance list located at (attach copy of list):
http://www.faa.gov/airports/aip/buy_american/
- ☐ 4. A waiver for the use of non-US produced products or production outside of the US is being requested as part of this submission (see FAA AIP Handbook Appendix Y in Division 1 – Reference Documents for guidance on waiver types and requirements).

CONTRACTOR / SUBCONTRACTOR / SUPPLIER
BUY AMERICAN CERTIFICATION

Dated at _____ this _____ day of _____, _____.
(Location Signed) (Day) (Month) (Year)

Contractor Name: _____ (print name)

By: _____ (signature)

Title: _____ (print title)

Submittal Number: _____

Revision Number: _____

**CONTRACTOR SUBMITTAL FORM
(CONTRACTOR)**

Job Name: _____ Construct New T-hangar and Taxilane _____

Airport: _____ Auburn-Lewiston Municipal Airport _____

AIP No. _____ 3-23-0002-xxx-2024 _____ MJ Job No. _____

Contractor: _____

Address: _____

Contractor's Contact: _____ Phone Number: _____

Reviewed By: _____ Date Submitted: _____

☐ Check here if submittal is from a Subcontractor

Item No.: _____

Specification Section and Paragraph: _____

CERTIFICATION

I HEREBY CERTIFY that the attached submittal has been reviewed under the terms of the Contract Documents and is in conformity with the requirements of the Plans and Specifications unless specifically noted otherwise. It is understood that the Contractor is responsible for dimensions and quantities to be confirmed and correlated at the site, for information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction, and for coordination of the Work of all trades.

- ☐ 1- Submitted as specified
- ☐ 2 - Submitted "AS EQUAL" to the product specified
- ☐ 3 - Submitted "IN SUBSTITUTION" to the product specified
- ☐ 4 - Subcontractor submittal form included
- ☐ 5 - Other

Description of Submittal Components: _____

Submittal will not be approved without an acceptable

**Form MJ-205 "Contractor / Subcontractor / Supplier Buy American Certification."(For additional
comments attach and number additional pages)**

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Submittal Number: _____

Revision Number: _____

SUBCONTRACTOR SUBMITTAL FORM

Job Name: _____ Construct New T-hangar and Taxilane _____

Airport: _____ Auburn-Lewiston Municipal Airport _____

AIP No. _____ 3-23-0002-xxx-2023 _____ MJ Job No. _____

Subcontractor: _____

Address: _____

Subcontractor's Contact: _____ Phone Number: _____

Reviewed By: _____ Date Submitted: _____

☐ Check here if submittal is from a Subcontractor

Item No.: _____

Specification Section and Paragraph: _____

CERTIFICATION

I HEREBY CERTIFY that the attached submittal has been reviewed under the terms of the Contract Documents and is in conformity with the requirements of the Plans and Specifications unless specifically noted otherwise. It is understood that the Contractor is responsible for dimensions and quantities to be confirmed and correlated at the site, for information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction, and for coordination of the Work of all trades.

- ☐ 1- Submitted as specified
- ☐ 2 - Submitted "AS EQUAL" to the product specified
- ☐ 3 - Submitted "IN SUBSTITUTION" to the product specified
- ☐ 4 - Subcontractor submittal form included
- ☐ 5 - Other

Description of Submittal Components: _____

Submittal will not be approved without an acceptable

Form MJ-205 “Contractor / Subcontractor / Supplier Buy American Certification.”

(For additional comments attach and number additional pages)

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**SUBCONTRACTOR / SUPPLIER
DISADVANTAGED BUSINESS ENTERPRISE (DBE) AND SMALL BUSINESS
PROJECT EXPENDITURE REPORT**

*(To be filled out by the Contractor and the Subcontractor / Supplier
and submitted with each Periodic Cost Estimate)*

Project Name: **CONSTRUCT NEW T-HANGAR AND TAXILANE**

Airport: **AUBURN-LEWISTON MUNICIPAL AIRPORT**

AIP Number: **3-23-0002-XXX-2024**

Prime Contractor

Company Name: _____

Subcontractor / Supplier Contractor

Company Name: _____

DBE Status:	<input type="checkbox"/> Non-DBE <input type="checkbox"/> Certified DBE (Check one)
Small Business Status:	<input type="checkbox"/> Non-Small Business <input type="checkbox"/> Small Business (Check one)

Contract Item No.	Description of Work Performed by Subcontractor / Supplier	Estimated Quantity	Unit Price	Item Amount
Total amount requested by Subcontractor / Supplier this Invoice:				
Total amount previously requested by Subcontractor / Supplier:				
Total amount requested by Subcontractor / Supplier to date:				

(Attach additional sheets if needed)

**SUBCONTRACTOR / SUPPLIER
DISADVANTAGED BUSINESS ENTERPRISE (DBE) AND SMALL BUSINESS
PROJECT EXPENDITURE REPORT**

The undersigned certifies that the Subcontractor / Supplier has successfully completed the above referenced work associated with this project and further assures that the Subcontractor / Supplier will be paid in full for the amount indicated above for said services in accordance with the Contract Documents.

NAME OF SUBCONTRACTOR / SUPPLIER: _____

AUTHORIZED SIGNATURE: _____

PRINTED NAME AND TITLE: _____

DATE: _____

NAME OF PRIME CONTRACTOR: _____

AUTHORIZED SIGNATURE: _____

PRINTED NAME AND TITLE: _____

DATE: _____

Note: If the Prime Contractor is a DBE or Small Business, the Prime Contractor should fill out and submit a copy of this form listing themselves as the Prime Contractor and the Subcontractor / Supplier.

WAIVER AND RELEASE OF MECHANIC'S LIENS AND CLAIMS

Project Name: Construct New T-Hangar and Taxilane

Project No.: AIP 3-23-0002-xxx-2024

Project Address: Auburn-Lewiston Municipal Airport
80 Airport Dr, Auburn, Maine

Owner Representative: McFarland Johnson

Through period Ending: _____

General Contractor: _____

Total Payments: _____

WHEREAS, the UNDERSIGNED has provided labor and/or materials and/or rental and/or services on the Project; and WHEREAS the UNDERSIGNED acknowledges receipt from OWNER of the amount set forth above as payments received to date and hereby remises, releases and forever discharges and by these presents does for itself and its successors, remise, release and forever discharge **Auburn-Lewiston Municipal Airport** its successor, heirs, executors and administrators, of and from all, and all manner of action and actions, cause and causes of action, suits, debts, dues, sums of money accounts, reckoning, bonds, bills, specialties, covenants, contracts, controversies, agreements, promises, variances, trespasses, damages, judgements, extents, executions, claims and demands whatsoever, in law, in admiralty, or in equity which against the said **Auburn-Lewiston Municipal Airport**, UNDERSIGNED ever had now has or which it or its successors, hereafter can, shall or may have for, upon or by reason of any matter, cause thing whatsoever from the beginning of the world to the date above, and especially in connection with any and all claims of any nature whatsoever arising out of the Project.

The UNDERSIGNED warrants that the amount of the payments received for the period indicated above represents the total value earned by the UNDERSIGNED for materials, labor rentals, equipment and services supplied to the project for the period, warrants that it has not and will not assign any claims for payment or right to perfect a lien against such land and improvements and appurtenances and warrants that it has the right to execute this waive and release.

The UNDERSIGNED, does hereby warrant and certify that it has made full payment of any amounts due or claimed to be due through the period ending stated above to any person or entity who has supplied materials or labor or rentals or services to it, pursuant to contract or otherwise, for the purpose of construction, raising, removing, repairing or otherwise improving the Project described above.

The UNDERSIGNED. does hereby, through the above date, forever waive, relinquish and release any mechanic's, materialmen's or like liens, and all claims or liens it now has may have or may obtain in the future upon a piece of land all the buildings thereon standing known as **Auburn-Lewiston Municipal Airport** situated at 80 Airport Dr, Auburn, Maine 04210

This release and waiver may not be changed orally.

Periodic Cost Estimate No.: _____

The UNDERSIGNED, agrees that the owner of the Project, any lender, any title insurer, and any surety may rely upon this waiver and release. WITNESS the signature and seal of the undersigned as of this _____ day of _____, 20____

STATE OF _____

Company Name: _____

COUNTY OF _____

Authorized Agent: _____

Signature: _____

Title: _____

Sworn to before me this _____
day of _____, 20____

Notary Public

CHANGE OF SUBCONTRACTORS/SUPPLIERS

SUBCONTRACTOR / SUPPLIER INFORMATION:

Name of Prime Contractor: _____

The above-named firm requests approval of the following addition(s) and/or deletion(s) of the Subcontractor/Supplier firm(s) to the approved Disadvantaged Business Enterprise (DBE) Utilization (Form MJ-103) and Letter of Intent (Form MJ-104) as originally submitted as part of Bidder Certifications for the above referenced contract. **No additional and/or substitute subcontractor/supplier shall begin work on the project until contractor receives written approval by the Airport.**

Please list the following information on Firm(s) that you wish to discontinue using:

Name of Firm	Is Firm a Subcontractor, Supplier, or Joint-Venture Partner	Description of Work to be Performed by Firm	Is Firm DBE State Certified? (Yes or No)	Total Dollar Amount to be Performed by Firm

Reason(s) for removing each firm listed above: _____

Please list the following information on Firm(s) that you wish to add or substitute:

Name of Firm	Is Firm a Subcontractor, Supplier, or Joint-Venture Partner	Description of Work to be Performed by Firm	Is Firm DBE State Certified? (Yes or No)	Total Dollar Amount to be Performed by Firm

Please include a copy of a Letter of Intent (Form MJ-104) for each firm added.

No additional and/or substitute subcontractor/supplier shall begin work at the Airport until Contractor receives written approval by the Airport.

1. If a DBE Subcontractor/Supplier/Partner was deleted/terminated/replaced, was it replaced with another DBE Firm? Yes ____ No ____ If not, why not:

2. If another DBE Firm did not replace the DBE Firm, please submit for our review the good faith efforts used to find another DBE to perform at least the same amount of work under the contract as the DBE that was deleted/terminated/replaced.

3. If a Subcontractor/Supplier is added at any time during this project, Contractor shall submit for Owner review and approval the good faith efforts used to find a DBE to perform such work.

AFFIRMATION

THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF, I FURTHER UNDERSTAND AND AGREE, THAT THIS DOCUMENT SHALL BE ATTACHED THERETO AND BECOME A BINDING PART OF THE CONTRACT.

Name & Title of Authorized Official: _____

Signature: _____

Approved: _____ Denied _____

DIVISION 1

PROJECT CONTRACT SPECIFICATIONS

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DIVISION 1 – PROJECT CONTRACT SPECIFICATIONS

**FAA GENERAL CONTRACT PROVISIONS
(Advisory Circular 150-5370-10H dated 12/21/2018)**

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DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

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DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

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DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

Section 10 Definition of Terms

When the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

Paragraph Number	Term	Definition
10-01	AASHTO	The American Association of State Highway and Transportation Officials.
10-02	Access Road	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
10-03	Advertisement	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
10-04	Airport	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
10-05	Airport Improvement Program (AIP)	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
10-06	Air Operations Area (AOA)	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
10-07	Apron	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	ASTM International (ASTM)	Formerly known as the American Society for Testing and Materials (ASTM).
10-09	Award	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	Bidder	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.
10-11	Building Area	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	Calendar Day	Every day shown on the calendar.
10-13	Certificate of Analysis (COA)	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.

DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

Paragraph Number	Term	Definition
10-14	Certificate of Compliance (COC)	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	Change Order	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
10-16	Contract	A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment. The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.
10-17	Contract Item (Pay Item)	A specific unit of work for which a price is provided in the contract.
10-18	Contract Time	The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
10-19	Contractor	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
10-20	Contractors Quality Control (QC) Facilities	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).
10-21	Contractor Quality Control Program (CQCP)	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	Control Strip	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.

DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

Paragraph Number	Term	Definition
10-23	Construction Safety and Phasing Plan (CSPP)	The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
10-24	Drainage System	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	Engineer	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	Equipment	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	Extra Work	An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	FAA	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	Federal Specifications	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.
10-30	Force Account	<p>a. Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis.</p> <p>b. Owner Force Account - Work performed for the project by the Owner's employees.</p>
10-31	Intention of Terms	<p>Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident Project Representative (RPR) is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner.</p> <p>Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard</p>

DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

Paragraph Number	Term	Definition
		shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.
10-32	Lighting	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
10-33	Major and Minor Contract Items	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	Materials	Any substance specified for use in the construction of the contract work.
10-35	Modification of Standards (MOS)	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	Notice to Proceed (NTP)	A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
10-37	Owner	The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is: Defined in the Invitation to Bid.
10-38	Passenger Facility Charge (PFC)	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	Pavement Structure	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	Payment bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.
10-41	Performance bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	Plans	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'

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Paragraph Number	Term	Definition
10-43	Project	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	Proposal	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.
10-45	Proposal guaranty	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	Quality Assurance (QA)	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	Quality Control (QC)	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	Quality Assurance (QA) Inspector	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
10-49	Quality Assurance (QA) Laboratory	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	Resident Project Representative (RPR)	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	Runway	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	Runway Safety Area (RSA)	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	Safety Plan Compliance Document (SPCD)	Details how the Contractor will comply with the CSPP.
10-54	Specifications	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.
10-55	Sponsor	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.

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Paragraph Number	Term	Definition
10-56	Structures	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	Subgrade	The soil that forms the pavement foundation.
10-58	Superintendent	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.
10-59	Supplemental Agreement	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	Surety	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	Taxilane	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	Taxiway	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	Taxiway/Taxilane Safety Area (TSA)	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	Work	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
10-65	Working day	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.
10-66	Architect	Same definition as the Engineer. Replace engineering with architecture in the definition.

END OF SECTION 10

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Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). See Advertisement for Bids and Instruction to Bidders of these specifications.

20-02 Qualification of bidders. Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the Owner satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

Each bidder shall submit "evidence of competency" and "evidence of financial responsibility" to the Owner at the time of bid opening.

20-03 Contents of proposal forms. The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

A prebid conference is required on this project to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield paving construction requirements. Refer to the Advertisement of Bids for the time, date, and place of the meeting.

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

- a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.
- b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.
- c. Documented record of Contractor default under previous contracts with the Owner.

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- d.** Documented record of unsatisfactory work on previous contracts with the Owner.

20-05 Interpretation of estimated proposal quantities. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

20-07 Preparation of proposal. The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

20-08 Responsive and responsible bidder. A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 Irregular proposals. Proposals shall be considered irregular for the following reasons:

- a.** If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.
- b.** If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.
- c.** If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.

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- d. If the proposal contains unit prices that are obviously unbalanced.
- e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.
- f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

20-10 Bid guarantee. Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.

20-11 Delivery of proposal. Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

20-12 Withdrawal or revision of proposals. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing or by email before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-13 Public opening of proposals. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 Disqualification of bidders. A bidder shall be considered disqualified for any of the following reasons:

- a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.
- b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.
- c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms*, of this section.

20-15 Discrepancies and Omissions. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than the number of days outlined in the Advertisement of Bids prior to bid opening.

Any interpretation of the project bid documents by the Owner's Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

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END OF SECTION 20

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Section 30 Award and Execution of Contract

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern. Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within **One Hundred Eighty (180) calendar days** of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals*. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds*.

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds*, of this section, within **fifteen (15) calendar days** from the date mailed or otherwise delivered to the successful bidder.

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30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract*, of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

END OF SECTION 30

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Section 40 Scope of Work

40-01 Intent of contract. The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

40-02 Alteration of work and quantities. The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

Supplemental agreements shall be approved by the FAA and shall include all applicable Federal contract provisions for procurement and contracting required under AIP. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds.

40-03 Omitted items. The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

40-04 Extra work. Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the RPR's opinion, is necessary for completion of the extra work.

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work

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that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

If extra work is essential to maintaining the project critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

All change orders, supplemental agreements, and contract modifications must be reviewed by the FAA.

40-05 Maintenance of traffic. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD). The Contractor shall also refer to AC 150/5210-5 (latest revision), *Painting, Marking and Lighting of Vehicles Used on an Airport* and AC 150/5370-2 (latest revision), *Operational Safety on Airports During Construction* for applicable standards.

c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (<http://mutcd.fhwa.dot.gov/>), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

40-06 Removal of existing structures. All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior

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to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

- a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,
- b. Remove such material from the site, upon written approval of the RPR; or
- c. Use such material for the Contractor's own temporary construction on site; or,
- d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

40-08 Final cleanup. Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of the property Owner.

END OF SECTION 40

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Section 50 Control of Work

50-01 Authority of the Resident Project Representative (RPR). The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

50-02 Conformity with plans and specifications. All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans, or specifications.

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

50-03 Coordination of contract, plans, and specifications. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs

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contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

50-04 List of Special Provisions. Special Provisions (as applicable) are included in the Supplemental General Conditions and Special Provision Section of the Contract Documents.

50-05 Cooperation of Contractor. The Contractor shall be supplied with **five (5)** hard copies or an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and shall cooperate with the RPR and their inspectors and with other Contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

50-06 Cooperation between Contractors. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

50-07 Construction layout and stakes. The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by Engineer/RPR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and

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control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): **AutoCAD, Microsoft Excel and PDF Format.**

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

50-08 Authority and duties of Quality Assurance (QA) inspectors. QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

50-09 Inspection of the work. All materials and each part or detail of the work shall be subject to inspection. The RPR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

50-10 Removal of unacceptable and unauthorized work. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

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Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

50-11 Load restrictions. The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

50-12 Maintenance during construction. The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be recovered as a liquidated damage against the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being

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complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

50-15 Final acceptance. Upon due notice from the Contractor of presumptive completion of the entire project, the RPR and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The RPR shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

50-16 Claims for adjustment and disputes. If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within ten (10) calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

END OF SECTION 50

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Section 60 Control of Materials

60-01 Source of supply and quality requirements. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the RPR as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the RPR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program and Addendum*, that is in effect on the date of advertisement.

60-02 Samples, tests, and cited specifications. All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Owner in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

All Contractor QC test data may be provided to the RPR in electronic PDF format, in lieu of hard copies.

The Contractor shall employ a Quality Control (QC) testing organization to perform all Contractor required QC tests in accordance with Item C-100 Contractor Quality Control Program (CQCP), as applicable.

60-03 Certification of compliance/analysis (COC/COA). The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

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Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the RPR.

When a material or assembly is specified by “brand name or equal” and the Contractor elects to furnish the specified “or equal,” the Contractor shall be required to furnish the manufacturer’s certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

- a. Conformance to the specified performance, testing, quality or dimensional requirements; and,
- b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed “or equal” is suitable for use in the work.

The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

60-04 Plant inspection. The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the RPR conduct plant inspections, the following conditions shall exist:

- a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.
- c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

60-05 Engineer/ Resident Project Representative (RPR) field office. The Contractor shall provide dedicated space for the use of the engineer, RPR, and inspectors, as a field office for the duration of the project. This space shall be located conveniently near the construction and shall be separate from any space used by the Contractor. The Contractor shall furnish water, sanitary facilities, heat, air conditioning, and electricity.

60-06 Storage of materials. Materials shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor’s plant and parked equipment or vehicles shall be as directed by the RPR. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the RPR a copy of the property Owner’s permission.

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All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

60-07 Unacceptable materials. Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the RPR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the RPR has approved its use in the work.

60-08 Owner furnished materials. The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

END OF SECTION 60

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Section 70 Legal Regulations and Responsibility to Public

70-01 Laws to be observed. The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

70-02 Permits, licenses, and taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

70-03 Patented devices, materials, and processes. If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) must be shown on the plans and is indicated as follows:

No other major work anticipated within or adjacent to the project location during construction.

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the RPR.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 Federal Participation. The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights

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of either party to the contract.

70-06 Sanitary, health, and safety provisions. The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

70-07 Public convenience and safety. The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic*, and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the RPR. If the RPR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the RPR reserves the right to assign the task of debris removal to a third party and recover the resulting costs as a liquidated damage against the Contractor.

70-08 Construction Safety and Phasing Plan (CSPP). The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is on the CS sheet(s) of the project plans and in the narrative located within the specifications.

70-09 Use of explosives. The use of explosives is not permitted on this project.

70-10 Protection and restoration of property and landscape. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at their expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

70-11 Responsibility for damage claims. The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for

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such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

70-12 Third party beneficiary clause. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

70-13 Opening sections of the work to traffic. If it is necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such “phasing” of the work must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

REFER TO THE CONSTRUCTION SAFETY AND PHASING PLANS (CSPP) FOR THE SCHEDULE OF WORK FOR ALL PROJECT PHASING AND ALLOWED TIME FOR EACH PHASE.

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at their expense.

The Contractor shall make their own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

70-14 Contractor’s responsibility for work. Until the RPR’s final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

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If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 Contractor's responsibility for utility service and facilities of others. As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and/or in the contract documents.

REFER TO THE PROJECT PLANS FOR ANY KNOWN UTILITY SERVICE LOCATIONS WITHIN THE PROJECT LIMITS AND ASSOCIATED CONTACT INFORMATION.

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the RPR.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the RPR and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the RPR continuously until such damage has

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been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or their own surety.

70-15.1 FAA facilities and cable runs. The Contractor is hereby advised that the construction limits of the project include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. The Contractor, during the execution of the project work, shall comply with the following:

a. The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

b. The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through the airport Owner a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

c. If execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact a minimum of 72 hours prior to the time of the required outage.

d. Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.

e. If the project work requires the cutting or splicing of FAA owned cables, the FAA Point-of-Contact shall be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have a FAA representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA specifications and require approval by the FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA, the Contractor shall furnish and install a sufficient length of new cable that eliminates the need for any splice.

70-16 Furnishing rights-of-way. The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 Personal liability of public officials. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, RPR, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

70-18 No waiver of legal rights. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

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70-19 Environmental protection. The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

70-20 Archaeological and historical findings. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work*, and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

70-21 Insurance Requirements. Refer to the Project Contract Agreement for the insurance requirements.

END OF SECTION 70

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Section 80 Execution and Progress

80-01 Subletting of contract. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least **twenty-five percent (25%)** of the total contract cost.

Should the Contractor elect to assign their contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

The Contractor shall provide copies of all subcontracts to the RPR fourteen (14) days prior to being utilized on the project. As a minimum, the information shall include the following:

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

80-02 Notice to proceed (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within **ten (10) days** of the NTP date. The Contractor shall notify the RPR at least **twenty-four (24) hours** in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least **ten (10) days** prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least **twenty-four (24) hours** in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall

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show all work items identified in the project proposal for each work area and shall include the project start date and end date.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a **twice** monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

80-04 Limitation of operations. The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least **forty-eight (48) hours** prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

REFER TO THE PROJECT PLANS FOR THE CSPP AND THE OPERATIONS IMPACTS.

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

80-04.1 Operational safety on airport during construction. All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time. The Owner shall coordinate any changes with the FAA.

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

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All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons, or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the RPR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the RPR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

80-06 Temporary suspension of the work. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods the Owner may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

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If it becomes necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 Determination and extension of contract time. The **number of calendar days** shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

80-07.1 Contract time based on calendar days. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

80-08 Failure to complete on time. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

REFER TO THE INFORMATION TO BIDDERS AND CONTRACT AGREEMENT DOCUMENTS FOR THE ALLOWED CONSTRUCTION TIME AND LIQUIDATED DAMAGES.

The maximum construction time allowed for the Project will be the sum of the time allowed for individual phase schedules as outlined in the CSPP but not more than the overall calendar days allowed. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of their contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

- a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or
- b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or
- c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or

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- d. Discontinues the execution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against the Contractor unsatisfied for a period of ten (10) days, or
- h. Makes an assignment for the benefit of creditors, or
- i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Owner consider the Contractor in default of the contract for any reason above, the Owner shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of ten (10) days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the RPR of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the RPR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

80-10 Termination for national emergencies. The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

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END OF SECTION 80

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Section 90 Measurement and Payment

90-01 Measurement of quantities. All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the RPR.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When requested by the Contractor and approved by the RPR in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment Volume	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
Measurement and Proportion by Weight	The term "ton" will mean the short ton consisting of 2,000 pounds (907 kg) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.
Measurement by Volume	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
Asphalt Material	Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be

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Term	Description
	corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton (kg) or hundredweight (km).
Structure	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
Timber	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
Plates and Sheets	The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.
Miscellaneous Items	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.
Scales	<p>Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end. Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted.</p> <p>In the event inspection reveals the scales have been “overweighing” (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%.</p> <p>In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded.</p> <p>Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.</p> <p>Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.</p> <p>All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other</p>

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Term	Description
	items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.
Rental Equipment	Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 <i>Payment for Extra Work</i> .
Pay Quantities	When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

90-02 Scope of payment. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

When the “basis of payment” subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

90-03 Compensation for altered quantities. When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, *Alteration of Work and Quantities*, will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 Payment for omitted items. As specified in Section 40, paragraph 40-03, *Omitted Items*, the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the RPR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the RPR’s order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the RPR’s order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the RPR’s order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

90-05 Payment for extra work. Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

a. From the total of the amount determined to be payable on a partial payment, **ten percent (10%)** of such total amount will be deducted and retained by the Owner for protection of the Owner's interests. Unless otherwise instructed by the Owner, the amount retained by the Owner will be in effect until the final payment is made except as follows:

(1) Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-14. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

(2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than thirty (30) days after the Contractor has received a partial payment. Contractor must provide the Owner evidence of prompt and full payment of retainage held by the prime Contractor to the subcontractor within thirty (30) days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

c. When at least ninety-five percent (95%) of the work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the RPR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

90-07 Payment for materials on hand. Partial payments may be made to the extent of the delivered cost

DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

- a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.
- b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.
- c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.
- d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.
- e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

- a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.
- b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.
- c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.
- d. The Contractor shall obtain the written consent of the surety to such agreement.

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within thirty (30) calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and*

DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

Disputes.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes*, or under the provisions of this paragraph, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

90-10 Construction warranty.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one (1) year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one (1) year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work. Light Emitting Diode emitting diode (LED) light fixtures with the exception of obstruction lighting, must be warranted by the manufacturer for a minimum of four (4) years after date of installation inclusive of all electronics.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within fourteen (14) days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

90-11 Contractor Final Project Documentation. Approval of final payment to the Contractor is

DIVISION 1 - FAA GENERAL CONTRACT PROVISIONS

contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR approves the Contractor's final submittal. The Contractor shall:

- a.** Provide two (2) copies of all manufacturers warranties specified for materials, equipment, and installations.
- b.** Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.
- c.** Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.
- d.** Complete all punch list items identified during the Final Inspection.
- e.** Provide complete release of all claims for labor and material arising out of the Contract.
- f.** Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.
- g.** When applicable per state requirements, return copies of sales tax completion forms.
- h.** Manufacturer's certifications for all items incorporated in the work.
- i.** All required record drawings, as-built drawings or as-constructed drawings.
- j.** Project Operation and Maintenance (O&M) Manual(s).
- k.** Security for Construction Warranty.
- l.** Equipment commissioning documentation submitted, if required.

END OF SECTION 90

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DIVISION 1 – PROJECT CONTRACT SPECIFICATIONS

REQUIRED CONTRACT PROVISIONS

Dated May 24, 2023

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**FAA
Airports**

Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects

(As of May 24, 2023)

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ACCESS TO RECORDS AND REPORTS
(2 CFR § 200.334, 2 CFR § 200.337, FAA Order 5100.38)

CONTRACT CLAUSE

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION to
ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(41 CFR part 60-4, Executive Order 11246)**

SOLICITATION CLAUSE

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade (**Androscoggin County**): **0.5%**

Goals for female participation in each trade: **6.9%**

These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is **State of Maine, Androscoggin County, City of Auburn.**

This solicitation clause is applicable for all contracts that exceed \$10,000.

BREACH OF CONTRACT TERMS
(2 CFR § 200, Appendix II(A))

CONTRACT CLAUSE

Any violation or breach of terms of this contract on the part of the **Contractor** or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide written notice that describes the nature of the breach and corrective actions the **Contractor** must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to **Contractor** until such time the **Contractor** corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the **Contractor** must correct the breach. Owner may proceed with termination of the contract if the **Contractor** fails to correct the breach by the deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

This contract clause is applicable for all contracts that exceed \$250,000.

BUY AMERICAN PREFERENCE
(Title 49 USC § 50101, Executive Order 14005,
Bipartisan Infrastructure Law (Pub. L. No. 117-58), Buy America, Build America (BABA))

SOLICITATION CLAUSE

FAA BUY AMERICAN PREFERENCE

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws,¹ U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA’s Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA’s Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

¹ Per Executive Order 14005 “Made in America Laws” means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to “Buy America” or “Buy American,” that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.

By reference, the Contractor is directed to additional Buy American guidance in the cited documents, and specifically in the required documentation section, which is contained in the original document entitled:

Federal Aviation Administration, FAA Airports, *Guidelines for Contract Provisions for Obligated Sponsors and Airport Improvement Program Projects, Appendix A Section A4 Buy American Preference,*.

Document found at: https://www.faa.gov/airports/aip/procurement/federal_contract_provisions

Certificate of Buy American Compliance – Construction Projects

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with its proposal. The bidder or offeror must indicate how it intends to comply with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e., not both) by inserting a checkmark (✓) or the letter “X”.

- ☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:
- a) Only installing iron, steel and manufactured products produced in the United States;
 - b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
 - c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
 - d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- a) To provide to the Airport Sponsor or the FAA evidence that documents the source and origin of the iron, steel, and/or manufactured product.
 - b) To faithfully comply with providing U.S. domestic products.
 - c) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
 - d) Certify that all construction materials used in the project are manufactured in the U.S.
- ☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:
- a) To submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
 - b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
 - c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
 - d) To furnish U.S. domestic product for any waiver request that the FAA rejects.

- e) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) – The iron, steel, manufactured goods or construction materials or manufactured goods are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
- c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “facility/project.” The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
- b) Listing of all manufactured products that are not comprised of 100 percent U.S. domestic content (excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).
- c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
- d) Percentage of non-domestic component and subcomponent cost as compared to total “facility” component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver (Unreasonable Costs) – Applying this provision for iron, steel, manufactured goods or construction materials would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) A completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bids and/or offers;
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
- d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date

Signature

Company Name

Title

Certificate of Buy American Compliance – Equipment/Building Projects

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101, and other Made in America Laws, U.S. statutes, guidance, and FAA policies by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter “X”.

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:

- a) Only installing steel and manufactured products produced in the United States;
- b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
- c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
- d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- a) To provide to the Airport Sponsor or FAA evidence that documents the source and origin of the steel and manufactured product.
- b) To faithfully comply with providing U.S. domestic product.
- c) To furnish U.S. domestic product for any waiver request that the FAA rejects.
- d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for a Type 3 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

- a) To submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
- b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
- c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
- d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
- c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of the item components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “item”. The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
- b) Listing of all product components and subcomponents that are not comprised of 100 percent U.S. domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108 (products of unknown origin must be considered as non-domestic products in their entirety).
- c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
- d) Percentage of non-domestic component and subcomponent cost as compared to total “item” component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials, would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bidders and/or offerors;
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
- d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date

Signature

Company Name

Title

GENERAL CIVIL RIGHTS PROVISIONS
(49 USC § 47123)

CONTRACT CLAUSES
GENERAL CIVIL RIGHTS PROVISIONS

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

GENERAL CIVIL RIGHTS – TITLE VI ASSURANCES
(49 USC § 47123, FAA Order 1400.11)

TITLE VI SOLICITATION NOTICE:

The **Sponsor**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, select businesses or disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

CONTRACT CLAUSE
TITLE VI LIST OF PERTINENT NONDISCRIMINATION ACTS AND AUTHORITIES

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “Contractor”) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d *et seq.*, 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-Assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);

- The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq.*) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-259) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms “programs or activities” to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990 (42 USC § 12101, *et seq.*) (prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration’s Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations);
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs [70 Fed. Reg. 74087 (2005)];
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, *et seq.*).

TITLE VI CONTRACT CLAUSES FOR COMPLIANCE WITH NONDISCRIMINATION REQUIREMENTS

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the “Contractor”), agrees as follows:

1. **Compliance with Regulations:** The Contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.
3. **Solicitations for Subcontracts, including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each

potential subcontractor or supplier will be notified by the Contractor of the contractor's obligations under this contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.

4. **Information and Reports:** The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a Contractor's noncompliance with the non-discrimination provisions of this contract, the Sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
 - a. Withholding payments to the Contractor under the contract until the Contractor complies; and/or
 - b. Cancelling, terminating, or suspending a contract, in whole or in part.
6. **Incorporation of Provisions:** The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Sponsor to enter into any litigation to protect the interests of the Sponsor. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

CLEAN AIR AND WATER POLLUTION CONTROL
(2 CFR § 200, Appendix II(G), 42 USC § 7401, 33 USC § 1251)

CONTRACT CLAUSE

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 USC § 740-7671q) and the Federal Water Pollution Control Act as amended (33 USC § 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceeds \$150,000.

This contract clause is applicable for all contracts that exceed \$150,000.

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CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS
(2 CFR § 200, Appendix II(E); 2 CFR§ 5.5(b); 40 USC § 3702; 40 USC § 3704)

CONSTRUCTION CONTRACT CLAUSE

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of \$29 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this clause.

4. Subcontractors.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

This contract clause is applicable for all construction projects and equipment projects with on-site installation construction contracts that exceed \$100,000.

**COPELAND “ANTI-KICKBACK” ACT
(2 CFR § 200, Appendix II(D), 29 CFR Parts 3 and 5)**

CONSTRUCTION CONTRACT CLAUSE

Contractor must comply with the requirements of the Copeland “Anti-Kickback” Act (18 USC 874 and 40 USC 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

This contract clause is applicable for all construction projects and equipment projects with on-site installation construction contracts that exceed \$2000.

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DAVIS-BACON REQUIREMENTS
(2 CFR § 200, Appendix II(D); 29 CFR Part 5; 49 USC§ 47112(b);
40 USC §§ 3141-3144, 3146, and 3147)

CONSTRUCTION CONTRACT CLAUSE

1. Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided* that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers, or mechanics to be employed in the classification, or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program: *Provided* that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding.

The Federal Aviation Administration or the sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the Contractor, Sponsor, Applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and Basic Records.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR § 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and that show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall

maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit the payrolls to the applicant, Sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR § 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.* the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at:

<https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit them to the applicant, sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, Sponsor, or Owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) The payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i), and that such information is correct and complete;

(2) Each laborer and mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) Each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the sponsor, the Federal Aviation Administration, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required

records or to make them available, the Federal agency may, after written notice to the Contractor, Sponsor, applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR § 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered

program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees, and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The Contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The Contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR §§ 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR § 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR § 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR § 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR § 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 USC § 1001.

This contract clause is applicable for all construction projects and equipment projects with on-site installation construction contracts that exceed \$2000.

DEBARMENT AND SUSPENSION
(2 CFR Part 180 (Subpart B); 2 CFR part 200, Appendix II(H); 2 CFR part 1200;
DOT Order 4200.5; Executive Orders 12549 and 12689)

SOLICITATION PROVISION

CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a “covered transaction”, must verify each lower tier participant of a “covered transaction” under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: <http://www.sam.gov>.
2. Collecting a certification statement similar to the Certification of Offerer/Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

**DISADVANTAGED BUSINESS ENTERPRISES
(49 CFR part 26)**

SOLICITATION PROVISION (FOR CONTRACT GOAL PROJECTS)

The Owner's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR §26.53.

As a condition of bid responsiveness, the Bidder or Offeror must submit the following information with its proposal on the forms provided herein:

- 1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
- 2) A description of the work that each DBE firm will perform;
- 3) The dollar amount of the participation of each DBE firm listed under (1);
- 4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal
- 5) Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and
- 6) If Bidder or Offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR part 26. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

SOLICITATION PROVISION (FOR RACE/GENDER NEUTRAL PROJECTS)

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the **Auburn Lewiston Municipal Airport** to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

PRIME CONTRACT PROVISIONS

Contract Assurance (§ 26.13) –

The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of Department of Transportation-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Owner deems appropriate, which may include, but is not limited to:

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the Contractor from future bidding as non-responsible.

Prompt Payment (§26.29) – The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than **thirty (30) calendar** days from the receipt of each payment the prime contractor receives from the Owner. The prime contractor agrees further to return retainage payments to each subcontractor within **thirty (30) calendar** days after the subcontractor’s work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the **Auburn Lewiston Municipal Airport**. This clause applies to both DBE and non-DBE subcontractors.

Termination of DBE Subcontracts (49 CFR § 26.53(f))

The prime contractor must not terminate a DBE subcontractor listed in response to the Solicitation as shown above in this Section (or an approved substitute DBE firm) without prior written consent of **Auburn Lewiston Municipal Airport**. This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent **Auburn Lewiston Municipal Airport**. Unless **Auburn Lewiston Municipal Airport** consent is provided, the prime contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

Auburn Lewiston Municipal Airport may provide such written consent only if **Auburn Lewiston Municipal Airport** agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to **Auburn Lewiston Municipal Airport** its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to **Auburn Lewiston Municipal Airport**, of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five (5) calendar days to respond to the prime contractor’s notice and advise the **Auburn Lewiston Municipal Airport** and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the **Auburn Lewiston Municipal Airport** should not approve the prime contractor’s action. If required in a particular case as a matter of public necessity (e.g., safety), the **Auburn Lewiston Municipal Airport** may provide a response period shorter than five (5) calendar days.

In addition to post-award terminations, the provisions of this section apply to pre-award deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

DISTRACTED DRIVING
(Executive Order 13513, DOT Order 3902.10)

TEXTING WHEN DRIVING CONTRACT CLAUSE

In accordance with Executive Order 13513, “Federal Leadership on Reducing Text Messaging While Driving”, (10/1/2009) and DOT Order 3902.10, “Text Messaging While Driving”, (12/30/2009), the Federal Aviation Administration encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or subgrant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding \$3,500 that involve driving a motor vehicle in performance of work activities associated with the project.

This contract clause is applicable for all contracts that exceed \$10,000.

**PROHIBITION OF CERTAIN TELECOMMUNICATIONS
AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
(2 CFR § 200, Appendix II(K); 2 CFR 200.216)**

CONTRACT CERTIFICATION CLAUSE

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

EQUAL EMPLOYMENT OPPORTUNITY
(2 CFR 200, Appendix II(C), 41 CFR § 60-1.4, 41 CFR § 60-4.3, Executive Order 11246)

EQUAL OPPORTUNITY CONTRACT CLAUSE

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff, or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the Contractor's commitments under this section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in

whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: *Provided*, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS

1. As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;
- c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. "Minority" includes:
 - (1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
 - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR part 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to

comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person

or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR part 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily

understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

This EEO contract clauses and specifications are applicable for all construction projects and equipment projects with on-site installation construction contracts that exceed \$10,000.

FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)
(29 USC § 201, et seq; 2 CFR 200.430)

SOLICITATION CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The ***Contractor*** has full responsibility to monitor compliance to the referenced statute or regulation. The ***Contractor*** must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

LOBBYING AND INFLUENCING FEDERAL EMPLOYEES
(31 USC § 1352 – Byrd Anti-Lobbying Amendment; 2 CFR part 200, Appendix II(i);
49 CFR part 20, Appendix A)

SOLICITATION CERTIFICATION REGARDING LOBBYING

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

This solicitation clause is applicable for all construction projects and equipment projects with on-site installation construction contracts that exceed \$100,000.

PROHIBITION OF SEGREGATED FACILITIES
(2 CFR Part 200, Appendix II(C); 41 CFR § 60-1)

PROHIBITION OF SEGREGATED FACILITIES CONTRACT CLAUSE

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Employment Opportunity clause in this contract.

(b) “Segregated facilities,” as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Employment Opportunity clause of this contract.

This contract clause is applicable for all construction projects and equipment projects with on-site installation construction contracts.

OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970
(29 CFR Part 1910)

CONTRACT CLAUSE

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The ***Employer*** must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The ***Employer*** retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (29 CFR Part 1910). The ***Employer*** must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

PROCUREMENT OF RECOVERED MATERIALS
(2 CFR § 200.323; 2 CFR Part 200, Appendix II(J); 40 CFR Part 247;
42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA)))

CONTRACT CLAUSE

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- 1) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year;
or
- 2) The Contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.

Section 6002© establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- b) Fails to meet reasonable contract performance requirements; or
- c) Is only available at an unreasonable price.

This contract clause is applicable for all construction projects and equipment projects contracts that exceed \$10,000.

**SEISMIC SAFETY
(49 CFR Part 41)**

**CONTRACT CLAUSE
(For Building Related Construction Projects, including Electrical Vaults & Additions)**

The Contractor agrees to ensure that all work performed under this contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.

TAX DELINQUENCY AND FELONY CONVICTIONS
(Sections 8113 of the Consolidated Appropriations Act 2022; DOT Order 4200.6)

CERTIFICATION CLAUSE

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

- 1) The applicant represents that it is (✓) is not (✓) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- 2) The applicant represents that it is (✓) is not (✓) is not a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

TERMINATION OF CONTRACT
(2 CFR Part 200 Appendix II(B); FAA Advisory Circular 150/5370-10 Sections 80-90)
CONTRACT CLAUSES

TERMINATION FOR CONVENIENCE (CONSTRUCTION & EQUIPMENT CONTRACTS)

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.
4. Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work, and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the Owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

- 1) completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
- 2) documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
- 3) reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
- 4) reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

TERMINATION FOR CAUSE (CONSTRUCTION)
(FAA Advisory Circular 150/5370-10, Section 80-09)

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes conditions, rights, and remedies associated with Owner termination of this contract due to default of the Contractor.

TERMINATION FOR CAUSE (EQUIPMENT)

The Owner may, by written notice of default to the Contractor, terminate all or part of this Contract if the Contractor:

1. Fails to commence the Work under the Contract within the time specified in the Notice- to-Proceed;
2. Fails to make adequate progress as to endanger performance of this Contract in accordance with its terms;
3. Fails to make delivery of the equipment within the time specified in the Contract, including any Owner approved extensions;
4. Fails to comply with material provisions of the Contract;
5. Submits certifications made under the Contract and as part of their proposal that include false or fraudulent statements; or
6. Becomes insolvent or declares bankruptcy.

If one or more of the stated events occur, the Owner will give notice in writing to the Contractor and Surety of its intent to terminate the contract for cause. At the Owner's discretion, the notice may allow the Contractor and Surety an opportunity to cure the breach or default.

If within ten (10) days of the receipt of notice, the Contractor or Surety fails to remedy the breach or default to the satisfaction of the Owner, the Owner has authority to acquire equipment by other procurement action. The Contractor will be liable to the Owner for any excess costs the Owner incurs for acquiring such similar equipment.

Payment for completed equipment delivered to and accepted by the Owner shall be at the Contract price. The Owner may withhold from amounts otherwise due the Contractor for such completed equipment, such sum as the Owner determines to be necessary to protect the Owner against loss because of Contractor default.

Owner will not terminate the Contractor's right to proceed with the Work under this clause if the delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such acceptable causes include: acts of God, acts of the Owner, acts of another Contractor in the performance of a contract with the Owner, and severe weather events that substantially exceed normal conditions for the location.

If, after termination of the Contractor's right to proceed, the Owner determines that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the Owner issued the termination for the convenience the Owner.

The rights and remedies of the Owner in this clause are in addition to any other rights and remedies provided by law or under this contract.

These contract termination clauses are applicable for all construction projects and equipment projects contracts that exceed \$10,000.

TRADE RESTRICTION CERTIFICATION
(49 USC § 50104; 49 CFR Part 30)

TRADE RESTRICTION CERTIFICATION SOLICITATION CLAUSE

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

- 1) is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR);
- 2) has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the USTR; and
- 3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18 USC Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

- 1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR or
- 2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list or
- 3) who incorporates in the public works project any product of a foreign country on such USTR list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The Contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by USTR, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration (FAA) may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

VETERAN'S PREFERENCE
(49 USC § 47112(c))

CONTRACT CLAUSE

In the employment of labor (excluding executive, administrative, and supervisory positions), the Contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 USC 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

DOMESTIC PREFERENCE FOR PROCUREMENTS
(2 CFR § 200.322; 2 CFR Part 200, Appendix II(L))

SOLICITATION & CONTRACT CERTIFICATION REGARDING
DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

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DIVISION 1 – PROJECT CONTRACT SPECIFICATIONS

REFERENCE DOCUMENTS

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DIVISION 1 - REFERENCED DOCUMENTS

EQUAL EMPLOYMENT OPPORTUNITY

41 CFR 60-4.2 & 4.3

§60-4.2 Solicitations.

(a) All Federal contracting officers and all applicants shall include the notice set forth in paragraph (d) of this section and the Standard Federal Equal Employment Opportunity Construction Contract Specifications set forth in §60-4.3 of this part in all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts to be performed in geographical areas designated by the Director pursuant to §60-4.6 of the part. Administering agencies shall require the inclusion of the notice set forth in paragraph (d) of this section and the specifications set forth in §60-4.3 of this part as a condition of any grant, contract, subcontract, loan, insurance or guarantee involving federally assisted construction covered by this part 60-4.

(b) All nonconstruction contractors covered by Executive Order 11246 and the implementing regulations shall include the notice in paragraph (d) of this section in all construction agreements which are necessary in whole or in part to the performance of the covered nonconstruction contract.

(c) Contracting officers, applicants and nonconstruction contractors shall give written notice to the Director within 10 working days of award of a contract subject to these provisions. The notification shall include the name, address and telephone number of the contractor; employer identification number; dollar amount of the contract, estimated starting and completion dates of the contract; the contract number; and geographical area in which the contract is to be performed. CFR 60-4.6

(d) The following notice shall be included in, and shall be a part of, all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of \$10,000 to be performed in geographical areas designated by the Director pursuant to §60-4.6 of this part (see 41 CFR 60-4.2(a)):

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Time- tables	Goals for minority participation for each trade	Goals for female participation in each trade
Current Project	0.5% for Androscoggin County	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the

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contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the “covered area” is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any).

[43 FR 49254, Oct. 20, 1978; 43 FR 51401, Nov. 3, 1978, as amended at 45 FR 65977, Oct. 3, 1980]

§60-4.3 Equal opportunity clauses.

(a) The equal opportunity clause published at 41 CFR 60-1.4(a) of this chapter is required to be included in, and is part of, all nonexempt Federal contracts and subcontracts, including construction contracts and subcontracts. The equal opportunity clause published at 41 CFR 60-1.4(b) is required to be included in, and is a part of, all nonexempt federally assisted construction contracts and subcontracts. In addition to the clauses described above, all Federal contracting officers, all applicants and all nonconstruction contractors, as applicable, shall include the specifications set forth in this section in all Federal and federally assisted construction contracts in excess of \$10,000 to be performed in geographical areas designated by the Director pursuant to §60-4.6 of this part and in construction subcontracts in excess of \$10,000 necessary in whole or in part to the performance of nonconstruction Federal contracts and subcontracts covered under the Executive order.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:

a. “Covered area” means the geographical area described in the solicitation from which this contract resulted;

b. “Director” means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. “Employer identification number” means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. “Minority” includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

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(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the FEDERAL REGISTER in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

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b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

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l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity.

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If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

(b) The notice set forth in 41 CFR 60-4.2 and the specifications set forth in 41 CFR 60-4.3 replace the New Form for Federal Equal Employment Opportunity Bid Conditions for Federal and Federally Assisted Construction published at 41 FR 32482 and commonly known as the Model Federal EEO Bid Conditions, and the New Form shall not be used after the regulations in 41 CFR part 60-4 become effective.

[43 FR 49254, Oct. 20, 1978; 43 FR 51401, Nov. 3, 1978, as amended at 45 FR 65978, Oct. 3, 1980; 79 FR 72995, Dec. 9, 2014]

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DISADVANTAGED BUSINESS ENTERPRISE
49 CFR Part 26

Title 49: Transportation

**PART 26—PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES IN
DEPARTMENT OF TRANSPORTATION FINANCIAL ASSISTANCE PROGRAMS**

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Appendix A to Part 26—Guidance Concerning Good Faith Efforts

Appendix B to Part 26—Uniform Report of DBE Awards or Commitments and Payments Form

Appendix C to Part 26—DBE Business Development Program Guidelines

Appendix D to Part 26—Mentor-Protégé Program Guidelines

Appendix E to Part 26—Individual Determinations of Social and Economic Disadvantage

Appendix F to Part 26—Uniform Certification Application Form

Appendix G to Part 26—Personal Net Worth Statement

AUTHORITY: 23 U.S.C. 324; 42 U.S.C. 2000d, *et seq.*; Sec. 1101(b), Pub. L. 114-94, 129 Stat. 1312, 1324; 49 U.S.C. 47113, 47123; Sec. 150, Pub. L. 115-254, 132 Stat. 3215.

SOURCE: 64 FR 5126, Feb. 2, 1999, unless otherwise noted.

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Subpart A—General

§26.1 What are the objectives of this part?

This part seeks to achieve several objectives:

- (a) To ensure nondiscrimination in the award and administration of DOT-assisted contracts in the Department's highway, transit, and airport financial assistance programs;
- (b) To create a level playing field on which DBEs can compete fairly for DOT-assisted contracts;
- (c) To ensure that the Department's DBE program is narrowly tailored in accordance with applicable law;
- (d) To ensure that only firms that fully meet this part's eligibility standards are permitted to participate as DBEs;
- (e) To help remove barriers to the participation of DBEs in DOT-assisted contracts;
- (f) To promote the use of DBEs in all types of federally-assisted contracts and procurement activities conducted by recipients.
- (g) To assist the development of firms that can compete successfully in the marketplace outside the DBE program; and
- (h) To provide appropriate flexibility to recipients of Federal financial assistance in establishing and providing opportunities for DBEs.

[64 FR 5126, Feb. 2, 1999, as amended at 79 FR 59592, Oct. 2, 2014]

§26.3 To whom does this part apply?

- (a) If you are a recipient of any of the following types of funds, this part applies to you:

(1) Federal-aid highway funds authorized under Titles I (other than Part B) and V of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Pub. L. 102-240, 105 Stat. 1914, or Titles I, III, and V of the Transportation Equity Act for the 21st Century (TEA-21), Pub. L. 105-178, 112 Stat. 107. Titles I, III, and V of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub. L. 109-59, 119 Stat. 1144; and Divisions A and B of the Moving Ahead for Progress in the 21st Century Act (MAP-21), Pub. L. 112-141, 126 Stat. 405.

(2) Federal transit funds authorized by Titles I, III, V and VI of ISTEA, Pub. L. 102-240 or by Federal transit laws in Title 49, U.S. Code, or Titles I, III, and V of the TEA-21, Pub. L. 105-178. Titles I, III, and V of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Pub. L. 109-59, 119 Stat. 1144; and Divisions A and B of the Moving Ahead for Progress in the 21st Century Act (MAP-21), Pub. L. 112-141, 126 Stat. 405.

- (3) Airport funds authorized by 49 U.S.C. 47101, *et seq.*

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(b) [Reserved]

(c) If you are letting a contract, and that contract is to be performed entirely outside the United States, its territories and possessions, Puerto Rico, Guam, or the Northern Marianas Islands, this part does not apply to the contract.

(d) If you are letting a contract in which DOT financial assistance does not participate, this part does not apply to the contract.

[64 FR 5126, Feb. 2, 1999, as amended at 79 FR 59592, Oct. 2, 2014]

§26.5 What do the terms used in this part mean?

Affiliation has the same meaning the term has in the Small Business Administration (SBA) regulations, 13 CFR part 121.

(1) Except as otherwise provided in 13 CFR part 121, concerns are affiliates of each other when, either directly or indirectly:

(i) One concern controls or has the power to control the other; or

(ii) A third party or parties controls or has the power to control both; or

(iii) An identity of interest between or among parties exists such that affiliation may be found.

(2) In determining whether affiliation exists, it is necessary to consider all appropriate factors, including common ownership, common management, and contractual relationships. Affiliates must be considered together in determining whether a concern meets small business size criteria and the statutory cap on the participation of firms in the DBE program.

Alaska Native means a citizen of the United States who is a person of one-fourth degree or more Alaskan Indian (including Tsimshian Indians not enrolled in the Metlaktla Indian Community), Eskimo, or Aleut blood, or a combination of those bloodlines. The term includes, in the absence of proof of a minimum blood quantum, any citizen whom a Native village or Native group regards as an Alaska Native if their father or mother is regarded as an Alaska Native.

Alaska Native Corporation (ANC) means any Regional Corporation, Village Corporation, Urban Corporation, or Group Corporation organized under the laws of the State of Alaska in accordance with the Alaska Native Claims Settlement Act, as amended (43 U.S.C. 1601, *et seq.*).

Assets mean all the property of a person available for paying debts or for distribution, including one's respective share of jointly held assets. This includes, but is not limited to, cash on hand and in banks, savings accounts, IRA or other retirement accounts, accounts receivable, life insurance, stocks and bonds, real estate, and personal property.

Business, business concern or business enterprise means an entity organized for profit with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the United States economy through payment of taxes or use of American products, materials, or labor.

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Compliance means that a recipient has correctly implemented the requirements of this part.

Contingent Liability means a liability that depends on the occurrence of a future and uncertain event. This includes, but is not limited to, guaranty for debts owed by the applicant concern, legal claims and judgments, and provisions for federal income tax.

Contract means a legally binding relationship obligating a seller to furnish supplies or services (including, but not limited to, construction and professional services) and the buyer to pay for them. For purposes of this part, a lease is considered to be a contract.

Contractor means one who participates, through a contract or subcontract (at any tier), in a DOT-assisted highway, transit, or airport program.

Days mean calendar days. In computing any period of time described in this part, the day from which the period begins to run is not counted, and when the last day of the period is a Saturday, Sunday, or Federal holiday, the period extends to the next day that is not a Saturday, Sunday, or Federal holiday. Similarly, in circumstances where the recipient's offices are closed for all or part of the last day, the period extends to the next day on which the agency is open.

Department or DOT means the U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Federal Aviation Administration (FAA).

Disadvantaged business enterprise or DBE means a for-profit small business concern—

(1) That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and

(2) Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

DOT-assisted contract means any contract between a recipient and a contractor (at any tier) funded in whole or in part with DOT financial assistance, including letters of credit or loan guarantees, except a contract solely for the purchase of land.

Good faith efforts means efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

Home state means the state in which a DBE firm or applicant for DBE certification maintains its principal place of business.

Immediate family member means father, mother, husband, wife, son, daughter, brother, sister, grandfather, grandmother, father-in-law, mother-in-law, sister-in-law, brother-in-law, and domestic partner and civil unions recognized under State law.

Indian tribe means any Indian tribe, band, nation, or other organized group or community of Indians, including any ANC, which is recognized as eligible for the special programs and services provided by the

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United States to Indians because of their status as Indians, or is recognized as such by the State in which the tribe, band, nation, group, or community resides. See definition of “tribally-owned concern” in this section.

Joint venture means an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

Liabilities mean financial or pecuniary obligations. This includes, but is not limited to, accounts payable, notes payable to bank or others, installment accounts, mortgages on real estate, and unpaid taxes.

Native Hawaiian means any individual whose ancestors were natives, prior to 1778, of the area which now comprises the State of Hawaii.

Native Hawaiian Organization means any community service organization serving Native Hawaiians in the State of Hawaii which is a not-for-profit organization chartered by the State of Hawaii, is controlled by Native Hawaiians, and whose business activities will principally benefit such Native Hawaiians.

Noncompliance means that a recipient has not correctly implemented the requirements of this part.

Operating Administration or *OA* means any of the following parts of DOT: the Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA). The “Administrator” of an operating administration includes his or her designees.

Personal net worth means the net value of the assets of an individual remaining after total liabilities are deducted. An individual's personal net worth does not include: The individual's ownership interest in an applicant or participating DBE firm; or the individual's equity in his or her primary place of residence. An individual's personal net worth includes only his or her own share of assets held jointly or as community property with the individual's spouse.

Primary industry classification means the most current North American Industry Classification System (NAICS) designation which best describes the primary business of a firm. The NAICS is described in the North American Industry Classification Manual—United States, which is available on the Internet at the U.S. Census Bureau Web site: <http://www.census.gov/eos/www/naics/>.

Primary recipient means a recipient which receives DOT financial assistance and passes some or all of it on to another recipient.

Principal place of business means the business location where the individuals who manage the firm's day-to-day operations spend most working hours. If the offices from which management is directed and where the business records are kept are in different locations, the recipient will determine the principal place of business.

Program means any undertaking on a recipient's part to use DOT financial assistance, authorized by the laws to which this part applies.

Race-conscious measure or program is one that is focused specifically on assisting only DBEs,

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including women-owned DBEs.

Race-neutral measure or program is one that is, or can be, used to assist all small businesses. For the purposes of this part, *race-neutral* includes gender-neutrality.

Recipient is any entity, public or private, to which DOT financial assistance is extended, whether directly or through another recipient, through the programs of the FAA, FHWA, or FTA, or who has applied for such assistance.

Secretary means the Secretary of Transportation or his/her designee.

Set-aside means a contracting practice restricting eligibility for the competitive award of a contract solely to DBE firms.

Small Business Administration or *SBA* means the United States Small Business Administration.

SBA certified firm refers to firms that have a current, valid certification from or recognized by the SBA under the 8(a) BD or SDB programs.

Small business concern means, with respect to firms seeking to participate as DBEs in DOT-assisted contracts, a small business concern as defined pursuant to section 3 of the Small Business Act and Small Business Administration regulations implementing it (13 CFR part 121) that also does not exceed the cap on average annual gross receipts specified in §26.65(b).

Socially and economically disadvantaged individual means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who has been subjected to racial or ethnic prejudice or cultural bias within American society because of his or her identity as a members of groups and without regard to his or her individual qualities. The social disadvantage must stem from circumstances beyond the individual's control.

(1) Any individual who a recipient finds to be a socially and economically disadvantaged individual on a case-by-case basis. An individual must demonstrate that he or she has held himself or herself out, as a member of a designated group if you require it.

(2) Any individual in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:

(i) “Black Americans,” which includes persons having origins in any of the Black racial groups of Africa;

(ii) “Hispanic Americans,” which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

(iii) “Native Americans,” which includes persons who are enrolled members of a federally or State recognized Indian tribe, Alaska Natives, or Native Hawaiians;

(iv) “Asian-Pacific Americans,” which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau),

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Republic of the Northern Marianas Islands, Samoa, Macao, Fiji, Tonga, Kirbati, Tuvalu, Nauru, Federated States of Micronesia, or Hong Kong;

(v) “Subcontinent Asian Americans,” which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;

(vi) Women;

(vii) Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

(3) Being born in a particular country does not, standing alone, mean that a person is necessarily a member of one of the groups listed in this definition.

Spouse means a married person, including a person in a domestic partnership or a civil union recognized under State law.

Transit vehicle manufacturer means any manufacturer whose primary business purpose is to manufacture vehicles specifically built for public mass transportation. Such vehicles include, but are not limited to: Buses, rail cars, trolleys, ferries, and vehicles manufactured specifically for paratransit purposes. Producers of vehicles that receive post-production alterations or retrofitting to be used for public transportation purposes (e.g., so-called cutaway vehicles, vans customized for service to people with disabilities) are also considered transit vehicle manufacturers. Businesses that manufacture, mass-produce, or distribute vehicles solely for personal use and for sale “off the lot” are not considered transit vehicle manufacturers.

Tribally-owned concern means any concern at least 51 percent owned by an Indian tribe as defined in this section.

You refers to a recipient, unless a statement in the text of this part or the context requires otherwise (i.e., ‘You must do XYZ’ means that recipients must do XYZ).

[64 FR 5126, Feb. 2, 1999, as amended at 64 FR 34570, June 28, 1999; 68 FR 35553, June 16, 2003; 76 FR 5096, Jan. 28, 2011; 79 FR 59592, Oct. 2, 2014]

§26.7 What discriminatory actions are forbidden?

(a) You must never exclude any person from participation in, deny any person the benefits of, or otherwise discriminate against anyone in connection with the award and performance of any contract covered by this part on the basis of race, color, sex, or national origin.

(b) In administering your DBE program, you must not, directly or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the objectives of the program with respect to individuals of a particular race, color, sex, or national origin.

§26.9 How does the Department issue guidance and interpretations under this part?

(a) Only guidance and interpretations (including interpretations set forth in certification appeal

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decisions) consistent with this part 26 and issued after March 4, 1999 express the official positions and views of the Department of Transportation or any of its operating administrations.

(b) The Secretary of Transportation, Office of the Secretary of Transportation, FHWA, FTA, and FAA may issue written interpretations of or written guidance concerning this part. Written interpretations and guidance are valid, and express the official positions and views of the Department of Transportation or any of its operating administrations, only if they are issued over the signature of the Secretary of Transportation or if they contain the following statement:

The General Counsel of the Department of Transportation has reviewed this document and approved it as consistent with the language and intent of 49 CFR part 26.

[72 FR 15617, Apr. 2, 2007]

§26.11 What records do recipients keep and report?

(a) You must transmit the Uniform Report of DBE Awards or Commitments and Payments, found in Appendix B to this part, at the intervals stated on the form.

(b) You must continue to provide data about your DBE program to the Department as directed by DOT operating administrations.

(c) You must create and maintain a bidders list.

(1) The purpose of this list is to provide you as accurate data as possible about the universe of DBE and non-DBE contractors and subcontractors who seek to work on your Federally-assisted contracts for use in helping you set your overall goals.

(2) You must obtain the following information about DBE and non-DBE contractors and subcontractors who seek to work on your Federally-assisted contracts:

(i) Firm name;

(ii) Firm address;

(iii) Firm's status as a DBE or non-DBE;

(iv) Age of the firm; and

(v) The annual gross receipts of the firm. You may obtain this information by asking each firm to indicate into what gross receipts bracket they fit (*e.g.*, less than \$500,000; \$500,000-\$1 million; \$1-2 million; \$2-5 million; etc.) rather than requesting an exact figure from the firm.

(3) You may acquire the information for your bidders list in a variety of ways. For example, you can collect the data from all bidders, before or after the bid due date. You can conduct a survey that will result in statistically sound estimate of the universe of DBE and non-DBE contractors and subcontractors who seek to work on your Federally-assisted contracts. You may combine different data collection approaches (*e.g.*, collect name and address information from all bidders, while conducting a survey with respect to age and gross receipts information).

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(d) You must maintain records documenting a firm's compliance with the requirements of this part. At a minimum, you must keep a complete application package for each certified firm and all affidavits of no-change, change notices, and on-site reviews. These records must be retained in accordance with applicable record retention requirements for the recipient's financial assistance agreement. Other certification or compliance related records must be retained for a minimum of three (3) years unless otherwise provided by applicable record retention requirements for the recipient's financial assistance agreement, whichever is longer.

(e) The State department of transportation in each UCP established pursuant to §26.81 of this part must report to the Department of Transportation's Office of Civil Rights, by January 1, 2015, and each year thereafter, the percentage and location in the State of certified DBE firms in the UCP Directory controlled by the following:

(1) Women;

(2) Socially and economically disadvantaged individuals (other than women); and

(3) Individuals who are women and are otherwise socially and economically disadvantaged individuals.

[64 FR 5126, Feb. 2, 1999, as amended at 65 FR 68951, Nov. 15, 2000; 76 FR 5096, Jan. 28, 2011; 79 FR 59593, Oct. 2, 2014]

§26.13 What assurances must recipients and contractors make?

(a) Each financial assistance agreement you sign with a DOT operating administration (or a primary recipient) must include the following assurance: The recipient shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT-assisted contract or in the administration of its DBE program or the requirements 49 CFR part 26. The recipient shall take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts. The recipient's DBE program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the recipient of its failure to carry out its approved program, the Department may impose sanctions as provided for under 49 CFR part 26 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. 3801 et seq.).

(b) Each contract you sign with a contractor (and each subcontract the prime contractor signs with a subcontractor) must include the following assurance: The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

(1) Withholding monthly progress payments;

(2) Assessing sanctions;

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(3) Liquidated damages; and/or

(4) Disqualifying the contractor from future bidding as non-responsible.

[79 FR 59593, Oct. 2, 2014]

§26.15 How can recipients apply for exemptions or waivers?

(a) You can apply for an exemption from any provision of this part. To apply, you must request the exemption in writing from the Office of the Secretary of Transportation, FHWA, FTA, or FAA. The Secretary will grant the request only if it documents special or exceptional circumstances, not likely to be generally applicable, and not contemplated in connection with the rulemaking that established this part, that make your compliance with a specific provision of this part impractical. You must agree to take any steps that the Department specifies to comply with the intent of the provision from which an exemption is granted. The Secretary will issue a written response to all exemption requests.

(b) You can apply for a waiver of any provision of Subpart B or C of this part including, but not limited to, any provisions regarding administrative requirements, overall goals, contract goals or good faith efforts. Program waivers are for the purpose of authorizing you to operate a DBE program that achieves the objectives of this part by means that may differ from one or more of the requirements of Subpart B or C of this part. To receive a program waiver, you must follow these procedures:

(1) You must apply through the concerned operating administration. The application must include a specific program proposal and address how you will meet the criteria of paragraph (b)(2) of this section. Before submitting your application, you must have had public participation in developing your proposal, including consultation with the DBE community and at least one public hearing. Your application must include a summary of the public participation process and the information gathered through it.

(2) Your application must show that—

(i) There is a reasonable basis to conclude that you could achieve a level of DBE participation consistent with the objectives of this part using different or innovative means other than those that are provided in subpart B or C of this part;

(ii) Conditions in your jurisdiction are appropriate for implementing the proposal;

(iii) Your proposal would prevent discrimination against any individual or group in access to contracting opportunities or other benefits of the program; and

(iv) Your proposal is consistent with applicable law and program requirements of the concerned operating administration's financial assistance program.

(3) The Secretary has the authority to approve your application. If the Secretary grants your application, you may administer your DBE program as provided in your proposal, subject to the following conditions:

(i) DBE eligibility is determined as provided in subparts D and E of this part, and DBE participation is counted as provided in §26.49;

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- (ii) Your level of DBE participation continues to be consistent with the objectives of this part;
- (iii) There is a reasonable limitation on the duration of your modified program; and
- (iv) Any other conditions the Secretary makes on the grant of the waiver.

(4) The Secretary may end a program waiver at any time and require you to comply with this part's provisions. The Secretary may also extend the waiver, if he or she determines that all requirements of paragraphs (b)(2) and (3) of this section continue to be met. Any such extension shall be for no longer than period originally set for the duration of the program.

Subpart B—Administrative Requirements for DBE Programs for Federally-Assisted Contracting

§26.21 Who must have a DBE program?

(a) If you are in one of these categories and let DOT-assisted contracts, you must have a DBE program meeting the requirements of this part:

- (1) All FHWA primary recipients receiving funds authorized by a statute to which this part applies;
- (2) FTA recipients receiving planning, capital and/or operating assistance who will award prime contracts (excluding transit vehicle purchases) the cumulative total value of which exceeds \$250,000 in FTA funds in a Federal fiscal year;
- (3) FAA recipients receiving grants for airport planning or development who will award prime contracts the cumulative total value of which exceeds \$250,000 in FAA funds in a Federal fiscal year.

(b)(1) You must submit a DBE program conforming to this part by August 31, 1999 to the concerned operating administration (OA). Once the OA has approved your program, the approval counts for all of your DOT-assisted programs (except that goals are reviewed by the particular operating administration that provides funding for your DOT-assisted contracts).

(2) You do not have to submit regular updates of your DBE programs, as long as you remain in compliance. However, you must submit significant changes in the program for approval.

(c) You are not eligible to receive DOT financial assistance unless DOT has approved your DBE program and you are in compliance with it and this part. You must continue to carry out your program until all funds from DOT financial assistance have been expended.

[64 FR 5126, Feb. 2, 1999, as amended at 64 FR 34570, June 28, 1999; 65 FR 68951, Nov. 15, 2000; 79 FR 59593, Oct. 2, 2014]

§26.23 What is the requirement for a policy statement?

You must issue a signed and dated policy statement that expresses your commitment to your DBE program, states its objectives, and outlines responsibilities for its implementation. You must circulate the statement throughout your organization and to the DBE and non-DBE business communities that perform work on your DOT-assisted contracts.

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§26.25 What is the requirement for a liaison officer?

You must have a DBE liaison officer, who shall have direct, independent access to your Chief Executive Officer concerning DBE program matters. The liaison officer shall be responsible for implementing all aspects of your DBE program. You must also have adequate staff to administer the program in compliance with this part.

§26.27 What efforts must recipients make concerning DBE financial institutions?

You must thoroughly investigate the full extent of services offered by financial institutions owned and controlled by socially and economically disadvantaged individuals in your community and make reasonable efforts to use these institutions. You must also encourage prime contractors to use such institutions.

§26.29 What prompt payment mechanisms must recipients have?

(a) You must establish, as part of your DBE program, a contract clause to require prime contractors to pay subcontractors for satisfactory performance of their contracts no later than 30 days from receipt of each payment you make to the prime contractor.

(b) You must ensure prompt and full payment of retainage from the prime contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. You must use one of the following methods to comply with this requirement:

(1) You may decline to hold retainage from prime contractors and prohibit prime contractors from holding retainage from subcontractors.

(2) You may decline to hold retainage from prime contractors and require a contract clause obligating prime contractors to make prompt and full payment of any retainage kept by prime contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed.

(3) You may hold retainage from prime contractors and provide for prompt and regular incremental acceptances of portions of the prime contract, pay retainage to prime contractors based on these acceptances, and require a contract clause obligating the prime contractor to pay all retainage owed to the subcontractor for satisfactory completion of the accepted work within 30 days after your payment to the prime contractor.

(c) For purposes of this section, a subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the recipient. When a recipient has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

(d) Your DBE program must provide appropriate means to enforce the requirements of this section. These means may include appropriate penalties for failure to comply, the terms and conditions of which you set. Your program may also provide that any delay or postponement of payment among the parties may take place only for good cause, with your prior written approval.

(e) You may also establish, as part of your DBE program, any of the following additional mechanisms to ensure prompt payment:

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(1) A contract clause that requires prime contractors to include in their subcontracts language providing that prime contractors and subcontractors will use appropriate alternative dispute resolution mechanisms to resolve payment disputes. You may specify the nature of such mechanisms.

(2) A contract clause providing that the prime contractor will not be reimbursed for work performed by subcontractors unless and until the prime contractor ensures that the subcontractors are promptly paid for the work they have performed.

(3) Other mechanisms, consistent with this part and applicable state and local law, to ensure that DBEs and other contractors are fully and promptly paid.

[68 FR 35553, June 16, 2003]

§26.31 What information must you include in your DBE directory?

(a) In the directory required under §26.81(g) of this Part, you must list all firms eligible to participate as DBEs in your program. In the listing for each firm, you must include its address, phone number, and the types of work the firm has been certified to perform as a DBE.

(b) You must list each type of work for which a firm is eligible to be certified by using the most specific NAICS code available to describe each type of work. You must make any changes to your current directory entries necessary to meet the requirement of this paragraph (a) by August 26, 2011.

[76 FR 5096, Jan. 28, 2011]

§26.33 What steps must a recipient take to address overconcentration of DBEs in certain types of work?

(a) If you determine that DBE firms are so overconcentrated in a certain type of work as to unduly burden the opportunity of non-DBE firms to participate in this type of work, you must devise appropriate measures to address this overconcentration.

(b) These measures may include the use of incentives, technical assistance, business development programs, mentor-protégé programs, and other appropriate measures designed to assist DBEs in performing work outside of the specific field in which you have determined that non-DBEs are unduly burdened. You may also consider varying your use of contract goals, to the extent consistent with §26.51, to ensure that non-DBEs are not unfairly prevented from competing for subcontracts.

(c) You must obtain the approval of the concerned DOT operating administration for your determination of overconcentration and the measures you devise to address it. Once approved, the measures become part of your DBE program.

§26.35 What role do business development and mentor-protégé programs have in the DBE program?

(a) You may or, if an operating administration directs you to, you must establish a DBE business development program (BDP) to assist firms in gaining the ability to compete successfully in the marketplace outside the DBE program. You may require a DBE firm, as a condition of receiving assistance through the BDP, to agree to terminate its participation in the DBE program after a certain time has passed or certain

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objectives have been reached. See Appendix C of this part for guidance on administering BDP programs.

(b) As part of a BDP or separately, you may establish a “mentor-protégé” program, in which another DBE or non-DBE firm is the principal source of business development assistance to a DBE firm.

(1) Only firms you have certified as DBEs before they are proposed for participation in a mentor-protégé program are eligible to participate in the mentor-protégé program.

(2) During the course of the mentor-protégé relationship, you must:

(i) Not award DBE credit to a non-DBE mentor firm for using its own protégé firm for more than one half of its goal on any contract let by the recipient; and

(ii) Not award DBE credit to a non-DBE mentor firm for using its own protégé firm for more than every other contract performed by the protégé firm.

(3) For purposes of making determinations of business size under this part, you must not treat protégé firms as affiliates of mentor firms, when both firms are participating under an approved mentor-protégé program. See Appendix D of this part for guidance concerning the operation of mentor-protégé programs.

(c) Your BDPs and mentor-protégé programs must be approved by the concerned operating administration before you implement them. Once approved, they become part of your DBE program.

§26.37 What are a recipient's responsibilities for monitoring the performance of other program participants?

(a) You must implement appropriate mechanisms to ensure compliance with the part's requirements by all program participants (e.g., applying legal and contract remedies available under Federal, state and local law). You must set forth these mechanisms in your DBE program.

(b) Your DBE program must also include a monitoring and enforcement mechanism to ensure that work committed to DBEs at contract award or subsequently (e.g., as the result of modification to the contract) is actually performed by the DBEs to which the work was committed. This mechanism must include a written certification that you have reviewed contracting records and monitored work sites in your state for this purpose. The monitoring to which this paragraph refers may be conducted in conjunction with monitoring of contract performance for other purposes (e.g., close-out reviews for a contract).

(c) This mechanism must provide for a running tally of actual DBE attainments (e.g., payments actually made to DBE firms), including a means of comparing these attainments to commitments. In your reports of DBE participation to the Department, you must display both commitments and attainments.

[64 FR 5126, Feb. 2, 1999, as amended at 65 FR 68951, Nov. 15, 2000; 68 FR 35554, June 16, 2003; 76 FR 5097, Jan. 28, 2011]

§26.39 Fostering small business participation.

(a) Your DBE program must include an element to structure contracting requirements to facilitate competition by small business concerns, taking all reasonable steps to eliminate obstacles to their participation, including unnecessary and unjustified bundling of contract requirements that may preclude

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small business participation in procurements as prime contractors or subcontractors.

(b) This element must be submitted to the appropriate DOT operating administration for approval as a part of your DBE program by February 28, 2012. As part of this program element you may include, but are not limited to, the following strategies:

(1) Establishing a race-neutral small business set-aside for prime contracts under a stated amount (*e.g.*, \$1 million).

(2) In multi-year design-build contracts or other large contracts (*e.g.*, for “megaprojects”) requiring bidders on the prime contract to specify elements of the contract or specific subcontracts that are of a size that small businesses, including DBEs, can reasonably perform.

(3) On prime contracts not having DBE contract goals, requiring the prime contractor to provide subcontracting opportunities of a size that small businesses, including DBEs, can reasonably perform, rather than self-performing all the work involved.

(4) Identifying alternative acquisition strategies and structuring procurements to facilitate the ability of consortia or joint ventures consisting of small businesses, including DBEs, to compete for and perform prime contracts.

(5) To meet the portion of your overall goal you project to meet through race-neutral measures, ensuring that a reasonable number of prime contracts are of a size that small businesses, including DBEs, can reasonably perform.

(c) You must actively implement your program elements to foster small business participation. Doing so is a requirement of good faith implementation of your DBE program.

[76 FR 5097, Jan. 28, 2011]

Subpart C—Goals, Good Faith Efforts, and Counting

§26.41 What is the role of the statutory 10 percent goal in this program?

(a) The statutes authorizing this program provide that, except to the extent the Secretary determines otherwise, not less than 10 percent of the authorized funds are to be expended with DBEs.

(b) This 10 percent goal is an aspirational goal at the national level, which the Department uses as a tool in evaluating and monitoring DBEs' opportunities to participate in DOT-assisted contracts.

(c) The national 10 percent goal does not authorize or require recipients to set overall or contract goals at the 10 percent level, or any other particular level, or to take any special administrative steps if their goals are above or below 10 percent.

§26.43 Can recipients use set-asides or quotas as part of this program?

(a) You are not permitted to use quotas for DBEs on DOT-assisted contracts subject to this part.

(b) You may not set-aside contracts for DBEs on DOT-assisted contracts subject to this part, except

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that, in limited and extreme circumstances, you may use set-asides when no other method could be reasonably expected to redress egregious instances of discrimination.

§26.45 How do recipients set overall goals?

(a)(1) Except as provided in paragraph (a)(2) of this section, you must set an overall goal for DBE participation in your DOT-assisted contracts.

(2) If you are a FTA or FAA recipient who reasonably anticipates awarding (excluding transit vehicle purchases) \$250,000 or less in FTA or FAA funds in prime contracts in a Federal fiscal year, you are not required to develop overall goals for FTA or FAA respectively for that fiscal year. However, if you have an existing DBE program, it must remain in effect and you must seek to fulfill the objectives outlined in §26.1.

(b) Your overall goal must be based on demonstrable evidence of the availability of ready, willing and able DBEs relative to all businesses ready, willing and able to participate on your DOT-assisted contracts (hereafter, the “relative availability of DBEs”). The goal must reflect your determination of the level of DBE participation you would expect absent the effects of discrimination. You cannot simply rely on either the 10 percent national goal, your previous overall goal or past DBE participation rates in your program without reference to the relative availability of DBEs in your market.

(c) *Step 1.* You must begin your goal setting process by determining a base figure for the relative availability of DBEs. The following are examples of approaches that you may take toward determining a base figure. These examples are provided as a starting point for your goal setting process. Any percentage figure derived from one of these examples should be considered a basis from which you begin when examining all evidence available in your jurisdiction. These examples are not intended as an exhaustive list. Other methods or combinations of methods to determine a base figure may be used, subject to approval by the concerned operating administration.

(1) *Use DBE Directories and Census Bureau Data.* Determine the number of ready, willing and able DBEs in your market from your DBE directory. Using the Census Bureau's County Business Pattern (CBP) data base, determine the number of all ready, willing and able businesses available in your market that perform work in the same NAICS codes. (Information about the CBP data base may be obtained from the Census Bureau at their web site, www.census.gov/epcd/cbp/view/cbpview.html.) Divide the number of DBEs by the number of all businesses to derive a base figure for the relative availability of DBEs in your market.

(2) *Use a bidders list.* Determine the number of DBEs that have bid or quoted (successful and unsuccessful) on your DOT-assisted prime contracts or subcontracts in the past three years. Determine the number of all businesses that have bid or quoted (successful and unsuccessful) on prime or subcontracts in the same time period. Divide the number of DBE bidders and quoters by the number of all businesses to derive a base figure for the relative availability of DBEs in your market. When using this approach, you must establish a mechanism (documented in your goal submission) to directly capture data on DBE and non-DBE prime and subcontractors that submitted bids or quotes on your DOT-assisted contracts.

(3) *Use data from a disparity study.* Use a percentage figure derived from data in a valid, applicable disparity study.

(4) *Use the goal of another DOT recipient.* If another DOT recipient in the same, or substantially similar, market has set an overall goal in compliance with this rule, you may use that goal as a base figure

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for your goal.

(5) *Alternative methods.* Except as otherwise provided in this paragraph, you may use other methods to determine a base figure for your overall goal. Any methodology you choose must be based on demonstrable evidence of local market conditions and be designed to ultimately attain a goal that is rationally related to the relative availability of DBEs in your market. The exclusive use of a list of prequalified contractors or plan holders, or a bidders list that does not comply with the requirements of paragraph (c)(2) of this section, is not an acceptable alternative means of determining the availability of DBEs.

(d) *Step 2.* Once you have calculated a base figure, you must examine all of the evidence available in your jurisdiction to determine what adjustment, if any, is needed to the base figure to arrive at your overall goal. If the evidence does not suggest an adjustment is necessary, then no adjustment shall be made.

(1) There are many types of evidence that must be considered when adjusting the base figure. These include:

(i) The current capacity of DBEs to perform work in your DOT-assisted contracting program, as measured by the volume of work DBEs have performed in recent years;

(ii) Evidence from disparity studies conducted anywhere within your jurisdiction, to the extent it is not already accounted for in your base figure; and

(iii) If your base figure is the goal of another recipient, you must adjust it for differences in your local market and your contracting program.

(2) If available, you must consider evidence from related fields that affect the opportunities for DBEs to form, grow and compete. These include, but are not limited to:

(i) Statistical disparities in the ability of DBEs to get the financing, bonding and insurance required to participate in your program;

(ii) Data on employment, self-employment, education, training and union apprenticeship programs, to the extent you can relate it to the opportunities for DBEs to perform in your program.

(3) If you attempt to make an adjustment to your base figure to account for the continuing effects of past discrimination (often called the “but for” factor) or the effects of an ongoing DBE program, the adjustment must be based on demonstrable evidence that is logically and directly related to the effect for which the adjustment is sought.

(e) Once you have determined a percentage figure in accordance with paragraphs (c) and (d) of this section, you should express your overall goal as follows:

(1) If you are an FHWA recipient, as a percentage of all Federal-aid highway funds you will expend in FHWA-assisted contracts in the forthcoming three fiscal years.

(2) If you are an FTA or FAA recipient, as a percentage of all FT or FAA funds (exclusive of FTA funds to be used for the purchase of transit vehicles) that you will expend in FTA or FAA-assisted contracts in the three forthcoming fiscal years.

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(3) In appropriate cases, the FHWA, FTA or FAA Administrator may permit or require you to express your overall goal as a percentage of funds for a particular grant or project or group of grants and/or projects, including entire projects. Like other overall goals, a project goal may be adjusted to reflect changed circumstances, with the concurrence of the appropriate operating administration.

(i) A project goal is an overall goal, and must meet all the substantive and procedural requirements of this section pertaining to overall goals.

(ii) A project goal covers the entire length of the project to which it applies.

(iii) The project goal should include a projection of the DBE participation anticipated to be obtained during each fiscal year covered by the project goal.

(iv) The funds for the project to which the project goal pertains are separated from the base from which your regular overall goal, applicable to contracts not part of the project covered by a project goal, is calculated.

(f)(1)(i) If you set your overall goal on a fiscal year basis, you must submit it to the applicable DOT operating administration by August 1 at three-year intervals, based on a schedule established by the FHWA, FTA, or FAA, as applicable, and posted on that agency's Web site.

(ii) You may adjust your three-year overall goal during the three-year period to which it applies, in order to reflect changed circumstances. You must submit such an adjustment to the concerned operating administration for review and approval.

(iii) The operating administration may direct you to undertake a review of your goal if necessary to ensure that the goal continues to fit your circumstances appropriately.

(iv) While you are required to submit an overall goal to FHWA, FTA, or FAA only every three years, the overall goal and the provisions of Sec. 26.47(c) apply to each year during that three-year period.

(v) You may make, for informational purposes, projections of your expected DBE achievements during each of the three years covered by your overall goal. However, it is the overall goal itself, and not these informational projections, to which the provisions of section 26.47(c) of this part apply.

(2) If you are a recipient and set your overall goal on a project or grant basis as provided in paragraph (e)(3) of this section, you must submit the goal for review at a time determined by the FHWA, FTA or FAA Administrator, as applicable.

(3) You must include with your overall goal submission a description of the methodology you used to establish the goal, including your base figure and the evidence with which it was calculated, and the adjustments you made to the base figure and the evidence you relied on for the adjustments. You should also include a summary listing of the relevant available evidence in your jurisdiction and, where applicable, an explanation of why you did not use that evidence to adjust your base figure. You must also include your projection of the portions of the overall goal you expect to meet through race-neutral and race-conscious measures, respectively (*see* 26.51(c)).

(4) You are not required to obtain prior operating administration concurrence with your overall goal. However, if the operating administration's review suggests that your overall goal has not been correctly

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calculated or that your method for calculating goals is inadequate, the operating administration may, after consulting with you, adjust your overall goal or require that you do so. The adjusted overall goal is binding on you. In evaluating the adequacy or soundness of the methodology used to derive the overall goal, the operating administration will be guided by goal setting principles and best practices identified by the Department in guidance issued pursuant to §26.9.

(5) If you need additional time to collect data or take other steps to develop an approach to setting overall goals, you may request the approval of the concerned operating administration for an interim goal and/or goal-setting mechanism. Such a mechanism must:

(i) Reflect the relative availability of DBEs in your local market to the maximum extent feasible given the data available to you; and

(ii) Avoid imposing undue burdens on non-DBEs.

(6) Timely submission and operating administration approval of your overall goal is a condition of eligibility for DOT financial assistance.

(7) If you fail to establish and implement goals as provided in this section, you are not in compliance with this part. If you establish and implement goals in a way different from that provided in this part, you are not in compliance with this part. If you fail to comply with this requirement, you are not eligible to receive DOT financial assistance.

(g)(1) In establishing an overall goal, you must provide for consultation and publication. This includes:

(i) Consultation with minority, women's and general contractor groups, community organizations, and other officials or organizations which could be expected to have information concerning the availability of disadvantaged and non-disadvantaged businesses, the effects of discrimination on opportunities for DBEs, and your efforts to establish a level playing field for the participation of DBEs. The consultation must include a scheduled, direct, interactive exchange (e.g., a face-to-face meeting, video conference, teleconference) with as many interested stakeholders as possible focused on obtaining information relevant to the goal setting process, and it must occur before you are required to submit your methodology to the operating administration for review pursuant to paragraph (f) of this section. You must document in your goal submission the consultation process you engaged in. Notwithstanding paragraph (f)(4) of this section, you may not implement your proposed goal until you have complied with this requirement.

(ii) A published notice announcing your proposed overall goal before submission to the operating administration on August 1st. The notice must be posted on your official Internet Web site and may be posted in any other sources (e.g., minority-focused media, trade association publications). If the proposed goal changes following review by the operating administration, the revised goal must be posted on your official Internet Web site.

(2) At your discretion, you may inform the public that the proposed overall goal and its rationale are available for inspection during normal business hours at your principal office and for a 30-day comment period. Notice of the comment period must include addresses to which comments may be sent. The public comment period will not extend the August 1st deadline set in paragraph (f) of this section.

(h) Your overall goals must provide for participation by all certified DBEs and must not be subdivided into group-specific goals.

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[64 FR 5126, Feb. 2, 1999, as amended at 64 FR 34570, June 28, 1999; 65 FR 68951, Nov. 15, 2000; 68 FR 35553, June 16, 2003; 75 FR 5536, Feb. 3, 2010; 76 FR 5097, Jan. 28, 2011; 79 FR 59593, Oct. 2, 2014]

§26.47 Can recipients be penalized for failing to meet overall goals?

(a) You cannot be penalized, or treated by the Department as being in noncompliance with this rule, because your DBE participation falls short of your overall goal, unless you have failed to administer your program in good faith.

(b) If you do not have an approved DBE program or overall goal, or if you fail to implement your program in good faith, you are in noncompliance with this part.

(c) If the awards and commitments shown on your Uniform Report of Awards or Commitments and Payments at the end of any fiscal year are less than the overall goal applicable to that fiscal year, you must do the following in order to be regarded by the Department as implementing your DBE program in good faith:

(1) Analyze in detail the reasons for the difference between the overall goal and your awards and commitments in that fiscal year;

(2) Establish specific steps and milestones to correct the problems you have identified in your analysis and to enable you to meet fully your goal for the new fiscal year;

(3)(i) If you are a state highway agency; one of the 50 largest transit authorities as determined by the FTA; or an Operational Evolution Partnership Plan airport or other airport designated by the FAA, you must submit, within 90 days of the end of the fiscal year, the analysis and corrective actions developed under paragraphs (c)(1) and (2) of this section to the appropriate operating administration for approval. If the operating administration approves the report, you will be regarded as complying with the requirements of this section for the remainder of the fiscal year.

(ii) As a transit authority or airport not meeting the criteria of paragraph (c)(3)(i) of this section, you must retain analysis and corrective actions in your records for three years and make it available to FTA or FAA on request for their review.

(4) FHWA, FTA, or FAA may impose conditions on the recipient as part of its approval of the recipient's analysis and corrective actions including, but not limited to, modifications to your overall goal methodology, changes in your race-conscious/race-neutral split, or the introduction of additional race-neutral or race-conscious measures.

(5) You may be regarded as being in noncompliance with this Part, and therefore subject to the remedies in §26.103 or §26.105 of this part and other applicable regulations, for failing to implement your DBE program in good faith if any of the following things occur:

(i) You do not submit your analysis and corrective actions to FHWA, FTA, or FAA in a timely manner as required under paragraph (c)(3) of this section;

(ii) FHWA, FTA, or FAA disapproves your analysis or corrective actions; or

(iii) You do not fully implement the corrective actions to which you have committed or conditions

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that FHWA, FTA, or FAA has imposed following review of your analysis and corrective actions.

(d) If, as recipient, your Uniform Report of DBE Awards or Commitments and Payments or other information coming to the attention of FTA, FHWA, or FAA, demonstrates that current trends make it unlikely that you will achieve DBE awards and commitments that would be necessary to allow you to meet your overall goal at the end of the fiscal year, FHWA, FTA, or FAA, as applicable, may require you to make further good faith efforts, such as by modifying your race-conscious/race-neutral split or introducing additional race-neutral or race-conscious measures for the remainder of the fiscal year.

[64 FR 5126, Feb. 2, 1999, as amended at 76 FR 5098, Jan. 28, 2011]

§26.49 How are overall goals established for transit vehicle manufacturers?

(a) If you are an FTA recipient, you must require in your DBE program that each transit vehicle manufacturer, as a condition of being authorized to bid or propose on FTA-assisted transit vehicle procurements, certify that it has complied with the requirements of this section. You do not include FTA assistance used in transit vehicle procurements in the base amount from which your overall goal is calculated.

(1) Only those transit vehicle manufacturers listed on FTA's certified list of Transit Vehicle Manufacturers, or that have submitted a goal methodology to FTA that has been approved or has not been disapproved, at the time of solicitation are eligible to bid.

(2) A TVM's failure to implement the DBE Program in the manner as prescribed in this section and throughout 49 CFR part 26 will be deemed as non-compliance, which will result in removal from FTA's certified TVMs list, resulting in that manufacturer becoming ineligible to bid.

(3) FTA recipient's failure to comply with the requirements set forth in paragraph (a) of this section may result in formal enforcement action or appropriate sanction as determined by FTA (e.g., FTA declining to participate in the vehicle procurement).

(4) FTA recipients are required to submit within 30 days of making an award, the name of the successful bidder, and the total dollar value of the contract in the manner prescribed in the grant agreement.

(b) If you are a transit vehicle manufacturer, you must establish and submit for FTA's approval an annual overall percentage goal.

(1) In setting your overall goal, you should be guided, to the extent applicable, by the principles underlying §26.45. The base from which you calculate this goal is the amount of FTA financial assistance included in transit vehicle contracts you will bid on during the fiscal year in question, less the portion(s) attributable to the manufacturing process performed entirely by the transit vehicle manufacturer's own forces.

(i) You must consider and include in your base figure all domestic contracting opportunities made available to non-DBE firms; and

(ii) You must exclude from this base figure funds attributable to work performed outside the United States and its territories, possessions, and commonwealths.

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(iii) In establishing an overall goal, the transit vehicle manufacturer must provide for public participation. This includes consultation with interested parties consistent with §26.45(g).

(2) The requirements of this part with respect to submission and approval of overall goals apply to you as they do to recipients.

(c) Transit vehicle manufacturers awarded must comply with the reporting requirements of §26.11 of this part including the requirement to submit the Uniform Report of Awards or Commitments and Payments, in order to remain eligible to bid on FTA assisted transit vehicle procurements.

(d) Transit vehicle manufacturers must implement all other applicable requirements of this part, except those relating to UCPs and DBE certification procedures.

(e) If you are an FHWA or FAA recipient, you may, with FHWA or FAA approval, use the procedures of this section with respect to procurements of vehicles or specialized equipment. If you choose to do so, then the manufacturers of this equipment must meet the same requirements (including goal approval by FHWA or FAA) as transit vehicle manufacturers must meet in FTA-assisted procurements.

(f) As a recipient you may, with FTA approval, establish project-specific goals for DBE participation in the procurement of transit vehicles in lieu of complying through the procedures of this section.

[79 FR 59594, Oct. 2, 2014]

§26.51 What means do recipients use to meet overall goals?

(a) You must meet the maximum feasible portion of your overall goal by using race-neutral means of facilitating race-neutral DBE participation. Race-neutral DBE participation includes any time a DBE wins a prime contract through customary competitive procurement procedures or is awarded a subcontract on a prime contract that does not carry a DBE contract goal.

(b) Race-neutral means include, but are not limited to, the following:

(1) Arranging solicitations, times for the presentation of bids, quantities, specifications, and delivery schedules in ways that facilitate participation by DBEs and other small businesses and by making contracts more accessible to small businesses, by means such as those provided under §26.39 of this part.

(2) Providing assistance in overcoming limitations such as inability to obtain bonding or financing (e.g., by such means as simplifying the bonding process, reducing bonding requirements, eliminating the impact of surety costs from bids, and providing services to help DBEs, and other small businesses, obtain bonding and financing);

(3) Providing technical assistance and other services;

(4) Carrying out information and communications programs on contracting procedures and specific contract opportunities (e.g., ensuring the inclusion of DBEs, and other small businesses, on recipient mailing lists for bidders; ensuring the dissemination to bidders on prime contracts of lists of potential subcontractors; provision of information in languages other than English, where appropriate);

(5) Implementing a supportive services program to develop and improve immediate and long-term

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business management, record keeping, and financial and accounting capability for DBEs and other small businesses;

(6) Providing services to help DBEs, and other small businesses, improve long-term development, increase opportunities to participate in a variety of kinds of work, handle increasingly significant projects, and achieve eventual self-sufficiency;

(7) Establishing a program to assist new, start-up firms, particularly in fields in which DBE participation has historically been low;

(8) Ensuring distribution of your DBE directory, through print and electronic means, to the widest feasible universe of potential prime contractors; and

(9) Assisting DBEs, and other small businesses, to develop their capability to utilize emerging technology and conduct business through electronic media.

(c) Each time you submit your overall goal for review by the concerned operating administration, you must also submit your projection of the portion of the goal that you expect to meet through race-neutral means and your basis for that projection. This projection is subject to approval by the concerned operating administration, in conjunction with its review of your overall goal.

(d) You must establish contract goals to meet any portion of your overall goal you do not project being able to meet using race-neutral means.

(e) The following provisions apply to the use of contract goals:

(1) You may use contract goals only on those DOT-assisted contracts that have subcontracting possibilities.

(2) You are not required to set a contract goal on every DOT-assisted contract. You are not required to set each contract goal at the same percentage level as the overall goal. The goal for a specific contract may be higher or lower than that percentage level of the overall goal, depending on such factors as the type of work involved, the location of the work, and the availability of DBEs for the work of the particular contract. However, over the period covered by your overall goal, you must set contract goals so that they will cumulatively result in meeting any portion of your overall goal you do not project being able to meet through the use of race-neutral means.

(3) Operating administration approval of each contract goal is not necessarily required. However, operating administrations may review and approve or disapprove any contract goal you establish.

(4) Your contract goals must provide for participation by all certified DBEs and must not be subdivided into group-specific goals.

(f) To ensure that your DBE program continues to be narrowly tailored to overcome the effects of discrimination, you must adjust your use of contract goals as follows:

(1) If your approved projection under paragraph (c) of this section estimates that you can meet your entire overall goal for a given year through race-neutral means, you must implement your program without setting contract goals during that year, unless it becomes necessary in order meet your overall goal.

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Example to paragraph (f)(1): Your overall goal for Year 1 is 12 percent. You estimate that you can obtain 12 percent or more DBE participation through the use of race-neutral measures, without any use of contract goals. In this case, you do not set any contract goals for the contracts that will be performed in Year 1. However, if part way through Year 1, your DBE awards or commitments are not at a level that would permit you to achieve your overall goal for Year 1, you could begin setting race-conscious DBE contract goals during the remainder of the year as part of your obligation to implement your program in good faith.

(2) If, during the course of any year in which you are using contract goals, you determine that you will exceed your overall goal, you must reduce or eliminate the use of contract goals to the extent necessary to ensure that the use of contract goals does not result in exceeding the overall goal. If you determine that you will fall short of your overall goal, then you must make appropriate modifications in your use of race-neutral and/or race-conscious measures to allow you to meet the overall goal.

Example to paragraph (f)(2): In Year II, your overall goal is 12 percent. You have estimated that you can obtain 5 percent DBE participation through use of race-neutral measures. You therefore plan to obtain the remaining 7 percent participation through use of DBE goals. By September, you have already obtained 11 percent DBE participation for the year. For contracts let during the remainder of the year, you use contract goals only to the extent necessary to obtain an additional one percent DBE participation. However, if you determine in September that your participation for the year is likely to be only 8 percent total, then you would increase your use of race-neutral and/or race-conscious means during the remainder of the year in order to achieve your overall goal.

(3) If the DBE participation you have obtained by race-neutral means alone meets or exceeds your overall goals for two consecutive years, you are not required to make a projection of the amount of your goal you can meet using such means in the next year. You do not set contract goals on any contracts in the next year. You continue using only race-neutral means to meet your overall goals unless and until you do not meet your overall goal for a year.

Example to paragraph (f)(3): Your overall goal for Years I and Year II is 10 percent. The DBE participation you obtain through race-neutral measures alone is 10 percent or more in each year. (For this purpose, it does not matter whether you obtained additional DBE participation through using contract goals in these years.) In Year III and following years, you do not need to make a projection under paragraph (c) of this section of the portion of your overall goal you expect to meet using race-neutral means. You simply use race-neutral means to achieve your overall goals. However, if in Year VI your DBE participation falls short of your overall goal, then you must make a paragraph (c) projection for Year VII and, if necessary, resume use of contract goals in that year.

(4) If you obtain DBE participation that exceeds your overall goal in two consecutive years through the use of contract goals (*i.e.*, not through the use of race-neutral means alone), you must reduce your use of contract goals proportionately in the following year.

Example to paragraph (f)(4): In Years I and II, your overall goal is 12 percent, and you obtain 14 and 16 percent DBE participation, respectively. You have exceeded your goals over the two-year period by an average of 25 percent. In Year III, your overall goal is again 12 percent, and your paragraph (c) projection estimates that you will obtain 4 percent DBE participation through race-neutral means and 8 percent through contract goals. You then reduce the contract goal projection by 25 percent (*i.e.*, from 8 to 6 percent) and set contract goals accordingly during the year. If in Year III you obtain 11 percent participation, you do not

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use this contract goal adjustment mechanism for Year IV, because there have not been two *consecutive* years of exceeding overall goals.

(g) In any year in which you project meeting part of your goal through race-neutral means and the remainder through contract goals, you must maintain data separately on DBE achievements in those contracts with and without contract goals, respectively. You must report this data to the concerned operating administration as provided in §26.11.

[64 FR 5126, Feb. 2, 1999, as amended at 76 FR 5098, Jan. 28, 2011; 79 FR 59595, Oct. 2, 2014]

§26.53 What are the good faith efforts procedures recipients follow in situations where there are contract goals?

(a) When you have established a DBE contract goal, you must award the contract only to a bidder/offeror who makes good faith efforts to meet it. You must determine that a bidder/offeror has made good faith efforts if the bidder/offeror does either of the following things:

(1) Documents that it has obtained enough DBE participation to meet the goal; or

(2) Documents that it made adequate good faith efforts to meet the goal, even though it did not succeed in obtaining enough DBE participation to do so. If the bidder/offeror does document adequate good faith efforts, you must not deny award of the contract on the basis that the bidder/offeror failed to meet the goal. See Appendix A of this part for guidance in determining the adequacy of a bidder/offeror's good faith efforts.

(b) In your solicitations for DOT-assisted contracts for which a contract goal has been established, you must require the following:

(1) Award of the contract will be conditioned on meeting the requirements of this section;

(2) All bidders or offerors will be required to submit the following information to the recipient, at the time provided in paragraph (b)(3) of this section:

(i) The names and addresses of DBE firms that will participate in the contract;

(ii) A description of the work that each DBE will perform. To count toward meeting a goal, each DBE firm must be certified in a NAICS code applicable to the kind of work the firm would perform on the contract;

(iii) The dollar amount of the participation of each DBE firm participating;

(iv) Written documentation of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet a contract goal; and

(v) Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment.

(vi) If the contract goal is not met, evidence of good faith efforts (see Appendix A of this part). The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote

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submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract; and

(3)(i) At your discretion, the bidder/offeror must present the information required by paragraph (b)(2) of this section—

(A) Under sealed bid procedures, as a matter of responsiveness, or with initial proposals, under contract negotiation procedures; or

(B) No later than 7 days after bid opening as a matter of responsibility. The 7 days shall be reduced to 5 days beginning January 1, 2017.

(ii) Provided that, in a negotiated procurement, including a design-build procurement, the bidder/offeror may make a contractually binding commitment to meet the goal at the time of bid submission or the presentation of initial proposals but provide the information required by paragraph (b)(2) of this section before the final selection for the contract is made by the recipient.

(c) You must make sure all information is complete and accurate and adequately documents the bidder/offeror's good faith efforts before committing yourself to the performance of the contract by the bidder/offeror.

(d) If you determine that the apparent successful bidder/offeror has failed to meet the requirements of paragraph (a) of this section, you must, before awarding the contract, provide the bidder/offeror an opportunity for administrative reconsideration.

(1) As part of this reconsideration, the bidder/offeror must have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so.

(2) Your decision on reconsideration must be made by an official who did not take part in the original determination that the bidder/offeror failed to meet the goal or make adequate good faith efforts to do so.

(3) The bidder/offeror must have the opportunity to meet in person with your reconsideration official to discuss the issue of whether it met the goal or made adequate good faith efforts to do so.

(4) You must send the bidder/offeror a written decision on reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so.

(5) The result of the reconsideration process is not administratively appealable to the Department of Transportation.

(e) In a “design-build” or “turnkey” contracting situation, in which the recipient lets a master contract to a contractor, who in turn lets subsequent subcontracts for the work of the project, a recipient may establish a goal for the project. The master contractor then establishes contract goals, as appropriate, for the subcontracts it lets. Recipients must maintain oversight of the master contractor's activities to ensure that they are conducted consistent with the requirements of this part.

(f)(1)(i) You must require that a prime contractor not terminate a DBE subcontractor listed in response to paragraph (b)(2) of this section (or an approved substitute DBE firm) without your prior written consent.

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This includes, but is not limited to, instances in which a prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

(ii) You must include in each prime contract a provision stating:

(A) That the contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains your written consent as provided in this paragraph (f); and

(B) That, unless your consent is provided under this paragraph (f), the contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

(2) You may provide such written consent only if you agree, for reasons stated in your concurrence document, that the prime contractor has good cause to terminate the DBE firm.

(3) For purposes of this paragraph, good cause includes the following circumstances:

(i) The listed DBE subcontractor fails or refuses to execute a written contract;

(ii) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;

(iii) The listed DBE subcontractor fails or refuses to meet the prime contractor's reasonable, nondiscriminatory bond requirements.

(iv) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(v) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable state law;

(vii) You have determined that the listed DBE subcontractor is not a responsible contractor;

(vi) The listed DBE subcontractor voluntarily withdraws from the project and provides to you written notice of its withdrawal;

(vii) The listed DBE is ineligible to receive DBE credit for the type of work required;

(viii) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;

(ix) Other documented good cause that you determine compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime contractor can self-perform the work for which the DBE contractor was engaged or so that the prime contractor can substitute another DBE or non-DBE contractor after contract award.

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(4) Before transmitting to you its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to you, of its intent to request to terminate and/or substitute, and the reason for the request.

(5) The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise you and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why you should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (*e.g.*, safety), you may provide a response period shorter than five days.

(6) In addition to post-award terminations, the provisions of this section apply to preaward deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

(g) When a DBE subcontractor is terminated as provided in paragraph (f) of this section, or fails to complete its work on the contract for any reason, you must require the prime contractor to make good faith efforts to find another DBE subcontractor to substitute for the original DBE. These good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the contract as the DBE that was terminated, to the extent needed to meet the contract goal you established for the procurement. The good faith efforts shall be documented by the contractor. If the recipient requests documentation under this provision, the contractor shall submit the documentation within 7 days, which may be extended for an additional 7 days if necessary at the request of the contractor, and the recipient shall provide a written determination to the contractor stating whether or not good faith efforts have been demonstrated.

(h) You must include in each prime contract the contract clause required by §26.13(b) stating that failure by the contractor to carry out the requirements of this part is a material breach of the contract and may result in the termination of the contract or such other remedies set forth in that section you deem appropriate if the prime contractor fails to comply with the requirements of this section.

(i) You must apply the requirements of this section to DBE bidders/offerors for prime contracts. In determining whether a DBE bidder/offeror for a prime contract has met a contract goal, you count the work the DBE has committed to performing with its own forces as well as the work that it has committed to be performed by DBE subcontractors and DBE suppliers.

(j) You must require the contractor awarded the contract to make available upon request a copy of all DBE subcontracts. The subcontractor shall ensure that all subcontracts or an agreement with DBEs to supply labor or materials require that the subcontract and all lower tier subcontractors be performed in accordance with this part's provisions.

[64 FR 5126, Feb. 2, 1999, as amended at 76 FR 5098, Jan. 28, 2011; 79 FR 59595, Oct. 2, 2014]

§26.55 How is DBE participation counted toward goals?

(a) When a DBE participates in a contract, you count only the value of the work actually performed by the DBE toward DBE goals.

(1) Count the entire amount of that portion of a construction contract (or other contract not covered by paragraph (a)(2) of this section) that is performed by the DBE's own forces. Include the cost of supplies and materials obtained by the DBE for the work of the contract, including supplies purchased or equipment leased by the DBE (except supplies and equipment the DBE subcontractor purchases or leases from the prime contractor or its affiliate).

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(2) Count the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, toward DBE goals, provided you determine the fee to be reasonable and not excessive as compared with fees customarily allowed for similar services.

(3) When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward DBE goals only if the DBE's subcontractor is itself a DBE. Work that a DBE subcontracts to a non-DBE firm does not count toward DBE goals.

(b) When a DBE performs as a participant in a joint venture, count a portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work of the contract that the DBE performs with its own forces toward DBE goals.

(c) Count expenditures to a DBE contractor toward DBE goals only if the DBE is performing a commercially useful function on that contract.

(1) A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, you must evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and other relevant factors.

(2) A DBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation. In determining whether a DBE is such an extra participant, you must examine similar transactions, particularly those in which DBEs do not participate.

(3) If a DBE does not perform or exercise responsibility for at least 30 percent of the total cost of its contract with its own work force, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, you must presume that it is not performing a commercially useful function.

(4) When a DBE is presumed not to be performing a commercially useful function as provided in paragraph (c)(3) of this section, the DBE may present evidence to rebut this presumption. You may determine that the firm is performing a commercially useful function given the type of work involved and normal industry practices.

(5) Your decisions on commercially useful function matters are subject to review by the concerned operating administration, but are not administratively appealable to DOT.

(d) Use the following factors in determining whether a DBE trucking company is performing a commercially useful function:

(1) The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the

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purpose of meeting DBE goals.

(2) The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

(3) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.

(4) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

(5) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE that leases trucks equipped with drivers from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE leased trucks equipped with drivers not to exceed the value of transportation services on the contract provided by DBE-owned trucks or leased trucks with DBE employee drivers. Additional participation by non-DBE owned trucks equipped with drivers receives credit only for the fee or commission it receives as a result of the lease arrangement. If a recipient chooses this approach, it must obtain written consent from the appropriate DOT operating administration.

Example to paragraph (d)(5): DBE Firm X uses two of its own trucks on a contract. It leases two trucks from DBE Firm Y and six trucks equipped with drivers from non-DBE Firm Z. DBE credit would be awarded for the total value of transportation services provided by Firm X and Firm Y, and may also be awarded for the total value of transportation services provided by four of the six trucks provided by Firm Z. In all, full credit would be allowed for the participation of eight trucks. DBE credit could be awarded only for the fees or commissions pertaining to the remaining trucks Firm X receives as a result of the lease with Firm Z.

(6) The DBE may lease trucks without drivers from a non-DBE truck leasing company. If the DBE leases trucks from a non-DBE truck leasing company and uses its own employees as drivers, it is entitled to credit for the total value of these hauling services.

Example to paragraph (d)(6): DBE Firm X uses two of its own trucks on a contract. It leases two additional trucks from non-DBE Firm Z. Firm X uses its own employees to drive the trucks leased from Firm Z. DBE credit would be awarded for the total value of the transportation services provided by all four trucks.

(7) For purposes of this paragraph (d), a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

(e) Count expenditures with DBEs for materials or supplies toward DBE goals as provided in the following:

(1)(i) If the materials or supplies are obtained from a DBE manufacturer, count 100 percent of the cost of the materials or supplies toward DBE goals.

(ii) For purposes of this paragraph (e)(1), a manufacturer is a firm that operates or maintains a factory

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or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.

(2)(i) If the materials or supplies are purchased from a DBE regular dealer, count 60 percent of the cost of the materials or supplies toward DBE goals.

(ii) For purposes of this section, a regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

(A) To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question.

(B) A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided in this paragraph (e)(2)(ii) if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract-by-contract basis.

(C) Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers within the meaning of this paragraph (e)(2).

(3) With respect to materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals, provided you determine the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. Do not count any portion of the cost of the materials and supplies themselves toward DBE goals, however.

(4) You must determine the amount of credit awarded to a firm for the provisions of materials and supplies (e.g., whether a firm is acting as a regular dealer or a transaction expeditor) on a contract-by-contract basis.

(f) If a firm is not currently certified as a DBE in accordance with the standards of subpart D of this part at the time of the execution of the contract, do not count the firm's participation toward any DBE goals, except as provided for in §26.87(i)).

(g) Do not count the dollar value of work performed under a contract with a firm after it has ceased to be certified toward your overall goal.

(h) Do not count the participation of a DBE subcontractor toward a contractor's final compliance with its DBE obligations on a contract until the amount being counted has actually been paid to the DBE.

[64 FR 5126, Feb. 2, 1999, as amended at 65 FR 68951, Nov. 15, 2000; 68 FR 35554, June 16, 2003; 79 FR 59595, Oct. 2, 2014]

Subpart D—Certification Standards

§26.61 How are burdens of proof allocated in the certification process?

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(a) In determining whether to certify a firm as eligible to participate as a DBE, you must apply the standards of this subpart.

(b) The firm seeking certification has the burden of demonstrating to you, by a preponderance of the evidence, that it meets the requirements of this subpart concerning group membership or individual disadvantage, business size, ownership, and control.

(c) You must rebuttably presume that members of the designated groups identified in §26.67(a) are socially and economically disadvantaged. This means they do not have the burden of proving to you that they are socially and economically disadvantaged. In order to obtain the benefit of the rebuttable presumption, individuals must submit a signed, notarized statement that they are a member of one of the groups in §26.67(a). Applicants do have the obligation to provide you information concerning their economic disadvantage (*see* §26.67).

(d) Individuals who are not presumed to be socially and economically disadvantaged, and individuals concerning whom the presumption of disadvantage has been rebutted, have the burden of proving to you, by a preponderance of the evidence, that they are socially and economically disadvantaged. (See Appendix E of this part.)

(e) You must make determinations concerning whether individuals and firms have met their burden of demonstrating group membership, ownership, control, and social and economic disadvantage (where disadvantage must be demonstrated on an individual basis) by considering all the facts in the record, viewed as a whole.

[64 FR 5126, Feb. 2, 1999, as amended at 68 FR 35554, June 16, 2003]

§26.63 What rules govern group membership determinations?

(a)(1) If, after reviewing the signed notarized statement of membership in a presumptively disadvantaged group (*see* §26.61(c)), you have a well founded reason to question the individual's claim of membership in that group, you must require the individual to present additional evidence that he or she is a member of the group.

(2) You must provide the individual a written explanation of your reasons for questioning his or her group membership and a written request for additional evidence as outlined in paragraph (b) of this section.

(3) In implementing this section, you must take special care to ensure that you do not impose a disproportionate burden on members of any particular designated group. Imposing a disproportionate burden on members of a particular group could violate §26.7(b) and/or Title VI of the Civil Rights Act of 1964 and 49 CFR part 21.

(b) In making such a determination, you must consider whether the person has held himself out to be a member of the group over a long period of time prior to application for certification and whether the person is regarded as a member of the group by the relevant community. You may require the applicant to produce appropriate documentation of group membership.

(1) If you determine that an individual claiming to be a member of a group presumed to be disadvantaged is not a member of a designated disadvantaged group, the individual must demonstrate social and economic disadvantage on an individual basis.

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(2) Your decisions concerning membership in a designated group are subject to the certification appeals procedure of §26.89.

[64 FR 5126, Feb. 2, 1999, as amended at 68 FR 35554, June 16, 2003]

§26.65 What rules govern business size determinations?

(a) To be an eligible DBE, a firm (including its affiliates) must be an existing small business, as defined by Small Business Administration (SBA) standards. As a recipient, you must apply current SBA business size standard(s) found in 13 CFR part 121 appropriate to the type(s) of work the firm seeks to perform in DOT-assisted contracts, including the primary industry classification of the applicant.

(b) Even if it meets the requirements of paragraph (a) of this section, a firm is not an eligible DBE for the purposes of Federal Highway Administration and Federal Transit Administration-assisted work in any Federal fiscal year if the firm (including its affiliates) has had average annual gross receipts, as defined by SBA regulations (see 13 CFR 121.104), over the firm's previous three fiscal years, in excess of \$26.29 million. The Department will adjust this amount for inflation on an annual basis. The adjusted amount will be published on the Department's website in subsequent years.

(c) The Department adjusts the number in paragraph (b) of this section annually using the Department of Commerce price deflators for purchases by State and local governments as the basis for this adjustment.

[74 FR 15224, Apr. 3, 2009, as amended at 79 FR 59596, Oct. 2, 2014; 85 FR 80647, Dec. 14, 2020]

§26.67 What rules determine social and economic disadvantage?

(a) *Presumption of disadvantage.* (1) You must rebuttably presume that citizens of the United States (or lawfully admitted permanent residents) who are women, Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Subcontinent Asian Americans, or other minorities found to be disadvantaged by the SBA, are socially and economically disadvantaged individuals. You must require applicants to submit a signed, notarized certification that each presumptively disadvantaged owner is, in fact, socially and economically disadvantaged.

(2)(i) You must require each individual owner of a firm applying to participate as a DBE, whose ownership and control are relied upon for DBE certification, to certify that he or she has a personal net worth that does not exceed \$1.32 million.

(ii) You must require each individual who makes this certification to support it with a signed, notarized statement of personal net worth, with appropriate supporting documentation. To meet this requirement, you must use the DOT personal net worth form provided in appendix G to this part without change or revision. Where necessary to accurately determine an individual's personal net worth, you may, on a case-by-case basis, require additional financial information from the owner of an applicant firm (e.g., information concerning the assets of the owner's spouse, where needed to clarify whether assets have been transferred to the spouse or when the owner's spouse is involved in the operation of the company). Requests for additional information shall not be unduly burdensome or intrusive.

(iii) In determining an individual's net worth, you must observe the following requirements:

(A) Exclude an individual's ownership interest in the applicant firm;

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(B) Exclude the individual's equity in his or her primary residence (except any portion of such equity that is attributable to excessive withdrawals from the applicant firm). The equity is the market value of the residence less any mortgages and home equity loan balances. Recipients must ensure that home equity loan balances are included in the equity calculation and not as a separate liability on the individual's personal net worth form. Exclusions for net worth purposes are not exclusions for asset valuation or access to capital and credit purposes.

(C) Do not use a contingent liability to reduce an individual's net worth.

(D) With respect to assets held in vested pension plans, Individual Retirement Accounts, 401(k) accounts, or other retirement savings or investment programs in which the assets cannot be distributed to the individual at the present time without significant adverse tax or interest consequences, include only the present value of such assets, less the tax and interest penalties that would accrue if the asset were distributed at the present time.

(iv) Notwithstanding any provision of Federal or State law, you must not release an individual's personal net worth statement nor any documents pertaining to it to any third party without the written consent of the submitter. Provided, that you must transmit this information to DOT in any certification appeal proceeding under §26.89 of this part or to any other State to which the individual's firm has applied for certification under §26.85 of this part.

(b) *Rebuttal of presumption of disadvantage.* (1) An individual's presumption of economic disadvantage may be rebutted in two ways.

(i) If the statement of personal net worth and supporting documentation that an individual submits under paragraph (a)(2) of this section shows that the individual's personal net worth exceeds \$1.32 million, the individual's presumption of economic disadvantage is rebutted. You are not required to have a proceeding under paragraph (b)(2) of this section in order to rebut the presumption of economic disadvantage in this case.

Example to paragraph (b)(1)(i): An individual with very high assets and significant liabilities may, in accounting terms, have a PNW of less than \$1.32 million. However, the person's assets collectively (e.g., high income level, a very expensive house, a yacht, extensive real or personal property holdings) may lead a reasonable person to conclude that he or she is not economically disadvantaged. The recipient may rebut the individual's presumption of economic disadvantage under these circumstances, as provided in this section, even though the individual's PNW is less than \$1.32 million.

(ii)(A) If the statement of personal net worth and supporting documentation that an individual submits under paragraph (a)(2) of this section demonstrates that the individual is able to accumulate substantial wealth, the individual's presumption of economic disadvantage is rebutted. In making this determination, as a certifying agency, you may consider factors that include, but are not limited to, the following:

(1) Whether the average adjusted gross income of the owner over the most recent three year period exceeds \$350,000;

(2) Whether the income was unusual and not likely to occur in the future;

(3) Whether the earnings were offset by losses;

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(4) Whether the income was reinvested in the firm or used to pay taxes arising in the normal course of operations by the firm;

(5) Other evidence that income is not indicative of lack of economic disadvantage; and

(6) Whether the total fair market value of the owner's assets exceed \$6 million.

(B) You must have a proceeding under paragraph (b)(2) of this section in order to rebut the presumption of economic disadvantage in this case.

(2) If you have a reasonable basis to believe that an individual who is a member of one of the designated groups is not, in fact, socially and/or economically disadvantaged you may, at any time, start a proceeding to determine whether the presumption should be regarded as rebutted with respect to that individual. Your proceeding must follow the procedures of §26.87.

(3) In such a proceeding, you have the burden of demonstrating, by a preponderance of the evidence, that the individual is not socially and economically disadvantaged. You may require the individual to produce information relevant to the determination of his or her disadvantage.

(4) When an individual's presumption of social and/or economic disadvantage has been rebutted, his or her ownership and control of the firm in question cannot be used for purposes of DBE eligibility under this subpart unless and until he or she makes an individual showing of social and/or economic disadvantage. If the basis for rebutting the presumption is a determination that the individual's personal net worth exceeds \$1.32 million, the individual is no longer eligible for participation in the program and cannot regain eligibility by making an individual showing of disadvantage, so long as his or her PNW remains above that amount.

(c) *Transfers within two years.* (1) Except as set forth in paragraph (c)(2) of this section, recipients must attribute to an individual claiming disadvantaged status any assets which that individual has transferred to an immediate family member, to a trust a beneficiary of which is an immediate family member, or to the applicant firm for less than fair market value, within two years prior to a concern's application for participation in the DBE program or within two years of recipient's review of the firm's annual affidavit, unless the individual claiming disadvantaged status can demonstrate that the transfer is to or on behalf of an immediate family member for that individual's education, medical expenses, or some other form of essential support.

(2) Recipients must not attribute to an individual claiming disadvantaged status any assets transferred by that individual to an immediate family member that are consistent with the customary recognition of special occasions, such as birthdays, graduations, anniversaries, and retirements.

(d) *Individual determinations of social and economic disadvantage.* Firms owned and controlled by individuals who are not presumed to be socially and economically disadvantaged (including individuals whose presumed disadvantage has been rebutted) may apply for DBE certification. You must make a case-by-case determination of whether each individual whose ownership and control are relied upon for DBE certification is socially and economically disadvantaged. In such a proceeding, the applicant firm has the burden of demonstrating to you, by a preponderance of the evidence, that the individuals who own and control it are socially and economically disadvantaged. An individual whose personal net worth exceeds \$1.32 million shall not be deemed to be economically disadvantaged. In making these determinations, use the guidance found in Appendix E of this part. You must require that applicants provide sufficient information to permit determinations under the guidance of appendix E of this part.

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[79 FR 59596, Oct. 2, 2014]

§26.69 What rules govern determinations of ownership?

(a) In determining whether the socially and economically disadvantaged participants in a firm own the firm, you must consider all the facts in the record viewed as a whole, including the origin of all assets and how and when they were used in obtaining the firm. All transactions for the establishment and ownership (or transfer of ownership) must be in the normal course of business, reflecting commercial and arms-length practices.

(b) To be an eligible DBE, a firm must be at least 51 percent owned by socially and economically disadvantaged individuals.

(1) In the case of a corporation, such individuals must own at least 51 percent of the each class of voting stock outstanding and 51 percent of the aggregate of all stock outstanding.

(2) In the case of a partnership, 51 percent of each class of partnership interest must be owned by socially and economically disadvantaged individuals. Such ownership must be reflected in the firm's partnership agreement.

(3) In the case of a limited liability company, at least 51 percent of each class of member interest must be owned by socially and economically disadvantaged individuals.

(c)(1) The firm's ownership by socially and economically disadvantaged individuals, including their contribution of capital or expertise to acquire their ownership interests, must be real, substantial, and continuing, going beyond pro forma ownership of the firm as reflected in ownership documents. Proof of contribution of capital should be submitted at the time of the application. When the contribution of capital is through a loan, there must be documentation of the value of assets used as collateral for the loan.

(2) Insufficient contributions include a promise to contribute capital, an unsecured note payable to the firm or an owner who is not a disadvantaged individual, mere participation in a firm's activities as an employee, or capitalization not commensurate with the value for the firm.

(3) The disadvantaged owners must enjoy the customary incidents of ownership, and share in the risks and be entitled to the profits and loss commensurate with their ownership interests, as demonstrated by the substance, not merely the form, of arrangements. Any terms or practices that give a non-disadvantaged individual or firm a priority or superior right to a firm's profits, compared to the disadvantaged owner(s), are grounds for denial.

(4) Debt instruments from financial institutions or other organizations that lend funds in the normal course of their business do not render a firm ineligible, even if the debtor's ownership interest is security for the loan.

Examples to paragraph (c): (i) An individual pays \$100 to acquire a majority interest in a firm worth \$1 million. The individual's contribution to capital would not be viewed as substantial.

(ii) A 51% disadvantaged owner and a non-disadvantaged 49% owner contribute \$100 and \$10,000, respectively, to acquire a firm grossing \$1 million. This may be indicative of a pro forma arrangement that does not meet the requirements of (c)(1).

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(iii) The disadvantaged owner of a DBE applicant firm spends \$250 to file articles of incorporation and obtains a \$100,000 loan, but makes only nominal or sporadic payments to repay the loan. This type of contribution is not of a continuing nature.

(d) All securities that constitute ownership of a firm shall be held directly by disadvantaged persons. Except as provided in this paragraph (d), no securities or assets held in trust, or by any guardian for a minor, are considered as held by disadvantaged persons in determining the ownership of a firm. However, securities or assets held in trust are regarded as held by a disadvantaged individual for purposes of determining ownership of the firm, if—

(1) The beneficial owner of securities or assets held in trust is a disadvantaged individual, and the trustee is the same or another such individual; or

(2) The beneficial owner of a trust is a disadvantaged individual who, rather than the trustee, exercises effective control over the management, policy-making, and daily operational activities of the firm. Assets held in a revocable living trust may be counted only in the situation where the same disadvantaged individual is the sole grantor, beneficiary, and trustee.

(e) The contributions of capital or expertise by the socially and economically disadvantaged owners to acquire their ownership interests must be real and substantial. Examples of insufficient contributions include a promise to contribute capital, an unsecured note payable to the firm or an owner who is not a disadvantaged individual, or mere participation in a firm's activities as an employee. Debt instruments from financial institutions or other organizations that lend funds in the normal course of their business do not render a firm ineligible, even if the debtor's ownership interest is security for the loan.

(f) The following requirements apply to situations in which expertise is relied upon as part of a disadvantaged owner's contribution to acquire ownership:

(1) The owner's expertise must be—

(i) In a specialized field;

(ii) Of outstanding quality;

(iii) In areas critical to the firm's operations;

(iv) Indispensable to the firm's potential success;

(v) Specific to the type of work the firm performs; and

(vi) Documented in the records of the firm. These records must clearly show the contribution of expertise and its value to the firm.

(2) The individual whose expertise is relied upon must have a significant financial investment in the firm.

(g) You must always deem as held by a socially and economically disadvantaged individual, for purposes of determining ownership, all interests in a business or other assets obtained by the individual—

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(1) As the result of a final property settlement or court order in a divorce or legal separation, provided that no term or condition of the agreement or divorce decree is inconsistent with this section; or

(2) Through inheritance, or otherwise because of the death of the former owner.

(h)(1) You must presume as not being held by a socially and economically disadvantaged individual, for purposes of determining ownership, all interests in a business or other assets obtained by the individual as the result of a gift, or transfer without adequate consideration, from any non-disadvantaged individual or non-DBE firm who is—

(i) Involved in the same firm for which the individual is seeking certification, or an affiliate of that firm;

(ii) Involved in the same or a similar line of business; or

(iii) Engaged in an ongoing business relationship with the firm, or an affiliate of the firm, for which the individual is seeking certification.

(2) To overcome this presumption and permit the interests or assets to be counted, the disadvantaged individual must demonstrate to you, by clear and convincing evidence, that—

(i) The gift or transfer to the disadvantaged individual was made for reasons other than obtaining certification as a DBE; and

(ii) The disadvantaged individual actually controls the management, policy, and operations of the firm, notwithstanding the continuing participation of a non-disadvantaged individual who provided the gift or transfer.

(i) You must apply the following rules in situations in which marital assets form a basis for ownership of a firm:

(1) When marital assets (other than the assets of the business in question), held jointly or as community property by both spouses, are used to acquire the ownership interest asserted by one spouse, you must deem the ownership interest in the firm to have been acquired by that spouse with his or her own individual resources, provided that the other spouse irrevocably renounces and transfers all rights in the ownership interest in the manner sanctioned by the laws of the state in which either spouse or the firm is domiciled. You do not count a greater portion of joint or community property assets toward ownership than state law would recognize as belonging to the socially and economically disadvantaged owner of the applicant firm.

(2) A copy of the document legally transferring and renouncing the other spouse's rights in the jointly owned or community assets used to acquire an ownership interest in the firm must be included as part of the firm's application for DBE certification.

(j) You may consider the following factors in determining the ownership of a firm. However, you must not regard a contribution of capital as failing to be real and substantial, or find a firm ineligible, solely because—

(1) A socially and economically disadvantaged individual acquired his or her ownership interest as the result of a gift, or transfer without adequate consideration, other than the types set forth in paragraph

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(h) of this section;

(2) There is a provision for the co-signature of a spouse who is not a socially and economically disadvantaged individual on financing agreements, contracts for the purchase or sale of real or personal property, bank signature cards, or other documents; or

(3) Ownership of the firm in question or its assets is transferred for adequate consideration from a spouse who is not a socially and economically disadvantaged individual to a spouse who is such an individual. In this case, you must give particularly close and careful scrutiny to the ownership and control of a firm to ensure that it is owned and controlled, in substance as well as in form, by a socially and economically disadvantaged individual.

[64 FR 5126, Feb. 2, 1999, as amended at 79 FR 59597, Oct. 2, 2014]

§26.71 What rules govern determinations concerning control?

(a) In determining whether socially and economically disadvantaged owners control a firm, you must consider all the facts in the record, viewed as a whole.

(b) Only an independent business may be certified as a DBE. An independent business is one the viability of which does not depend on its relationship with another firm or firms.

(1) In determining whether a potential DBE is an independent business, you must scrutinize relationships with non-DBE firms, in such areas as personnel, facilities, equipment, financial and/or bonding support, and other resources.

(2) You must consider whether present or recent employer/employee relationships between the disadvantaged owner(s) of the potential DBE and non-DBE firms or persons associated with non-DBE firms compromise the independence of the potential DBE firm.

(3) You must examine the firm's relationships with prime contractors to determine whether a pattern of exclusive or primary dealings with a prime contractor compromises the independence of the potential DBE firm.

(4) In considering factors related to the independence of a potential DBE firm, you must consider the consistency of relationships between the potential DBE and non-DBE firms with normal industry practice.

(c) A DBE firm must not be subject to any formal or informal restrictions which limit the customary discretion of the socially and economically disadvantaged owners. There can be no restrictions through corporate charter provisions, by-law provisions, contracts or any other formal or informal devices (e.g., cumulative voting rights, voting powers attached to different classes of stock, employment contracts, requirements for concurrence by non-disadvantaged partners, conditions precedent or subsequent, executory agreements, voting trusts, restrictions on or assignments of voting rights) that prevent the socially and economically disadvantaged owners, without the cooperation or vote of any non-disadvantaged individual, from making any business decision of the firm. This paragraph does not preclude a spousal co-signature on documents as provided for in §26.69(j)(2).

(d) The socially and economically disadvantaged owners must possess the power to direct or cause the direction of the management and policies of the firm and to make day-to-day as well as long-term

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decisions on matters of management, policy and operations.

(1) A disadvantaged owner must hold the highest officer position in the company (e.g., chief executive officer or president).

(2) In a corporation, disadvantaged owners must control the board of directors.

(3) In a partnership, one or more disadvantaged owners must serve as general partners, with control over all partnership decisions.

(e) Individuals who are not socially and economically disadvantaged or immediate family members may be involved in a DBE firm as owners, managers, employees, stockholders, officers, and/or directors. Such individuals must not, however possess or exercise the power to control the firm, or be disproportionately responsible for the operation of the firm.

(f) The socially and economically disadvantaged owners of the firm may delegate various areas of the management, policymaking, or daily operations of the firm to other participants in the firm, regardless of whether these participants are socially and economically disadvantaged individuals. Such delegations of authority must be revocable, and the socially and economically disadvantaged owners must retain the power to hire and fire any person to whom such authority is delegated. The managerial role of the socially and economically disadvantaged owners in the firm's overall affairs must be such that the recipient can reasonably conclude that the socially and economically disadvantaged owners actually exercise control over the firm's operations, management, and policy.

(g) The socially and economically disadvantaged owners must have an overall understanding of, and managerial and technical competence and experience directly related to, the type of business in which the firm is engaged and the firm's operations. The socially and economically disadvantaged owners are not required to have experience or expertise in every critical area of the firm's operations, or to have greater experience or expertise in a given field than managers or key employees. The socially and economically disadvantaged owners must have the ability to intelligently and critically evaluate information presented by other participants in the firm's activities and to use this information to make independent decisions concerning the firm's daily operations, management, and policymaking. Generally, expertise limited to office management, administration, or bookkeeping functions unrelated to the principal business activities of the firm is insufficient to demonstrate control.

(h) If state or local law requires the persons to have a particular license or other credential in order to own and/or control a certain type of firm, then the socially and economically disadvantaged persons who own and control a potential DBE firm of that type must possess the required license or credential. If state or local law does not require such a person to have such a license or credential to own and/or control a firm, you must not deny certification solely on the ground that the person lacks the license or credential. However, you may take into account the absence of the license or credential as one factor in determining whether the socially and economically disadvantaged owners actually control the firm.

(i)(1) You may consider differences in remuneration between the socially and economically disadvantaged owners and other participants in the firm in determining whether to certify a firm as a DBE. Such consideration shall be in the context of the duties of the persons involved, normal industry practices, the firm's policy and practice concerning reinvestment of income, and any other explanations for the differences proffered by the firm. You may determine that a firm is controlled by its socially and economically disadvantaged owner although that owner's remuneration is lower than that of some other participants in the firm.

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(2) In a case where a non-disadvantaged individual formerly controlled the firm, and a socially and economically disadvantaged individual now controls it, you may consider a difference between the remuneration of the former and current controller of the firm as a factor in determining who controls the firm, particularly when the non-disadvantaged individual remains involved with the firm and continues to receive greater compensation than the disadvantaged individual.

(j) In order to be viewed as controlling a firm, a socially and economically disadvantaged owner cannot engage in outside employment or other business interests that conflict with the management of the firm or prevent the individual from devoting sufficient time and attention to the affairs of the firm to control its activities. For example, absentee ownership of a business and part-time work in a full-time firm are not viewed as constituting control. However, an individual could be viewed as controlling a part-time business that operates only on evenings and/or weekends, if the individual controls it all the time it is operating.

(k)(1) A socially and economically disadvantaged individual may control a firm even though one or more of the individual's immediate family members (who themselves are not socially and economically disadvantaged individuals) participate in the firm as a manager, employee, owner, or in another capacity. Except as otherwise provided in this paragraph, you must make a judgment about the control the socially and economically disadvantaged owner exercises vis-a-vis other persons involved in the business as you do in other situations, without regard to whether or not the other persons are immediate family members.

(2) If you cannot determine that the socially and economically disadvantaged owners—as distinct from the family as a whole—control the firm, then the socially and economically disadvantaged owners have failed to carry their burden of proof concerning control, even though they may participate significantly in the firm's activities.

(l) Where a firm was formerly owned and/or controlled by a non-disadvantaged individual (whether or not an immediate family member), ownership and/or control were transferred to a socially and economically disadvantaged individual, and the nondisadvantaged individual remains involved with the firm in any capacity, there is a rebuttable presumption of control by the non-disadvantaged individual unless the disadvantaged individual now owning the firm demonstrates to you, by clear and convincing evidence, that:

(1) The transfer of ownership and/or control to the disadvantaged individual was made for reasons other than obtaining certification as a DBE; and

(2) The disadvantaged individual actually controls the management, policy, and operations of the firm, notwithstanding the continuing participation of a nondisadvantaged individual who formerly owned and/or controlled the firm.

(m) In determining whether a firm is controlled by its socially and economically disadvantaged owners, you may consider whether the firm owns equipment necessary to perform its work. However, you must not determine that a firm is not controlled by socially and economically disadvantaged individuals solely because the firm leases, rather than owns, such equipment, where leasing equipment is a normal industry practice and the lease does not involve a relationship with a prime contractor or other party that compromises the independence of the firm.

(n) You must grant certification to a firm only for specific types of work in which the socially and economically disadvantaged owners have the ability to control the firm. To become certified in an additional type of work, the firm need demonstrate to you only that its socially and economically disadvantaged owners are able to control the firm with respect to that type of work. You must not require

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that the firm be recertified or submit a new application for certification, but you must verify the disadvantaged owner's control of the firm in the additional type of work.

(1) The types of work a firm can perform (whether on initial certification or when a new type of work is added) must be described in terms of the most specific available NAICS code for that type of work. If you choose, you may also, in addition to applying the appropriate NAICS code, apply a descriptor from a classification scheme of equivalent detail and specificity. A correct NAICS code is one that describes, as specifically as possible, the principal goods or services which the firm would provide to DOT recipients. Multiple NAICS codes may be assigned where appropriate. Program participants must rely on, and not depart from, the plain meaning of NAICS code descriptions in determining the scope of a firm's certification. If your Directory does not list types of work for any firm in a manner consistent with this paragraph (a)(1), you must update the Directory entry for that firm to meet the requirements of this paragraph (a)(1) by August 28, 2011.

(2) Firms and recipients must check carefully to make sure that the NAICS codes cited in a certification are kept up-to-date and accurately reflect work which the UCP has determined the firm's owners can control. The firm bears the burden of providing detailed company information the certifying agency needs to make an appropriate NAICS code designation.

(3) If a firm believes that there is not a NAICS code that fully or clearly describes the type(s) of work in which it is seeking to be certified as a DBE, the firm may request that the certifying agency, in its certification documentation, supplement the assigned NAICS code(s) with a clear, specific, and detailed narrative description of the type of work in which the firm is certified. A vague, general, or confusing description is not sufficient for this purpose, and recipients should not rely on such a description in determining whether a firm's participation can be counted toward DBE goals.

(4) A certifier is not precluded from changing a certification classification or description if there is a factual basis in the record. However, certifiers must not make after-the-fact statements about the scope of a certification, not supported by evidence in the record of the certification action.

(o) A business operating under a franchise or license agreement may be certified if it meets the standards in this subpart and the franchiser or licensor is not affiliated with the franchisee or licensee. In determining whether affiliation exists, you should generally not consider the restraints relating to standardized quality, advertising, accounting format, and other provisions imposed on the franchisee or licensee by the franchise agreement or license, provided that the franchisee or licensee has the right to profit from its efforts and bears the risk of loss commensurate with ownership. Alternatively, even though a franchisee or licensee may not be controlled by virtue of such provisions in the franchise agreement or license, affiliation could arise through other means, such as common management or excessive restrictions on the sale or transfer of the franchise interest or license.

(p) In order for a partnership to be controlled by socially and economically disadvantaged individuals, any non-disadvantaged partners must not have the power, without the specific written concurrence of the socially and economically disadvantaged partner(s), to contractually bind the partnership or subject the partnership to contract or tort liability.

(q) The socially and economically disadvantaged individuals controlling a firm may use an employee leasing company. The use of such a company does not preclude the socially and economically disadvantaged individuals from controlling their firm if they continue to maintain an employer-employee relationship with the leased employees. This includes being responsible for hiring, firing, training, assigning, and otherwise controlling the on-the-job activities of the employees, as well as ultimate

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responsibility for wage and tax obligations related to the employees.

[64 FR 5126, Feb. 2, 1999, as amended at 76 FR 5099, Jan. 28, 2011; 79 FR 59597, Oct. 2, 2014]

§26.73 What are other rules affecting certification?

(a)(1) Consideration of whether a firm performs a commercially useful function or is a regular dealer pertains solely to counting toward DBE goals the participation of firms that have already been certified as DBEs. Except as provided in paragraph (a)(2) of this section, you must not consider commercially useful function issues in any way in making decisions about whether to certify a firm as a DBE.

(2) You may consider, in making certification decisions, whether a firm has exhibited a pattern of conduct indicating its involvement in attempts to evade or subvert the intent or requirements of the DBE program.

(b)(1) You must evaluate the eligibility of a firm on the basis of present circumstances. You must not refuse to certify a firm based solely on historical information indicating a lack of ownership or control of the firm by socially and economically disadvantaged individuals at some time in the past, if the firm currently meets the ownership and control standards of this part.

(2) You must not refuse to certify a firm solely on the basis that it is a newly formed firm, has not completed projects or contracts at the time of its application, has not yet realized profits from its activities, or has not demonstrated a potential for success. If the firm meets disadvantaged, size, ownership, and control requirements of this Part, the firm is eligible for certification.

(c) DBE firms and firms seeking DBE certification shall cooperate fully with your requests (and DOT requests) for information relevant to the certification process. Failure or refusal to provide such information is a ground for a denial or removal of certification.

(d) Only firms organized for profit may be eligible DBEs. Not-for-profit organizations, even though controlled by socially and economically disadvantaged individuals, are not eligible to be certified as DBEs.

(e) An eligible DBE firm must be owned by individuals who are socially and economically disadvantaged. Except as provided in this paragraph, a firm that is not owned by such individuals, but instead is owned by another firm—even a DBE firm—cannot be an eligible DBE.

(1) If socially and economically disadvantaged individuals own and control a firm through a parent or holding company, established for tax, capitalization or other purposes consistent with industry practice, and the parent or holding company in turn owns and controls an operating subsidiary, you may certify the subsidiary if it otherwise meets all requirements of this subpart. In this situation, the individual owners and controllers of the parent or holding company are deemed to control the subsidiary through the parent or holding company.

(2) You may certify such a subsidiary only if there is cumulatively 51 percent ownership of the subsidiary by socially and economically disadvantaged individuals. The following examples illustrate how this cumulative ownership provision works:

Example 1: Socially and economically disadvantaged individuals own 100 percent of a holding company, which has a wholly-owned subsidiary. The subsidiary may be certified, if it meets all other

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requirements.

Example 2: Disadvantaged individuals own 100 percent of the holding company, which owns 51 percent of a subsidiary. The subsidiary may be certified, if all other requirements are met.

Example 3: Disadvantaged individuals own 80 percent of the holding company, which in turn owns 70 percent of a subsidiary. In this case, the cumulative ownership of the subsidiary by disadvantaged individuals is 56 percent (80 percent of the 70 percent). This is more than 51 percent, so you may certify the subsidiary, if all other requirements are met.

Example 4: Same as Example 2 or 3, but someone other than the socially and economically disadvantaged owners of the parent or holding company controls the subsidiary. Even though the subsidiary is owned by disadvantaged individuals, through the holding or parent company, you cannot certify it because it fails to meet control requirements.

Example 5: Disadvantaged individuals own 60 percent of the holding company, which in turn owns 51 percent of a subsidiary. In this case, the cumulative ownership of the subsidiary by disadvantaged individuals is about 31 percent. This is less than 51 percent, so you cannot certify the subsidiary.

Example 6: The holding company, in addition to the subsidiary seeking certification, owns several other companies. The combined gross receipts of the holding companies and its subsidiaries are greater than the size standard for the subsidiary seeking certification and/or the gross receipts cap of §26.65(b). Under the rules concerning affiliation, the subsidiary fails to meet the size standard and cannot be certified.

(f) Recognition of a business as a separate entity for tax or corporate purposes is not necessarily sufficient to demonstrate that a firm is an independent business, owned and controlled by socially and economically disadvantaged individuals.

(g) You must not require a DBE firm to be prequalified as a condition for certification.

(h) A firm that is owned by an Indian tribe or Native Hawaiian organization, rather than by Indians or Native Hawaiians as individuals, may be eligible for certification. Such a firm must meet the size standards of §26.65. Such a firm must be controlled by socially and economically disadvantaged individuals, as provided in §26.71.

(i) The following special rules apply to the certification of firms related to Alaska Native Corporations (ANCs).

(1) Notwithstanding any other provisions of this subpart, a direct or indirect subsidiary corporation, joint venture, or partnership entity of an ANC is eligible for certification as a DBE if it meets all of the following requirements:

(i) The Settlement Common Stock of the underlying ANC and other stock of the ANC held by holders of the Settlement Common Stock and by Natives and descendants of Natives represents a majority of both the total equity of the ANC and the total voting power of the corporation for purposes of electing directors;

(ii) The shares of stock or other units of common ownership interest in the subsidiary, joint venture, or partnership entity held by the ANC and by holders of its Settlement Common Stock represent a majority of both the total equity of the entity and the total voting power of the entity for the purpose of electing directors, the general partner, or principal officers; and

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(iii) The subsidiary, joint venture, or partnership entity has been certified by the Small Business Administration under the 8(a) or small disadvantaged business program.

(2) As a recipient to whom an ANC-related entity applies for certification, you do not use the DOT uniform application form (*see* Appendix F of this part). You must obtain from the firm documentation sufficient to demonstrate that entity meets the requirements of paragraph (i)(1) of this section. You must also obtain sufficient information about the firm to allow you to administer your program (*e.g.*, information that would appear in your DBE Directory).

(3) If an ANC-related firm does not meet all the conditions of paragraph (i)(1) of this section, then it must meet the requirements of paragraph (h) of this section in order to be certified, on the same basis as firms owned by Indian Tribes or Native Hawaiian Organizations.

[64 FR 5126, Feb. 2, 1999, as amended at 68 FR 35555, June 16, 2003; 76 FR 5099, Jan. 28, 2011; 79 FR 59598, Oct. 2, 2014]

Subpart E—Certification Procedures

§26.81 What are the requirements for Unified Certification Programs?

(a) You and all other DOT recipients in your state must participate in a Unified Certification Program (UCP).

(1) Within three years of March 4, 1999, you and the other recipients in your state must sign an agreement establishing the UCP for that state and submit the agreement to the Secretary for approval. The Secretary may, on the basis of extenuating circumstances shown by the recipients in the state, extend this deadline for no more than one additional year.

(2) The agreement must provide for the establishment of a UCP meeting all the requirements of this section. The agreement must specify that the UCP will follow all certification procedures and standards of this part, on the same basis as recipients; that the UCP shall cooperate fully with oversight, review, and monitoring activities of DOT and its operating administrations; and that the UCP shall implement DOT directives and guidance concerning certification matters. The agreement shall also commit recipients to ensuring that the UCP has sufficient resources and expertise to carry out the requirements of this part. The agreement shall include an implementation schedule ensuring that the UCP is fully operational no later than 18 months following the approval of the agreement by the Secretary.

(3) Subject to approval by the Secretary, the UCP in each state may take any form acceptable to the recipients in that state.

(4) The Secretary shall review the UCP and approve it, disapprove it, or remand it to the recipients in the state for revisions. A complete agreement which is not disapproved or remanded within 180 days of its receipt is deemed to be accepted.

(5) If you and the other recipients in your state fail to meet the deadlines set forth in this paragraph (a), you shall have the opportunity to make an explanation to the Secretary why a deadline could not be met and why meeting the deadline was beyond your control. If you fail to make such an explanation, or the explanation does not justify the failure to meet the deadline, the Secretary shall direct you to complete the required action by a date certain. If you and the other recipients fail to carry out this direction in a timely manner, you are collectively in noncompliance with this part.

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(b) The UCP shall make all certification decisions on behalf of all DOT recipients in the state with respect to participation in the DOT DBE Program.

(1) Certification decisions by the UCP shall be binding on all DOT recipients within the state.

(2) The UCP shall provide “one-stop shopping” to applicants for certification, such that an applicant is required to apply only once for a DBE certification that will be honored by all recipients in the state.

(3) All obligations of recipients with respect to certification and nondiscrimination must be carried out by UCPs, and recipients may use only UCPs that comply with the certification and nondiscrimination requirements of this part.

(c) All certifications by UCPs shall be pre-certifications; i.e., certifications that have been made final before the due date for bids or offers on a contract on which a firm seeks to participate as a DBE.

(d) A UCP is not required to process an application for certification from a firm having its principal place of business outside the state if the firm is not certified by the UCP in the state in which it maintains its principal place of business. The “home state” UCP shall share its information and documents concerning the firm with other UCPs that are considering the firm's application.

(e) Subject to DOT approval as provided in this section, the recipients in two or more states may form a regional UCP. UCPs may also enter into written reciprocity agreements with other UCPs. Such an agreement shall outline the specific responsibilities of each participant. A UCP may accept the certification of any other UCP or DOT recipient.

(f) Pending the establishment of UCPs meeting the requirements of this section, you may enter into agreements with other recipients, on a regional or inter-jurisdictional basis, to perform certification functions required by this part. You may also grant reciprocity to other recipient's certification decisions.

(g) Each UCP shall maintain a unified DBE directory containing, for all firms certified by the UCP (including those from other states certified under the provisions of this part), the information required by §26.31. The UCP shall make the directory available to the public electronically, on the internet, as well as in print. The UCP shall update the electronic version of the directory by including additions, deletions, and other changes as soon as they are made and shall revise the print version of the Directory at least once a year.

(h) Except as otherwise specified in this section, all provisions of this subpart and subpart D of this part pertaining to recipients also apply to UCPs.

[64 FR 5126, Feb. 2, 1999, as amended at 76 FR 5100, Jan. 28, 2011]

§26.83 What procedures do recipients follow in making certification decisions?

(a) You must ensure that only firms certified as eligible DBEs under this section participate as DBEs in your program.

(b) You must determine the eligibility of firms as DBEs consistent with the standards of subpart D of this part. When a UCP is formed, the UCP must meet all the requirements of subpart D of this part and this subpart that recipients are required to meet.

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(c)(1) You must take all the following steps in determining whether a DBE firm meets the standards of subpart D of this part:

(i) Perform an on-site visit to the firm's principal place of business. You must interview the principal officers and review their résumés and/or work histories. You may interview key personnel of the firm if necessary. You must also perform an on-site visit to job sites if there are such sites on which the firm is working at the time of the eligibility investigation in your jurisdiction or local area. You may rely upon the site visit report of any other recipient with respect to a firm applying for certification;

(ii) Analyze documentation related to the legal structure, ownership, and control of the applicant firm. This includes, but is not limited to, Articles of Incorporation/Organization; corporate by-laws or operating agreements; organizational, annual and board/member meeting records; stock ledgers and certificates; and State-issued Certificates of Good Standing

(iii) Analyze the bonding and financial capacity of the firm; lease and loan agreements; bank account signature cards;

(iv) Determine the work history of the firm, including contracts it has received, work it has completed; and payroll records;

(v) Obtain a statement from the firm of the type of work it prefers to perform as part of the DBE program and its preferred locations for performing the work, if any.

(vi) Obtain or compile a list of the equipment owned by or available to the firm and the licenses the firm and its key personnel possess to perform the work it seeks to do as part of the DBE program;

(vii) Obtain complete Federal income tax returns (or requests for extensions) filed by the firm, its affiliates, and the socially and economically disadvantaged owners for the last 3 years. A complete return includes all forms, schedules, and statements filed with the Internal Revenue Service.

(viii) Require potential DBEs to complete and submit an appropriate application form, except as otherwise provided in §26.85 of this part.

(2) You must use the application form provided in Appendix F to this part without change or revision. However, you may provide in your DBE program, with the written approval of the concerned operating administration, for supplementing the form by requesting specified additional information not inconsistent with this part.

(3) You must make sure that the applicant attests to the accuracy and truthfulness of the information on the application form. This shall be done either in the form of an affidavit sworn to by the applicant before a person who is authorized by State law to administer oaths or in the form of an unsworn declaration executed under penalty of perjury of the laws of the United States.

(4) You must review all information on the form prior to making a decision about the eligibility of the firm. You may request clarification of information contained in the application at any time in the application process.

(d) When another recipient, in connection with its consideration of the eligibility of a firm, makes a written request for certification information you have obtained about that firm (e.g., including application

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materials or the report of a site visit, if you have made one to the firm), you must promptly make the information available to the other recipient.

(e) [Reserved]

(f) Subject to the approval of the concerned operating administration as part of your DBE program, you may impose a reasonable application fee for certification. Fee waivers shall be made in appropriate cases.

(g) You must safeguard from disclosure to unauthorized persons information gathered as part of the certification process that may reasonably be regarded as proprietary or other confidential business information, consistent with applicable Federal, state, and local law.

(h)(1) Once you have certified a DBE, it shall remain certified until and unless you have removed its certification, in whole or in part, through the procedures of §26.87 of this part, except as provided in §26.67(b)(1) of this part.

(2) You may not require DBEs to reapply for certification or undergo a recertification process. However, you may conduct a certification review of a certified DBE firm, including a new on-site review, if appropriate in light of changed circumstances (e.g., of the kind requiring notice under paragraph (i) of this section or relating to suspension of certification under §26.88), a complaint, or other information concerning the firm's eligibility. If information comes to your attention that leads you to question the firm's eligibility, you may conduct an on-site review on an unannounced basis, at the firm's offices and job sites.

(i) If you are a DBE, you must inform the recipient or UCP in writing of any change in circumstances affecting your ability to meet size, disadvantaged status, ownership, or control requirements of this part or any material change in the information provided in your application form.

(1) Changes in management responsibility among members of a limited liability company are covered by this requirement.

(2) You must attach supporting documentation describing in detail the nature of such changes.

(3) The notice must take the form of an affidavit sworn to by the applicant before a person who is authorized by state law to administer oaths or of an unsworn declaration executed under penalty of perjury of the laws of the United States. You must provide the written notification within 30 days of the occurrence of the change. If you fail to make timely notification of such a change, you will be deemed to have failed to cooperate under §26.109(c).

(j) If you are a DBE, you must provide to the recipient, every year on the anniversary of the date of your certification, an affidavit sworn to by the firm's owners before a person who is authorized by State law to administer oaths or an unsworn declaration executed under penalty of perjury of the laws of the United States. This affidavit must affirm that there have been no changes in the firm's circumstances affecting its ability to meet size, disadvantaged status, ownership, or control requirements of this part or any material changes in the information provided in its application form, except for changes about which you have notified the recipient under paragraph (i) of this section. The affidavit shall specifically affirm that your firm continues to meet SBA business size criteria and the overall gross receipts cap of this part, documenting this affirmation with supporting documentation of your firm's size and gross receipts (e.g., submission of Federal tax returns). If you fail to provide this affidavit in a timely manner, you will be deemed to have failed to cooperate under §26.109(c).

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(k) If you are a recipient, you must make decisions on applications for certification within 90 days of receiving from the applicant firm all information required under this part. You may extend this time period once, for no more than an additional 60 days, upon written notice to the firm, explaining fully and specifically the reasons for the extension. You may establish a different time frame in your DBE program, upon a showing that this time frame is not feasible, and subject to the approval of the concerned operating administration. Your failure to make a decision by the applicable deadline under this paragraph is deemed a constructive denial of the application, on the basis of which the firm may appeal to DOT under §26.89.

(l) As a recipient or UCP, you must advise each applicant within 30 days from your receipt of the application whether the application is complete and suitable for evaluation and, if not, what additional information or action is required.

(m) Except as otherwise provided in this paragraph, if an applicant for DBE certification withdraws its application before you have issued a decision on the application, the applicant can resubmit the application at any time. As a recipient or UCP, you may not apply the waiting period provided under §26.86(c) of this part before allowing the applicant to resubmit its application. However, you may place the reapplication at the “end of the line,” behind other applications that have been made since the firm's previous application was withdrawn. You may also apply the waiting period provided under §26.86(c) of this part to a firm that has established a pattern of frequently withdrawing applications before you make a decision.

[64 FR 5126, Feb. 2, 1999, as amended at 68 FR 35555, June 16, 2003; 76 FR 5100, Jan. 28, 2011; 79 FR 59598, Oct. 2, 2014]

§26.85 Interstate certification.

(a) This section applies with respect to any firm that is currently certified in its home state.

(b) When a firm currently certified in its home state (“State A”) applies to another State (“State B”) for DBE certification, State B may, at its discretion, accept State A's certification and certify the firm, without further procedures.

(1) To obtain certification in this manner, the firm must provide to State B a copy of its certification notice from State A.

(2) Before certifying the firm, State B must confirm that the firm has a current valid certification from State A. State B can do so by reviewing State A's electronic directory or obtaining written confirmation from State A.

(c) In any situation in which State B chooses not to accept State A's certification of a firm as provided in paragraph (b) of this section, as the applicant firm you must provide the information in paragraphs (c)(1) through (4) of this section to State B.

(1) You must provide to State B a complete copy of the application form, all supporting documents, and any other information you have submitted to State A or any other state related to your firm's certification. This includes affidavits of no change (*see* §26.83(j)) and any notices of changes (*see* §26.83(i)) that you have submitted to State A, as well as any correspondence you have had with State A's UCP or any other recipient concerning your application or status as a DBE firm.

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(2) You must also provide to State B any notices or correspondence from states other than State A relating to your status as an applicant or certified DBE in those states. For example, if you have been denied certification or decertified in State C, or subject to a decertification action there, you must inform State B of this fact and provide all documentation concerning this action to State B.

(3) If you have filed a certification appeal with DOT (*see* §26.89), you must inform State B of the fact and provide your letter of appeal and DOT's response to State B.

(4) You must submit an affidavit sworn to by the firm's owners before a person who is authorized by State law to administer oaths or an unsworn declaration executed under penalty of perjury of the laws of the United States.

(i) This affidavit must affirm that you have submitted all the information required by 49 CFR 26.85(c) and the information is complete and, in the case of the information required by §26.85(c)(1), is an identical copy of the information submitted to State A.

(ii) If the on-site report from State A supporting your certification in State A is more than three years old, as of the date of your application to State B, State B may require that your affidavit also affirm that the facts in the on-site report remain true and correct.

(d) As State B, when you receive from an applicant firm all the information required by paragraph (c) of this section, you must take the following actions:

(1) Within seven days contact State A and request a copy of the site visit review report for the firm (*see* §26.83(c)(1)), any updates to the site visit review, and any evaluation of the firm based on the site visit. As State A, you must transmit this information to State B within seven days of receiving the request. A pattern by State B of not making such requests in a timely manner or by "State A" or any other State of not complying with such requests in a timely manner is noncompliance with this Part.

(2) Determine whether there is good cause to believe that State A's certification of the firm is erroneous or should not apply in your State. Reasons for making such a determination may include the following:

(i) Evidence that State A's certification was obtained by fraud;

(ii) New information, not available to State A at the time of its certification, showing that the firm does not meet all eligibility criteria;

(iii) State A's certification was factually erroneous or was inconsistent with the requirements of this part;

(iv) The State law of State B requires a result different from that of the State law of State A.

(v) The information provided by the applicant firm did not meet the requirements of paragraph (c) of this section.

(3) If, as State B, unless you have determined that there is good cause to believe that State A's certification is erroneous or should not apply in your State, you must, no later than 60 days from the date on which you received from the applicant firm all the information required by paragraph (c) of this section, send to the applicant firm a notice that it is certified and place the firm on your directory of certified firms.

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(4) If, as State B, you have determined that there is good cause to believe that State A's certification is erroneous or should not apply in your State, you must, no later than 60 days from the date on which you received from the applicant firm all the information required by paragraph (c) of this section, send to the applicant firm a notice stating the reasons for your determination.

(i) This notice must state with particularity the specific reasons why State B believes that the firm does not meet the requirements of this Part for DBE eligibility and must offer the firm an opportunity to respond to State B with respect to these reasons.

(ii) The firm may elect to respond in writing, to request an in-person meeting with State B's decision maker to discuss State B's objections to the firm's eligibility, or both. If the firm requests a meeting, as State B you must schedule the meeting to take place within 30 days of receiving the firm's request.

(iii) The firm bears the burden of demonstrating, by a preponderance of evidence, that it meets the requirements of this Part with respect to the particularized issues raised by State B's notice. The firm is not otherwise responsible for further demonstrating its eligibility to State B.

(iv) The decision maker for State B must be an individual who is thoroughly familiar with the provisions of this Part concerning certification.

(v) State B must issue a written decision within 30 days of the receipt of the written response from the firm or the meeting with the decision maker, whichever is later.

(vi) The firm's application for certification is stayed pending the outcome of this process.

(vii) A decision under this paragraph (d)(4) may be appealed to the Departmental Office of Civil Rights under s§26.89 of this part.

(e) As State B, if you have not received from State A a copy of the site visit review report by a date 14 days after you have made a timely request for it, you may hold action required by paragraphs (d)(2) through (4) of this section in abeyance pending receipt of the site visit review report. In this event, you must, no later than 30 days from the date on which you received from an applicant firm all the information required by paragraph (c) of this section, notify the firm in writing of the delay in the process and the reason for it.

(f)(1) As a UCP, when you deny a firm's application, reject the application of a firm certified in State A or any other State in which the firm is certified, through the procedures of paragraph (d)(4) of this section, or decertify a firm, in whole or in part, you must make an entry in the Department of Transportation Office of Civil Rights' (DOCR's) Ineligibility Determination Online Database. You must enter the following information:

(i) The name of the firm;

(ii) The name(s) of the firm's owner(s);

(iii) The type and date of the action;

(iv) The reason for the action.

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(2) As a UCP, you must check the DOCR Web site at least once every month to determine whether any firm that is applying to you for certification or that you have already certified is on the list.

(3) For any such firm that is on the list, you must promptly request a copy of the listed decision from the UCP that made it. As the UCP receiving such a request, you must provide a copy of the decision to the requesting UCP within 7 days of receiving the request. As the UCP receiving the decision, you must then consider the information in the decision in determining what, if any, action to take with respect to the certified DBE firm or applicant.

(g) You must implement the requirements of this section beginning January 1, 2012.

[76 FR 5100, Jan. 28, 2011]

§26.86 What rules govern recipients' denials of initial requests for certification?

(a) When you deny a request by a firm, which is not currently certified with you, to be certified as a DBE, you must provide the firm a written explanation of the reasons for the denial, specifically referencing the evidence in the record that supports each reason for the denial. All documents and other information on which the denial is based must be made available to the applicant, on request.

(b) [Reserved]

(c) When a firm is denied certification, you must establish a time period of no more than twelve months that must elapse before the firm may reapply to the recipient for certification. You may provide, in your DBE program, subject to approval by the concerned operating administration, a shorter waiting period for reapplication. The time period for reapplication begins to run on the date the explanation required by paragraph (a) of this section is received by the firm. An applicant's appeal of your decision to the Department pursuant to §26.89 does not extend this period.

(d) When you make an administratively final denial of certification concerning a firm, the firm may appeal the denial to the Department under §26.89.

[64 FR 5126, Feb. 2, 1999. Redesignated and amended at 68 FR 35555, June 16, 2003; 79 FR 59598, Oct. 2, 2014]

§26.87 What procedures does a recipient use to remove a DBE's eligibility?

(a) *Ineligibility complaints.* (1) Any person may file with you a written complaint alleging that a currently-certified firm is ineligible and specifying the alleged reasons why the firm is ineligible. You are not required to accept a general allegation that a firm is ineligible or an anonymous complaint. The complaint may include any information or arguments supporting the complainant's assertion that the firm is ineligible and should not continue to be certified. Confidentiality of complainants' identities must be protected as provided in §26.109(b).

(2) You must review your records concerning the firm, any material provided by the firm and the complainant, and other available information. You may request additional information from the firm or conduct any other investigation that you deem necessary.

(3) If you determine, based on this review, that there is reasonable cause to believe that the firm is

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ineligible, you must provide written notice to the firm that you propose to find the firm ineligible, setting forth the reasons for the proposed determination. If you determine that such reasonable cause does not exist, you must notify the complainant and the firm in writing of this determination and the reasons for it. All statements of reasons for findings on the issue of reasonable cause must specifically reference the evidence in the record on which each reason is based.

(b) *Recipient-initiated proceedings.* If, based on notification by the firm of a change in its circumstances or other information that comes to your attention, you determine that there is reasonable cause to believe that a currently certified firm is ineligible, you must provide written notice to the firm that you propose to find the firm ineligible, setting forth the reasons for the proposed determination. The statement of reasons for the finding of reasonable cause must specifically reference the evidence in the record on which each reason is based.

(c) *DOT directive to initiate proceeding.* (1) If the concerned operating administration determines that information in your certification records, or other information available to the concerned operating administration, provides reasonable cause to believe that a firm you certified does not meet the eligibility criteria of this part, the concerned operating administration may direct you to initiate a proceeding to remove the firm's certification.

(2) The concerned operating administration must provide you and the firm a notice setting forth the reasons for the directive, including any relevant documentation or other information.

(3) You must immediately commence and prosecute a proceeding to remove eligibility as provided by paragraph (b) of this section.

(d) *Hearing.* When you notify a firm that there is reasonable cause to remove its eligibility, as provided in paragraph (a), (b), or (c) of this section, you must give the firm an opportunity for an informal hearing, at which the firm may respond to the reasons for the proposal to remove its eligibility in person and provide information and arguments concerning why it should remain certified.

(1) In such a proceeding, you bear the burden of proving, by a preponderance of the evidence, that the firm does not meet the certification standards of this part.

(2) You must maintain a complete record of the hearing, by any means acceptable under state law for the retention of a verbatim record of an administrative hearing. If there is an appeal to DOT under §26.89, you must provide a transcript of the hearing to DOT and, on request, to the firm. You must retain the original record of the hearing. You may charge the firm only for the cost of copying the record.

(3) The firm may elect to present information and arguments in writing, without going to a hearing. In such a situation, you bear the same burden of proving, by a preponderance of the evidence, that the firm does not meet the certification standards, as you would during a hearing.

(e) *Separation of functions.* You must ensure that the decision in a proceeding to remove a firm's eligibility is made by an office and personnel that did not take part in actions leading to or seeking to implement the proposal to remove the firm's eligibility and are not subject, with respect to the matter, to direction from the office or personnel who did take part in these actions.

(1) Your method of implementing this requirement must be made part of your DBE program.

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(2) The decisionmaker must be an individual who is knowledgeable about the certification requirements of your DBE program and this part.

(3) Before a UCP is operational in its state, a small airport or small transit authority (*i.e.*, an airport or transit authority serving an area with less than 250,000 population) is required to meet this requirement only to the extent feasible.

(f) *Grounds for decision.* You may base a decision to remove a firm's eligibility only on one or more of the following grounds:

(1) Changes in the firm's circumstances since the certification of the firm by the recipient that render the firm unable to meet the eligibility standards of this part;

(2) Information or evidence not available to you at the time the firm was certified;

(3) Information relevant to eligibility that has been concealed or misrepresented by the firm;

(4) A change in the certification standards or requirements of the Department since you certified the firm;

(5) Your decision to certify the firm was clearly erroneous;

(6) The firm has failed to cooperate with you (see §26.109(c));

(7) The firm has exhibited a pattern of conduct indicating its involvement in attempts to subvert the intent or requirements of the DBE program (see §26.73(a)(2)); or

(8) The firm has been suspended or debarred for conduct related to the DBE program. The notice required by paragraph (g) of this section must include a copy of the suspension or debarment action. A decision to remove a firm for this reason shall not be subject to the hearing procedures in paragraph (d) of this section.

(g) *Notice of decision.* Following your decision, you must provide the firm written notice of the decision and the reasons for it, including specific references to the evidence in the record that supports each reason for the decision. The notice must inform the firm of the consequences of your decision and of the availability of an appeal to the Department of Transportation under §26.89. You must send copies of the notice to the complainant in an ineligibility complaint or the concerned operating administration that had directed you to initiate the proceeding. Provided that, when sending such a notice to a complainant other than a DOT operating administration, you must not include information reasonably construed as confidential business information without the written consent of the firm that submitted the information.

(h) [Reserved]

(i) *Status of firm during proceeding.* (1) A firm remains an eligible DBE during the pendency of your proceeding to remove its eligibility.

(2) The firm does not become ineligible until the issuance of the notice provided for in paragraph (g) of this section.

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(j) *Effects of removal of eligibility.* When you remove a firm's eligibility, you must take the following action:

(1) When a prime contractor has made a commitment to using the ineligible firm, or you have made a commitment to using a DBE prime contractor, but a subcontract or contract has not been executed before you issue the decertification notice provided for in paragraph (g) of this section, the ineligible firm does not count toward the contract goal or overall goal. You must direct the prime contractor to meet the contract goal with an eligible DBE firm or demonstrate to you that it has made a good faith effort to do so.

(2) If a prime contractor has executed a subcontract with the firm before you have notified the firm of its ineligibility, the prime contractor may continue to use the firm on the contract and may continue to receive credit toward its DBE goal for the firm's work. In this case, or in a case where you have let a prime contract to the DBE that was later ruled ineligible, the portion of the ineligible firm's performance of the contract remaining after you issued the notice of its ineligibility shall not count toward your overall goal, but may count toward the contract goal.

(3) *Exception:* If the DBE's ineligibility is caused solely by its having exceeded the size standard during the performance of the contract, you may continue to count its participation on that contract toward overall and contract goals.

(k) *Availability of appeal.* When you make an administratively final removal of a firm's eligibility under this section, the firm may appeal the removal to the Department under §26.89.

[64 FR 5126, Feb. 2, 1999, as amended at 68 FR 35556, June 16, 2003; 76 FR 5101, Jan. 28, 2011; 79 FR 59599, Oct. 2, 2014]

§26.88 Summary suspension of certification.

(a) A recipient shall immediately suspend a DBE's certification without adhering to the requirements in §26.87(d) of this part when an individual owner whose ownership and control of the firm are necessary to the firm's certification dies or is incarcerated.

(b)(1) A recipient may immediately suspend a DBE's certification without adhering to the requirements in §26.87(d) when there is adequate evidence to believe that there has been a material change in circumstances that may affect the eligibility of the DBE firm to remain certified, or when the DBE fails to notify the recipient or UCP in writing of any material change in circumstances as required by §26.83(i) of this part or fails to timely file an affidavit of no change under §26.83(j).

(2) In determining the adequacy of the evidence to issue a suspension under paragraph (b)(1) of this section, the recipient shall consider all relevant factors, including how much information is available, the credibility of the information and allegations given the circumstances, whether or not important allegations are corroborated, and what inferences can reasonably be drawn as a result.

(c) The concerned operating administration may direct the recipient to take action pursuant to paragraph (a) or (b) this section if it determines that information available to it is sufficient to warrant immediate suspension.

(d) When a firm is suspended pursuant to paragraph (a) or (b) of this section, the recipient shall immediately notify the DBE of the suspension by certified mail, return receipt requested, to the last known

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address of the owner(s) of the DBE.

(e) Suspension is a temporary status of ineligibility pending an expedited show cause hearing/proceeding under §26.87 of this part to determine whether the DBE is eligible to participate in the program and consequently should be removed. The suspension takes effect when the DBE receives, or is deemed to have received, the Notice of Suspension.

(f) While suspended, the DBE may not be considered to meet a contract goal on a new contract, and any work it does on a contract received during the suspension shall not be counted toward a recipient's overall goal. The DBE may continue to perform under an existing contract executed before the DBE received a Notice of Suspension and may be counted toward the contract goal during the period of suspension as long as the DBE is performing a commercially useful function under the existing contract.

(g) Following receipt of the Notice of Suspension, if the DBE believes it is no longer eligible, it may voluntarily withdraw from the program, in which case no further action is required. If the DBE believes that its eligibility should be reinstated, it must provide to the recipient information demonstrating that the firm is eligible notwithstanding its changed circumstances. Within 30 days of receiving this information, the recipient must either lift the suspension and reinstate the firm's certification or commence a decertification action under §26.87 of this part. If the recipient commences a decertification proceeding, the suspension remains in effect during the proceeding.

(h) The decision to immediately suspend a DBE under paragraph (a) or (b) of this section is not appealable to the US Department of Transportation. The failure of a recipient to either lift the suspension and reinstate the firm or commence a decertification proceeding, as required by paragraph (g) of this section, is appealable to the U.S. Department of Transportation under §26.89 of this part, as a constructive decertification.

[79 FR 59599, Oct. 2, 2014]

§26.89 What is the process for certification appeals to the Department of Transportation?

(a)(1) If you are a firm that is denied certification or whose eligibility is removed by a recipient, including SBA-certified firms, you may make an administrative appeal to the Department.

(2) If you are a complainant in an ineligibility complaint to a recipient (including the concerned operating administration in the circumstances provided in §26.87(c)), you may appeal to the Department if the recipient does not find reasonable cause to propose removing the firm's eligibility or, following a removal of eligibility proceeding, determines that the firm is eligible.

(3) Send appeals to the following address: U.S. Department of Transportation, Departmental Office of Civil Rights, 1200 New Jersey Avenue SE., Washington, DC 20590-0001.

(b) Pending the Department's decision in the matter, the recipient's decision remains in effect. The Department does not stay the effect of the recipient's decision while it is considering an appeal.

(c) If you want to file an appeal, you must send a letter to the Department within 90 days of the date of the recipient's final decision, including information and setting forth a full and specific statement as to why the decision is erroneous, what significant fact that the recipient failed to consider, or what provisions of this Part the recipient did not properly apply. The Department may accept an appeal filed later than 90

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days after the date of the decision if the Department determines that there was good cause for the late filing of the appeal or in the interest of justice.

(d) When it receives an appeal, the Department requests a copy of the recipient's complete administrative record in the matter. If you are the recipient, you must provide the administrative record, including a hearing transcript, within 20 days of the Department's request. The Department may extend this time period on the basis of a recipient's showing of good cause. To facilitate the Department's review of a recipient's decision, you must ensure that such administrative records are well organized, indexed, and paginated. Records that do not comport with these requirements are not acceptable and will be returned to you to be corrected immediately. If an appeal is brought concerning one recipient's certification decision concerning a firm, and that recipient relied on the decision and/or administrative record of another recipient, this requirement applies to both recipients involved.

(e) The Department makes its decision based solely on the entire administrative record as supplemented by the appeal. The Department does not make a de novo review of the matter and does not conduct a hearing. The Department may also supplement the administrative record by adding relevant information made available by the DOT Office of Inspector General; Federal, State, or local law enforcement authorities; officials of a DOT operating administration or other appropriate DOT office; a recipient; or a firm or other private party.

(f) As a recipient, when you provide supplementary information to the Department, you shall also make this information available to the firm and any third-party complainant involved, consistent with Federal or applicable state laws concerning freedom of information and privacy. The Department makes available, on request by the firm and any third-party complainant involved, any supplementary information it receives from any source.

(1) The Department affirms your decision unless it determines, based on the entire administrative record, that your decision is unsupported by substantial evidence or inconsistent with the substantive or procedural provisions of this part concerning certification.

(2) If the Department determines, after reviewing the entire administrative record, that your decision was unsupported by substantial evidence or inconsistent with the substantive or procedural provisions of this part concerning certification, the Department reverses your decision and directs you to certify the firm or remove its eligibility, as appropriate. You must take the action directed by the Department's decision immediately upon receiving written notice of it.

(3) The Department is not required to reverse your decision if the Department determines that a procedural error did not result in fundamental unfairness to the appellant or substantially prejudice the opportunity of the appellant to present its case.

(4) If it appears that the record is incomplete or unclear with respect to matters likely to have a significant impact on the outcome of the case, the Department may remand the record to you with instructions seeking clarification or augmentation of the record before making a finding. The Department may also remand a case to you for further proceedings consistent with Department instructions concerning the proper application of the provisions of this part.

(5) The Department does not uphold your decision based on grounds not specified in your decision.

(6) The Department's decision is based on the status and circumstances of the firm as of the date of the decision being appealed.

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(7) The Department provides written notice of its decision to you, the firm, and the complainant in an ineligibility complaint. A copy of the notice is also sent to any other recipient whose administrative record or decision has been involved in the proceeding (*see* paragraph (d) of this section). The Department will also notify the SBA in writing when DOT takes an action on an appeal that results in or confirms a loss of eligibility to any SBA-certified firm. The notice includes the reasons for the Department's decision, including specific references to the evidence in the record that supports each reason for the decision.

(8) The Department's policy is to make its decision within 180 days of receiving the complete administrative record. If the Department does not make its decision within this period, the Department provides written notice to concerned parties, including a statement of the reason for the delay and a date by which the appeal decision will be made.

(g) All decisions under this section are administratively final, and are not subject to petitions for reconsideration.

[64 FR 5126, Feb. 2, 1999, as amended at 65 FR 68951, Nov. 15, 2000; 68 FR 35556, June 16, 2003; 73 FR 33329, June 12, 2008; 79 FR 59599, Oct. 2, 2014]

§26.91 What actions do recipients take following DOT certification appeal decisions?

(a) If you are the recipient from whose action an appeal under §26.89 is taken, the decision is binding. It is not binding on other recipients.

(b) If you are a recipient to which a DOT determination under §26.89 is applicable, you must take the following action:

(1) If the Department determines that you erroneously certified a firm, you must remove the firm's eligibility on receipt of the determination, without further proceedings on your part. Effective on the date of your receipt of the Department's determination, the consequences of a removal of eligibility set forth in §26.87(i) take effect.

(2) If the Department determines that you erroneously failed to find reasonable cause to remove the firm's eligibility, you must expeditiously commence a proceeding to determine whether the firm's eligibility should be removed, as provided in §26.87.

(3) If the Department determines that you erroneously declined to certify or removed the eligibility of the firm, you must certify the firm, effective on the date of your receipt of the written notice of Department's determination.

(4) If the Department determines that you erroneously determined that the presumption of social and economic disadvantage either should or should not be deemed rebutted, you must take appropriate corrective action as determined by the Department.

(5) If the Department affirms your determination, no further action is necessary.

(c) Where DOT has upheld your denial of certification to or removal of eligibility from a firm, or directed the removal of a firm's eligibility, other recipients with whom the firm is certified may commence a proceeding to remove the firm's eligibility under §26.87. Such recipients must not remove the firm's eligibility absent such a proceeding. Where DOT has reversed your denial of certification to or removal of

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eligibility from a firm, other recipients must take the DOT action into account in any certification action involving the firm. However, other recipients are not required to certify the firm based on the DOT decision.

Subpart F—Compliance and Enforcement

§26.101 What compliance procedures apply to recipients?

(a) If you fail to comply with any requirement of this part, you may be subject to formal enforcement action under §26.103 or §26.105 or appropriate program sanctions by the concerned operating administration, such as the suspension or termination of Federal funds, or refusal to approve projects, grants or contracts until deficiencies are remedied. Program sanctions may include, in the case of the FHWA program, actions provided for under 23 CFR 1.36; in the case of the FAA program, actions consistent with 49 U.S.C. 47106(d), 47111(d), and 47122; and in the case of the FTA program, any actions permitted under 49 U.S.C. chapter 53 or applicable FTA program requirements.

(b) As provided in statute, you will not be subject to compliance actions or sanctions for failing to carry out any requirement of this part because you have been prevented from complying because a Federal court has issued a final order in which the court found that the requirement is unconstitutional.

§26.103 What enforcement actions apply in FHWA and FTA programs?

The provisions of this section apply to enforcement actions under FHWA and FTA programs:

(a) *Noncompliance complaints.* Any person who believes that a recipient has failed to comply with its obligations under this part may file a written complaint with the concerned operating administration's Office of Civil Rights. If you want to file a complaint, you must do so no later than 180 days after the date of the alleged violation or the date on which you learned of a continuing course of conduct in violation of this part. In response to your written request, the Office of Civil Rights may extend the time for filing in the interest of justice, specifying in writing the reason for so doing. The Office of Civil Rights may protect the confidentiality of your identity as provided in §26.109(b). Complaints under this part are limited to allegations of violation of the provisions of this part.

(b) *Compliance reviews.* The concerned operating administration may review the recipient's compliance with this part at any time, including reviews of paperwork and on-site reviews, as appropriate. The Office of Civil Rights may direct the operating administration to initiate a compliance review based on complaints received.

(c) *Reasonable cause notice.* If it appears, from the investigation of a complaint or the results of a compliance review, that you, as a recipient, are in noncompliance with this part, the appropriate DOT office promptly sends you, return receipt requested, a written notice advising you that there is reasonable cause to find you in noncompliance. The notice states the reasons for this finding and directs you to reply within 30 days concerning whether you wish to begin conciliation.

(d) *Conciliation.* (1) If you request conciliation, the appropriate DOT office shall pursue conciliation for at least 30, but not more than 120, days from the date of your request. The appropriate DOT office may extend the conciliation period for up to 30 days for good cause, consistent with applicable statutes.

(2) If you and the appropriate DOT office sign a conciliation agreement, then the matter is regarded as closed and you are regarded as being in compliance. The conciliation agreement sets forth the measures you have taken or will take to ensure compliance. While a conciliation agreement is in effect, you remain

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eligible for FHWA or FTA financial assistance.

(3) The concerned operating administration shall monitor your implementation of the conciliation agreement and ensure that its terms are complied with. If you fail to carry out the terms of a conciliation agreement, you are in noncompliance.

(4) If you do not request conciliation, or a conciliation agreement is not signed within the time provided in paragraph (d)(1) of this section, then enforcement proceedings begin.

(e) *Enforcement actions.* (1) Enforcement actions are taken as provided in this subpart.

(2) Applicable findings in enforcement proceedings are binding on all DOT offices.

§26.105 What enforcement actions apply in FAA programs?

(a) Compliance with all requirements of this part by airport sponsors and other recipients of FAA financial assistance is enforced through the procedures of Title 49 of the United States Code, including 49 U.S.C. 47106(d), 47111(d), and 47122, and regulations implementing them.

(b) The provisions of §26.103(b) and this section apply to enforcement actions in FAA programs.

(c) Any person who knows of a violation of this part by a recipient of FAA funds may file a complaint under 14 CFR part 16 with the Federal Aviation Administration Office of Chief Counsel.

§26.107 What enforcement actions apply to firms participating in the DBE program?

(a) If you are a firm that does not meet the eligibility criteria of subpart D of this part and that attempts to participate in a DOT-assisted program as a DBE on the basis of false, fraudulent, or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, the Department may initiate suspension or debarment proceedings against you under 2 CFR parts 180 and 1200.

(b) If you are a firm that, in order to meet DBE contract goals or other DBE program requirements, uses or attempts to use, on the basis of false, fraudulent or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, another firm that does not meet the eligibility criteria of subpart D of this part, the Department may initiate suspension or debarment proceedings against you under 2 CFR parts 180 and 1200.

(c) In a suspension or debarment proceeding brought under paragraph (a) or (b) of this section, the concerned operating administration may consider the fact that a purported DBE has been certified by a recipient. Such certification does not preclude the Department from determining that the purported DBE, or another firm that has used or attempted to use it to meet DBE goals, should be suspended or debarred.

(d) The Department may take enforcement action under 49 CFR Part 31, Program Fraud and Civil Remedies, against any participant in the DBE program whose conduct is subject to such action under 49 CFR part 31.

(e) The Department may refer to the Department of Justice, for prosecution under 18 U.S.C. 1001 or other applicable provisions of law, any person who makes a false or fraudulent statement in connection with participation of a DBE in any DOT-assisted program or otherwise violates applicable Federal statutes.

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[64 FR 5126, Feb. 2, 1999, as amended at 76 FR 5101, Jan. 28, 2011]

§26.109 What are the rules governing information, confidentiality, cooperation, and intimidation or retaliation?

(a) *Availability of records.* (1) In responding to requests for information concerning any aspect of the DBE program, the Department complies with provisions of the Federal Freedom of Information and Privacy Acts (5 U.S.C. 552 and 552a). The Department may make available to the public any information concerning the DBE program release of which is not prohibited by Federal law.

(2) Notwithstanding any provision of Federal or state law, you must not release any information that may reasonably be construed as confidential business information to any third party without the written consent of the firm that submitted the information. This includes applications for DBE certification and supporting information. However, you must transmit this information to DOT in any certification appeal proceeding under §26.89 of this part or to any other state to which the individual's firm has applied for certification under §26.85 of this part.

(b) *Confidentiality of information on complainants.* Notwithstanding the provisions of paragraph (a) of this section, the identity of complainants shall be kept confidential, at their election. If such confidentiality will hinder the investigation, proceeding or hearing, or result in a denial of appropriate administrative due process to other parties, the complainant must be advised for the purpose of waiving the privilege. Complainants are advised that, in some circumstances, failure to waive the privilege may result in the closure of the investigation or dismissal of the proceeding or hearing. FAA follows the procedures of 14 CFR part 16 with respect to confidentiality of information in complaints.

(c) *Cooperation.* All participants in the Department's DBE program (including, but not limited to, recipients, DBE firms and applicants for DBE certification, complainants and appellants, and contractors using DBE firms to meet contract goals) are required to cooperate fully and promptly with DOT and recipient compliance reviews, certification reviews, investigations, and other requests for information. Failure to do so shall be a ground for appropriate action against the party involved (e.g., with respect to recipients, a finding of noncompliance; with respect to DBE firms, denial of certification or removal of eligibility and/or suspension and debarment; with respect to a complainant or appellant, dismissal of the complaint or appeal; with respect to a contractor which uses DBE firms to meet goals, findings of non-responsibility for future contracts and/or suspension and debarment).

(d) *Intimidation and retaliation.* If you are a recipient, contractor, or any other participant in the program, you must not intimidate, threaten, coerce, or discriminate against any individual or firm for the purpose of interfering with any right or privilege secured by this part or because the individual or firm has made a complaint, testified, assisted, or participated in any manner in an investigation, proceeding, or hearing under this part. If you violate this prohibition, you are in noncompliance with this part.

[64 FR 5126, Feb. 2, 1999, as amended at 68 FR 35556, June 16, 2003; 76 FR 5101, Jan. 28, 2011]

Appendix A to Part 26—Guidance Concerning Good Faith Efforts

I. When, as a recipient, you establish a contract goal on a DOT-assisted contract for procuring construction, equipment, services, or any other purpose, a bidder must, in order to be responsible and/or responsive, make sufficient good faith efforts to meet the goal. The bidder can meet this requirement in

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either of two ways. First, the bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose. Second, even if it doesn't meet the goal, the bidder can document adequate good faith efforts. This means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.

II. In any situation in which you have established a contract goal, Part 26 requires you to use the good faith efforts mechanism of this part. As a recipient, you have the responsibility to make a fair and reasonable judgment whether a bidder that did not meet the goal made adequate good faith efforts. It is important for you to consider the quality, quantity, and intensity of the different kinds of efforts that the bidder has made, based on the regulations and the guidance in this Appendix.

The efforts employed by the bidder should be those that one could reasonably expect a bidder to take if the bidder were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE contract goal. Mere pro forma efforts are not good faith efforts to meet the DBE contract requirements. We emphasize, however, that your determination concerning the sufficiency of the firm's good faith efforts is a judgment call. Determinations should not be made using quantitative formulas.

III. The Department also strongly cautions you against requiring that a bidder meet a contract goal (*i.e.*, obtain a specified amount of DBE participation) in order to be awarded a contract, even though the bidder makes an adequate good faith efforts showing. This rule specifically prohibits you from ignoring bona fide good faith efforts.

IV. The following is a list of types of actions which you should consider as part of the bidder's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

A. (1) Conducting market research to identify small business contractors and suppliers and soliciting through all reasonable and available means the interest of all certified DBEs that have the capability to perform the work of the contract. This may include attendance at pre-bid and business matchmaking meetings and events, advertising and/or written notices, posting of Notices of Sources Sought and/or Requests for Proposals, written notices or emails to all DBEs listed in the State's directory of transportation firms that specialize in the areas of work desired (as noted in the DBE directory) and which are located in the area or surrounding areas of the project.

(2) The bidder should solicit this interest as early in the acquisition process as practicable to allow the DBEs to respond to the solicitation and submit a timely offer for the subcontract. The bidder should determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units (for example, smaller tasks or quantities) to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces. This may include, where possible, establishing flexible timeframes for performance and delivery schedules in a manner that encourages and facilitates DBE participation.

C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation with their offer

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for the subcontract.

D. (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional Agreements could not be reached for DBEs to perform the work.

(2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

E. (1) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal. Another practice considered an insufficient good faith effort is the rejection of the DBE because its quotation for the work was not the lowest received. However, nothing in this paragraph shall be construed to require the bidder or prime contractor to accept unreasonable quotes in order to satisfy contract goals.

(2) A prime contractor's inability to find a replacement DBE at the original price is not alone sufficient to support a finding that good faith efforts have been made to replace the original DBE. The fact that the contractor has the ability and/or desire to perform the contract work with its own forces does not relieve the contractor of the obligation to make good faith efforts to find a replacement DBE, and it is not a sound basis for rejecting a prospective replacement DBE's reasonable quote.

F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

H. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, State, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

V. In determining whether a bidder has made good faith efforts, it is essential to scrutinize its documented efforts. At a minimum, you must review the performance of other bidders in meeting the contract goal. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, you may reasonably raise the question of whether, with additional efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds

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the average DBE participation obtained by other bidders, you may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts. As provided in §26.53(b)(2)(vi), you must also require the contractor to submit copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract to review whether DBE prices were substantially higher; and contact the DBEs listed on a contractor's solicitation to inquire as to whether they were contacted by the prime. Pro forma mailings to DBEs requesting bids are not alone sufficient to satisfy good faith efforts under the rule.

VI. A promise to use DBEs after contract award is not considered to be responsive to the contract solicitation or to constitute good faith efforts.

[79 FR 59600, Oct. 2, 2014]

Appendix B to Part 26—Uniform Report of DBE Awards or Commitments and Payments Form

INSTRUCTIONS FOR COMPLETING THE UNIFORM REPORT OF DBE AWARDS/COMMITMENTS AND PAYMENTS

Recipients of Department of Transportation (DOT) funds are expected to keep accurate data regarding the contracting opportunities available to firms paid for with DOT dollars. Failure to submit contracting data relative to the DBE program will result in noncompliance with Part 26. All dollar values listed on this form should represent the DOT share attributable to the Operating Administration (OA): Federal Highway Administration (FHWA), Federal Aviation Administration (FAA) or Federal Transit Administration (FTA) to which this report will be submitted.

1. Indicate the DOT (OA) that provides your Federal financial assistance. If assistance comes from more than one OA, use separate reporting forms for each OA. If you are an FTA recipient, indicate your Vendor Number in the space provided.

2. If you are an FAA recipient, indicate the relevant AIP Numbers covered by this report. If you are an FTA recipient, indicate the Grant/Project numbers covered by this report. If more than ten attach a separate sheet.

3. Specify the Federal fiscal year (*i.e.*, October 1-September 30) in which the covered reporting period falls.

4. State the date of submission of this report.

5. Check the appropriate box that indicates the reporting period that the data provided in this report covers. For FHWA and FTA recipients, if this report is due June 1, data should cover October 1-March 31. If this report is due December 1, data should cover April 1-September 30. If the report is due to the FAA, data should cover the entire year.

6. Provide the name and address of the recipient.

7. State your overall DBE goal(s) established for the Federal fiscal year of the report being submitted to and approved by the relevant OA. Your overall goal is to be reported as well as the breakdown for specific Race Conscious and Race Neutral projections (both of which include gender-conscious/neutral projections). The Race Conscious projection should be based on measures that focus on and provide benefits only for DBEs. The use of contract goals is a primary example of a race conscious measure. The Race Neutral

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projection should include measures that, while benefiting DBEs, are not solely focused on DBE firms. For example, a small business outreach program, technical assistance, and prompt payment clauses can assist a wide variety of businesses in addition to helping DBE firms.

Section A: Awards and Commitments Made During This Period

The amounts in items 8(A)-10(I) should include all types of prime contracts awarded and all types of subcontracts awarded or committed, including: professional or consultant services, construction, purchase of materials or supplies, lease or purchase of equipment and any other types of services. All dollar amounts are to reflect only the Federal share of such contracts and should be rounded to the nearest dollar.

Line 8: Prime contracts awarded this period: The items on this line should correspond to the contracts directly between the recipient and a supply or service contractor, with no intermediaries between the two.

8(A). Provide the *total dollar amount* for all prime contracts assisted with DOT funds and awarded during this reporting period. This value should include the entire Federal share of the contracts without removing any amounts associated with resulting subcontracts.

8(B). Provide the *total number* of all prime contracts assisted with DOT funds and awarded during this reporting period.

8(C). From the total dollar amount awarded in item 8(A), provide the *dollar amount* awarded in prime contracts to certified DBE firms during this reporting period. This amount should not include the amounts sub contracted to other firms.

8(D). From the total number of prime contracts awarded in item 8(B), specify the *number* of prime contracts awarded to certified DBE firms during this reporting period.

8(E&F). This field is closed for data entry. Except for the very rare case of DBE-set asides permitted under 49 CFR part 26, all prime contracts awarded to DBES are regarded as race-neutral.

8(G). From the total dollar amount awarded in item 8(C), provide the *dollar amount* awarded to certified DBEs through the use of Race Neutral methods. See the definition of Race Neutral in item 7 and the explanation in item 8 of project types to include.

8(H). From the total number of prime contracts awarded in 8(D), specify the *number* awarded to DBEs through Race Neutral methods.

8(I). Of all prime contracts awarded this reporting period, calculate the *percentage* going to DBEs. Divide the dollar amount in item 8(C) by the dollar amount in item 8(A) to derive this percentage. Round percentage to the nearest tenth.

Line 9: Subcontracts awarded/committed this period: Items 9(A)-9(I) are derived in the same way as items 8(A)-8(I), except that these calculations should be based on subcontracts rather than prime contracts. Unlike prime contracts, which may only be awarded, subcontracts may be either awarded or committed.

9(A). If filling out the form for general reporting, provide the total dollar amount of subcontracts assisted with DOT funds awarded or committed during this period. This value should be a subset of the total dollars awarded in prime contracts in 8(A), and therefore should never be greater than the amount

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awarded in prime contracts. If filling out the form for project reporting, provide the total dollar amount of subcontracts assisted with DOT funds awarded or committed during this period. This value should be a subset of the total dollars awarded or previously in prime contracts in 8(A). The sum of all subcontract amounts in consecutive periods should never exceed the sum of all prime contract amounts awarded in those periods.

9(B). Provide the total number of all sub contracts assisted with DOT funds that were awarded or committed during this reporting period.

9(C). From the total dollar amount of sub contracts awarded/committed this period in item 9(A), provide the total dollar amount awarded in sub contracts to DBEs.

9(D). From the total number of sub contracts awarded or committed in item 9(B), specify the number of sub contracts awarded or committed to DBEs.

9(E). From the total dollar amount of sub contracts awarded or committed to DBEs this period, provide the amount in dollars to DBEs using Race Conscious measures.

9(F). From the total number of sub contracts awarded or committed to DBEs this period, provide the number of sub contracts awarded or committed to DBEs using Race Conscious measures.

9(G). From the total dollar amount of sub contracts awarded/committed to DBEs this period, provide the amount in dollars to DBEs using Race Neutral measures.

9(H). From the total number of sub contracts awarded/committed to DBEs this period, provide the number of sub contracts awarded to DBEs using Race Neutral measures.

9(I). Of all subcontracts awarded this reporting period, calculate the *percentage* going to DBEs. Divide the dollar amount in item 9(C) by the dollar amount in item 9(A) to derive this percentage. Round percentage to the nearest tenth.

Line 10: Total contracts awarded or committed this period. These fields should be used to show the total dollar value and number of contracts awarded to DBEs and to calculate the overall percentage of dollars awarded to DBEs.

10(A)-10(B). These fields are unavailable for data entry.

10(C-H). Combine the total values listed on the prime contracts line (Line 8) with the corresponding values on the subcontracts line (Line 9).

10(I). Of all contracts awarded this reporting period, calculate the *percentage* going to DBEs. Divide the total dollars awarded to DBEs in item 10(C) by the dollar amount in item 8(A) to derive this percentage. Round percentage to the nearest tenth.

Section B: Breakdown by Ethnicity & Gender of Contracts Awarded to DBEs This Period

11-17. Further breakdown the contracting activity with DBE involvement. The Total Dollar Amount to DBEs in 17(C) should equal the Total Dollar Amount to DBEs in 10(C). Likewise the total number of contracts to DBEs in 17(F) should equal the Total Number of Contracts to DBEs in 10(D).

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Line 16: The “Non-Minority” category is reserved for any firms whose owners are not members of the presumptively disadvantaged groups already listed, but who are either “women” OR eligible for the DBE program on an individual basis. All DBE firms must be certified by the Unified Certification Program to be counted in this report.

Section C: Payments on Ongoing Contracts

Line 18(A-E). Submit information on contracts that are currently in progress. All dollar amounts are to reflect only the Federal share of such contracts, and should be rounded to the nearest dollar.

18(A). Provide the total dollar amount paid to all firms performing work on contracts.

18(B). Provide the total number of contracts where work was performed during the reporting period.

18(C). From the total number of contracts provided in 18(A) provide the total number of contracts that are currently being performed by DBE firms for which payments have been made.

18(D). From the total dollar amount paid to all firms in 18(A), provide the total dollar value paid to DBE firms currently performing work during this period.

18(E). Provide the total number of DBE firms that received payment during this reporting period. For example, while 3 contracts may be active during this period, one DBE firm may be providing supplies or services on all three contracts. This field should only list the number of DBE firms performing work.

18(F). Of all payments made during this period, calculate the percentage going to DBEs. Divide the total dollar value to DBEs in item 18(D) by the total dollars of all payments in 18(B). Round percentage to the nearest tenth.

Section D: Actual Payments on Contracts Completed This Reporting Period

This section should provide information only on contracts that are closed during this period. All dollar amounts are to reflect the entire Federal share of such contracts, and should be rounded to the nearest dollar.

19(A). Provide the total number of contracts completed during this reporting period that used Race Conscious measures. Race Conscious contracts are those with contract goals or another race conscious measure.

19(B). Provide the total dollar value of prime contracts completed this reporting period that had race conscious measures.

19(C). From the total dollar value of prime contracts completed this period in 19(B), provide the total dollar amount of dollars awarded or committed to DBE firms in order to meet the contract goals. This applies only to Race Conscious contracts.

19(D). Provide the actual total DBE participation in dollars on the race conscious contracts completed this reporting period.

19(E). Of all the contracts completed this reporting period using Race Conscious measures, calculate the percentage of DBE participation. Divide the total dollar amount to DBEs in item 19(D) by the total

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dollar value provided in 19(B) to derive this percentage. Round to the nearest tenth.

20(A)-20(E). Items 21(A)-21(E) are derived in the same manner as items 19(A)-19(E), except these figures should be based on contracts completed using Race Neutral measures.

20(C). This field is closed.

21(A)-21(D). Calculate the totals for each column by adding the race conscious and neutral figures provided in each row above.

21(C). This field is closed.

21(E). Calculate the overall percentage of dollars to DBEs on completed contracts. Divide the Total DBE participation dollar value in 21(D) by the Total Dollar Value of Contracts Completed in 21(B) to derive this percentage. Round to the nearest tenth.

23. Name of the Authorized Representative preparing this form.

24. Signature of the Authorized Representative.

25. Phone number of the Authorized Representative.

****Submit your completed report to your Regional or Division Office.**

UNIFORM REPORT OF THE COMPLETION OF CONTRACTS BY DBES									
1. Name of the contractor: _____ 2. Name of the subcontractor: _____ 3. Name of the project: _____ 4. Name of the owner: _____ 5. Name of the architect: _____ 6. Name of the engineer: _____ 7. Name of the consultant: _____ 8. Name of the contractor's representative: _____ 9. Name of the contractor's representative: _____ 10. Name of the contractor's representative: _____									
A. CONTRACT INFORMATION									
B. CONTRACT INFORMATION									
C. CONTRACT INFORMATION									
D. CONTRACT INFORMATION									
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W. CONTRACT INFORMATION									
X. CONTRACT INFORMATION									
Y. CONTRACT INFORMATION									
Z. CONTRACT INFORMATION									
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>23. Name of the Authorized Representative preparing this form.</p> <p>_____</p> </div> <div style="width: 45%;"> <p>24. Signature of the Authorized Representative.</p> <p>_____</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>25. Phone number of the Authorized Representative.</p> <p>_____</p> </div> <div style="width: 45%;"> <p>**Submit your completed report to your Regional or Division Office.</p> </div> </div>									

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[79 FR 59601, Oct. 2, 2014]

Appendix C to Part 26—DBE Business Development Program Guidelines

The purpose of this program element is to further the development of DBEs, including but not limited to assisting them to move into non-traditional areas of work and/or compete in the marketplace outside the DBE program, via the provision of training and assistance from the recipient.

(A) Each firm that participates in a recipient's business development program (BDP) program is subject to a program term determined by the recipient. The term should consist of two stages; a developmental stage and a transitional stage.

(B) In order for a firm to remain eligible for program participation, it must continue to meet all eligibility criteria contained in part 26.

(C) By no later than 6 months of program entry, the participant should develop and submit to the recipient a comprehensive business plan setting forth the participant's business targets, objectives and goals. The participant will not be eligible for program benefits until such business plan is submitted and approved by the recipient. The approved business plan will constitute the participant's short and long term goals and the strategy for developmental growth to the point of economic viability in non-traditional areas of work and/or work outside the DBE program.

(D) The business plan should contain at least the following:

(1) An analysis of market potential, competitive environment and other business analyses estimating the program participant's prospects for profitable operation during the term of program participation and after graduation from the program.

(2) An analysis of the firm's strengths and weaknesses, with particular attention paid to the means of correcting any financial, managerial, technical, or labor conditions which could impede the participant from receiving contracts other than those in traditional areas of DBE participation.

(3) Specific targets, objectives, and goals for the business development of the participant during the next two years, utilizing the results of the analysis conducted pursuant to paragraphs (C) and (D)(1) of this appendix;

(4) Estimates of contract awards from the DBE program and from other sources which are needed to meet the objectives and goals for the years covered by the business plan; and

(5) Such other information as the recipient may require.

(E) Each participant should annually review its currently approved business plan with the recipient and modify the plan as may be appropriate to account for any changes in the firm's structure and redefined needs. The currently approved plan should be considered the applicable plan for all program purposes until the recipient approves in writing a modified plan. The recipient should establish an anniversary date for review of the participant's business plan and contract forecasts.

(F) Each participant should annually forecast in writing its need for contract awards for the next program year and the succeeding program year during the review of its business plan conducted under

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paragraph (E) of this appendix. Such forecast should be included in the participant's business plan. The forecast should include:

(1) The aggregate dollar value of contracts to be sought under the DBE program, reflecting compliance with the business plan;

(2) The aggregate dollar value of contracts to be sought in areas other than traditional areas of DBE participation;

(3) The types of contract opportunities being sought, based on the firm's primary line of business; and

(4) Such other information as may be requested by the recipient to aid in providing effective business development assistance to the participant.

(G) Program participation is divided into two stages; (1) a developmental stage and (2) a transitional stage. The developmental stage is designed to assist participants to overcome their social and economic disadvantage by providing such assistance as may be necessary and appropriate to enable them to access relevant markets and strengthen their financial and managerial skills. The transitional stage of program participation follows the developmental stage and is designed to assist participants to overcome, insofar as practical, their social and economic disadvantage and to prepare the participant for leaving the program.

(H) The length of service in the program term should not be a pre-set time frame for either the developmental or transitional stages but should be figured on the number of years considered necessary in normal progression of achieving the firm's established goals and objectives. The setting of such time could be factored on such items as, but not limited to, the number of contracts, aggregate amount of the contract received, years in business, growth potential, etc.

(I) Beginning in the first year of the transitional stage of program participation, each participant should annually submit for inclusion in its business plan a transition management plan outlining specific steps to promote profitable business operations in areas other than traditional areas of DBE participation after graduation from the program. The transition management plan should be submitted to the recipient at the same time other modifications are submitted pursuant to the annual review under paragraph (E) of this section. The plan should set forth the same information as required under paragraph (F) of steps the participant will take to continue its business development after the expiration of its program term.

(J) When a participant is recognized as successfully completing the program by substantially achieving the targets, objectives and goals set forth in its program term, and has demonstrated the ability to compete in the marketplace, its further participation within the program may be determined by the recipient.

(K) In determining whether a concern has substantially achieved the goals and objectives of its business plan, the following factors, among others, should be considered by the recipient:

(1) Profitability;

(2) Sales, including improved ratio of non-traditional contracts to traditional-type contracts;

(3) Net worth, financial ratios, working capital, capitalization, access to credit and capital;

(4) Ability to obtain bonding;

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(5) A positive comparison of the DBE's business and financial profile with profiles of non-DBE businesses in the same area or similar business category; and

(6) Good management capacity and capability.

(L) Upon determination by the recipient that the participant should be graduated from the developmental program, the recipient should notify the participant in writing of its intent to graduate the firm in a letter of notification. The letter of notification should set forth findings, based on the facts, for every material issue relating to the basis of the program graduation with specific reasons for each finding. The letter of notification should also provide the participant 45 days from the date of service of the letter to submit in writing information that would explain why the proposed basis of graduation is not warranted.

(M) Participation of a DBE firm in the program may be discontinued by the recipient prior to expiration of the firm's program term for good cause due to the failure of the firm to engage in business practices that will promote its competitiveness within a reasonable period of time as evidenced by, among other indicators, a pattern of inadequate performance or unjustified delinquent performance. Also, the recipient can discontinue the participation of a firm that does not actively pursue and bid on contracts, and a firm that, without justification, regularly fails to respond to solicitations in the type of work it is qualified for and in the geographical areas where it has indicated availability under its approved business plan. The recipient should take such action if over a 2-year period a DBE firm exhibits such a pattern.

Appendix D to Part 26—Mentor-Protégé Program Guidelines

(A) The purpose of this program element is to further the development of DBEs, including but not limited to assisting them to move into non-traditional areas of work and/or compete in the marketplace outside the DBE program, via the provision of training and assistance from other firms. To operate a mentor-protégé program, a recipient must obtain the approval of the concerned operating administration.

(B)(1) Any mentor-protégé relationship shall be based on a written development plan, approved by the recipient, which clearly sets forth the objectives of the parties and their respective roles, the duration of the arrangement and the services and resources to be provided by the mentor to the protégé. The formal mentor-protégé agreement may set a fee schedule to cover the direct and indirect cost for such services rendered by the mentor for specific training and assistance to the protégé through the life of the agreement. Services provided by the mentor may be reimbursable under the FTA, FHWA, and FAA programs.

(2) To be eligible for reimbursement, the mentor's services provided and associated costs must be directly attributable and properly allowable to specific individual contracts. The recipient may establish a line item for the mentor to quote the portion of the fee schedule expected to be provided during the life of the contract. The amount claimed shall be verified by the recipient and paid on an incremental basis representing the time the protégé is working on the contract. The total individual contract figures accumulated over the life of the agreement shall not exceed the amount stipulated in the original mentor/protégé agreement.

(C) DBEs involved in a mentor-protégé agreement must be independent business entities which meet the requirements for certification as defined in subpart D of this part. A protégé firm must be certified *before* it begins participation in a mentor-protégé arrangement. If the recipient chooses to recognize mentor/protégé agreements, it should establish formal general program guidelines. These guidelines must be submitted to the operating administration for approval prior to the recipient executing an individual contractor/ subcontractor mentor-protégé agreement.

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Appendix E to Part 26—Individual Determinations of Social and Economic Disadvantage

The following guidance is adapted, with minor modifications, from SBA regulations concerning social and economic disadvantage determinations (see 13 CFR 124.103(c) and 124.104).

SOCIAL DISADVANTAGE

I. Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias within American society because of their identities as members of groups and without regard to their individual qualities. Social disadvantage must stem from circumstances beyond their control. Evidence of individual social disadvantage must include the following elements:

(A) At least one objective distinguishing feature that has contributed to social disadvantage, such as race, ethnic origin, gender, disability, long-term residence in an environment isolated from the mainstream of American society, or other similar causes not common to individuals who are not socially disadvantaged;

(B) Personal experiences of substantial and chronic social disadvantage in American society, not in other countries; and

(C) Negative impact on entry into or advancement in the business world because of the disadvantage. Recipients will consider any relevant evidence in assessing this element. In every case, however, recipients will consider education, employment and business history, where applicable, to see if the totality of circumstances shows disadvantage in entering into or advancing in the business world.

(1) *Education.* Recipients will consider such factors as denial of equal access to institutions of higher education and vocational training, exclusion from social and professional association with students or teachers, denial of educational honors rightfully earned, and social patterns or pressures which discouraged the individual from pursuing a professional or business education.

(2) *Employment.* Recipients will consider such factors as unequal treatment in hiring, promotions and other aspects of professional advancement, pay and fringe benefits, and other terms and conditions of employment; retaliatory or discriminatory behavior by an employer or labor union; and social patterns or pressures which have channeled the individual into non-professional or non-business fields.

(3) *Business history.* The recipient will consider such factors as unequal access to credit or capital, acquisition of credit or capital under commercially unfavorable circumstances, unequal treatment in opportunities for government contracts or other work, unequal treatment by potential customers and business associates, and exclusion from business or professional organizations.

II. With respect to paragraph I.(A) of this appendix, the Department notes that people with disabilities have disproportionately low incomes and high rates of unemployment. Many physical and attitudinal barriers remain to their full participation in education, employment, and business opportunities available to the general public. The Americans with Disabilities Act (ADA) was passed in recognition of the discrimination faced by people with disabilities. It is plausible that many individuals with disabilities—especially persons with severe disabilities (e.g., significant mobility, vision, or hearing impairments)—may be socially and economically disadvantaged.

III. Under the laws concerning social and economic disadvantage, people with disabilities are not a group presumed to be disadvantaged. Nevertheless, recipients should look carefully at individual showings

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of disadvantage by individuals with disabilities, making a case-by-case judgment about whether such an individual meets the criteria of this appendix. As public entities subject to Title II of the ADA, recipients must also ensure their DBE programs are accessible to individuals with disabilities. For example, physical barriers or the lack of application and information materials in accessible formats cannot be permitted to thwart the access of potential applicants to the certification process or other services made available to DBEs and applicants.

ECONOMIC DISADVANTAGE

(A) *General.* Economically disadvantaged individuals are socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same or similar line of business who are not socially disadvantaged.

(B) *Submission of narrative and financial information.* (1) Each individual claiming economic disadvantage must describe the conditions which are the basis for the claim in a narrative statement, and must submit personal financial information.

(2) [Reserved]

(C) *Factors to be considered.* In considering diminished capital and credit opportunities, recipients will examine factors relating to the personal financial condition of any individual claiming disadvantaged status, including personal income for the past two years (including bonuses and the value of company stock given in lieu of cash), personal net worth, and the fair market value of all assets, whether encumbered or not. Recipients will also consider the financial condition of the applicant compared to the financial profiles of small businesses in the same primary industry classification, or, if not available, in similar lines of business, which are not owned and controlled by socially and economically disadvantaged individuals in evaluating the individual's access to credit and capital. The financial profiles that recipients will compare include total assets, net sales, pre-tax profit, sales/working capital ratio, and net worth.


(D) *Transfers within two years.* (1) Except as set forth in paragraph (D)(2) of this appendix, recipients will attribute to an individual claiming disadvantaged status any assets which that individual has transferred to an immediate family member, or to a trust, a beneficiary of which is an immediate family member, for less than fair market value, within two years prior to a concern's application for participation in the DBE program, unless the individual claiming disadvantaged status can demonstrate that the transfer is to or on behalf of an immediate family member for that individual's education, medical expenses, or some other form of essential support.

(2) Recipients will not attribute to an individual claiming disadvantaged status any assets transferred by that individual to an immediate family member that are consistent with the customary recognition of special occasions, such as birthdays, graduations, anniversaries, and retirements.

(3) In determining an individual's access to capital and credit, recipients may consider any assets that the individual transferred within such two-year period described by paragraph (D)(1) of this appendix that are not considered in evaluating the individual's assets and net worth (e.g., transfers to charities).

[64 FR 5126, Feb. 2, 1999, as amended at 68 FR 35559, June 16, 2003]

Appendix F to Part 26—Uniform Certification Application Form



UNIFORM CERTIFICATION APPLICATION
DISADVANTAGED BUSINESS ENTERPRISE (DBE) /
AIRPORT CONCESSION DISADVANTAGED BUSINESS ENTERPRISE (ACDBE)
49 C.F.R. Parts 23 and 26

Appendix F

Roadmap for Applicants

1. Should I apply?
 You may be eligible to participate in the DBE/ACDBE program if:

- The firm is a for-profit business that performs or seeks to perform transportation related work (or a concession activity) for a recipient of Federal Transit Administration, Federal Highway Administration, or Federal Aviation Administration funds.
- The firm is at least 51% owned by a socially and economically disadvantaged individual(s) who also controls it.
- The firm's disadvantaged owners are U.S. citizens or lawfully admitted permanent residents of the U.S.
- The firm meets the Small Business Administration's size standard and does not exceed \$23.98 million in gross annual receipts for DBE (\$52.47 million for ACDBEs). (Other size standards apply for ACDBE that are banks/financial institutions, car rental companies, pay telephone firms, and automobile dealers.)

2. How do I apply?
 First time applicants for DBE certification must complete and submit this certification application and related material to the certifying agency in your home state and participate in an on-site interview conducted by that agency. The attached document checklist can help you locate the items you need to submit to the agency with your completed application. If you fail to submit the required documents, your application may be delayed and/or denied. Firms already certified as a DBE do not have to complete this form, but may be asked by certifying agencies outside of your home state to provide a copy of your initial application form, supporting documents, and any other information you submitted to your home state to obtain certification or to any other state related to your certification.

3. Where can I send my application? INSERT UCP PARTICIPATING MEMBER CONTACT INFORMATION

4. Who will contact me about my application and what are the eligibility standards?
 The DBE and ACDBE Programs require that all U.S. Department of Transportation (DOT) recipients of federal assistance participate in a statewide Unified Certification Program (UCP). The UCP is a one-stop certification program that eliminates the need for your firm to obtain certification from multiple certifying agencies within your state. The UCP is responsible for certifying firms and maintaining a database of certified DBEs and ACDBEs for DOT grantees, pursuant to the eligibility standards found in 49 C.F.R. Parts 23 and 26.

5. Where can I find more information?
 U.S. DOT—<https://www.civilrights.dot.gov/> (This site provides useful links to the rules and regulations governing the DBE/ACDBE program, questions and answers, and other pertinent information)

SBA—Small Business Size Standards matched to the North American Industry Classification System (NAICS): <http://www.sba.gov/eos/www/naics/> and <http://www.sba.gov/content/table-small-business-size-standards>.

In collecting the information requested by this form, the Department of Transportation (Department) complies with the provisions of the Federal Freedom of Information and Privacy Acts (5 U.S.C. 552 and 552a). The Privacy Act provides comprehensive protections for your personal information. This includes how information is collected, used, disclosed, stored, and discarded. Your information will not be disclosed to third parties without your consent. The information collected will be used solely to determine your firm's eligibility to participate in the Department's Disadvantaged Business Enterprise Program as defined in 49 CFR §26.5 and the Airport Concession Disadvantaged Business Enterprise Program as defined in 49 CFR §23.3. You may review DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477).

Under 49 C.F.R. §26.107, dated February 2, 1999 and January 28, 2011, if at any time, the Department or a recipient has reason to believe that any person or firm has willfully and knowingly provided incorrect information or made false statements, the Department may initiate suspension or debarment proceedings against the person or firm under 2 CFR Parts 180 and 1200, Nonprocurement Suspension and Debarment, take enforcement action under 49 C.F.R. Part 31, Program Fraud and Civil Remedies, and/or refer the matter to the Department of Justice for criminal prosecution under 18 U.S.C. 1001, which prohibits false statements in Federal programs.

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**INSTRUCTIONS FOR COMPLETING THE
DISADVANTAGED BUSINESS ENTERPRISE (DBE)
AIRPORT CONCESSIONS DISADVANTAGED BUSINESS ENTERPRISE (ACDBE)
UNIFORM CERTIFICATION APPLICATION**

NOTE: All participating firms must be for-profit enterprises. If your firm is not for profit, then you do NOT qualify for the DBE/ACDBE program and should not complete this application. If you require additional space for any question in this application, please attach additional sheets or copies as needed, taking care to indicate on each attached sheet/copy the section and number of this application to which it refers.

Section 1: CERTIFICATION INFORMATION

A. Basic Contact Information

- (1) Enter the contact name and title of the person completing this application and the person who will serve as your firm's contact for this application.
- (2) Enter the legal name of your firm, as indicated in your firm's Articles of Incorporation or charter.
- (3) Enter the primary phone number of your firm.
- (4) Enter a secondary phone number, if any.
- (5) Enter your firm's fax number, if any.
- (6) Enter the contact person's email address.
- (7) Enter your firm's website addresses, if any.
- (8) Enter the street address of the firm where its offices are physically located (not a P.O. Box).
- (9) Enter the mailing address of your firm, if it is different from your firm's street address.

B. Prior/Other Certifications and Applications

- (10) Check the appropriate box indicating whether your firm is currently certified in the DBE/ACDBE program, and provide the name of the certifying agency that certified your firm. List the dates of any site visits conducted by your home state and any other states or UCP members. Also provide the names of state/UCP members that conducted the review.
- (11) Indicate whether your firm or any of the persons listed has ever been denied certification as a DBE, 8(a), or Small Disadvantaged Business (SDB) firm, or state and local MBE/WBE firm. Indicate if the firm has ever been decertified from one of these programs. Indicate if the application was withdrawn or whether the firm was debarred, suspended, or otherwise had its bidding privileges denied or restricted by any state or local agency, or Federal entity. If your answer is yes, identify the name of the agency, and explain fully the nature of the action in the space provided. Indicate if you have ever appealed this decision to the Department and if so, attach a copy of USDOT's final agency decision(s).

Section 2: GENERAL INFORMATION

A. Business profile:

- (1) Give a concise description of the firm's primary activities, the product(s) or services the company provides, or type of construction. If your company offers more than one product/service, list primary product or service first (attach additional sheets if necessary). This description may be used in our UCP online directory if you are certified as a DBE.

- (2) If you know the appropriate NAICS Code for the line(s) of work you identified in your business profile, enter the codes in the space provided.
- (3) State the date on which your firm was established as stated in your firm's Articles of Incorporation or charter.
- (4) State the date each person became a firm owner.
- (5) Check the appropriate box describing the manner in which you and each other owner acquired ownership of your firm. If you checked "Other," explain in the space provided.
- (6) Check the appropriate box that indicates whether your firm is "for profit." If you checked "No," then you do NOT qualify for the DBE/ACDBE program and should not complete this application. All participating firms must be for-profit enterprises. If the firm is a for-profit enterprise, provide the Federal Tax ID number as stated on your firm's Federal tax return.
- (7) Check the appropriate box that describes the type of legal business structure of your firm, as indicated in your firm's Articles of Incorporation or similar document. Identify all joint venture partners if applicable. If you checked "Other," briefly explain in the space provided.
- (8) Indicate in the spaces provided how many employees your firm has, specifying the number of employees who work on a full-time, part-time, and seasonal basis. Attach a list of employees, their job titles, and dates of employment, to your application.
- (9) Specify the firm's gross receipts for each of the past three years, as stated in your firm's filed Federal tax returns. You must submit complete copies of the firm's Federal tax returns for each year. If there are any affiliates or subsidiaries of the applicant firm or owners, you must provide these firms' gross receipts and submit complete copies of these firm(s) Federal tax returns. Affiliation is defined in 49 C.F.R. §26.5 and 13 C.F.R. Part 121.

B. Relationships and Dealings with Other Businesses

- (1) Check the appropriate box that indicates whether your firm is co-located at any of its business locations, or whether your firm shares a telephone number(s), a post office box, any office space, a yard, warehouse, other facilities, any equipment, financing, or any office staff and/or employees with any other business, organization or entity of any kind. If you answered "Yes," then specify the name of the other firm(s) and fully explain the nature of your relationship with these other businesses by identifying the business or person with whom you have any formal, informal, written, or

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oral agreement. Provide an explanation of any items shared with other firms in the space provided.

- (2) Check the appropriate box indicating whether any other firm currently has or had an ownership interest in your firm at present or at any time in the past. If you checked yes, please explain.
- (3) Check the appropriate box that indicates whether at present or at any time in the past your firm:
 - (a) ever existed under different ownership, a different type of ownership, or a different name;
 - (b) existed as a subsidiary of any other firm;
 - (c) existed as a partnership in which one or more of the partners are were other firms;
 - (d) owned any percentage of any other firm; and
 - (e) had any subsidiaries of its own.
- (f) served as a subcontractor with another firm constituting more than 25% of your firm's receipts.

If you answered "Yes" to any of the questions in (J)(a-f), you may be asked to explain the arrangement in detail.

Section 3: MAJORITY OWNER INFORMATION

Identify all individuals or holding companies with any ownership interest in your firm, providing the information requested below (if your firm has more than one owner, provide completed copies of this section for each owner):

A. Identify the majority owner of the firm holding 51% or more ownership interest

- (1) Enter the full name of the owner.
- (2) Enter his/her title or position within your firm.
- (3) Give his/her home phone number.
- (4) Enter his/her home (street) address.
- (5) Indicate this owner's gender.
- (6) Identify the owner's ethnic group membership. If you checked "Other," specify this owner's ethnic group identity not otherwise listed.
- (7) Check the appropriate box to indicate whether this owner is a U.S. citizen or a lawfully admitted permanent resident. If this owner is neither a U.S. citizen nor a lawfully admitted permanent resident of the U.S., then this owner is NOT eligible for certification as a DBE owner.
- (8) Enter the number of years during which this owner has been an owner of your firm.
- (9) Indicate the percentage of the total ownership this person holds and the date acquired, including (if appropriate), the class of stock owned.
- (10) Indicate the dollar value of this owner's initial investment to acquire an ownership interest in your firm, broken down by cash, real estate, equipment, and/or other investment. Describe how you acquired your business and attach documentation substantiating this investment.

B. Additional Owner Information

- (1) Describe the familial relationship of this owner to each other owner of your firm and employees.
- (2) Indicate whether this owner performs a management or supervisory function for any other business. If you

checked "Yes," state the name of the other business and this owner's function/title held in that business.

- (3) (a) Check the appropriate box that indicates whether this owner owns or works for any other firm(s) that has any relationship with your firm. If you checked "Yes," identify the name of the other business, the nature of the business relationship, and the owner's function at the firm.
 - (b) If the owner works for any other firm, non-profit organization, or is engaged in any other activity more than 10 hours per week, please identify this activity.
- (4) (a) Provide the personal net worth of the owner applying for certification in the space provided. Complete and attach the accompanying "Personal Net Worth Statement for DBE/ACDBE Program Eligibility" with your application. Note, complete this section and accompanying statement only for each owner applying for DBE qualification (i.e., for each owner claiming to be socially and economically disadvantaged).
 - (b) Check the appropriate box that indicates whether any trust has been created for the benefit of the disadvantaged owner(s). If you answered "Yes," you may be asked to provide a copy of the trust instrument.
- (5) Check the appropriate to indicate whether any of your immediate family members, managers, or employees, own, manage, or are associated with another company. Immediate family member is defined in 49 C.F.R. §26.5. If you answered "Yes," provide the name of each person, your relationship to them, the name of the company, the type of business, and whether they own or manage the company.

Section 4: CONTROL

A. Identify the firm's Officers and Board of Directors

- (1) In the space provided, state the name, title, date of appointment, ethnicity, and gender of each officer.
- (2) In the space provided, state the name, title, date of appointment, ethnicity, and gender of each individual serving on your firm's Board of Directors.
- (3) Check the appropriate box to indicate whether any of your firm's officers and/or directors listed above performs a management or supervisory function for any other business. If you answered "Yes," identify each person by name, his/her title, the name of the other business in which s/he is involved, and his/her function performed in that other business.
- (4) Check the appropriate box that indicates whether any of your firm's officers and/or directors listed above own or work for any other firm(s) that has a relationship with your firm (e.g., ownership interest, shared office space, financial investments, equipment leases, personnel sharing, etc.) If you answered "Yes," identify the name of the firm, the individual's name, and the nature of his/her business relationship with that other firm.

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 <p>B. Duties of Owners, Officers, Directors, Managers and Key Personnel</p> <p>(1), (2) Specify the roles of the majority and minority owners, directors, officers, and managers, and key personnel who control the functions listed for the business. Submit resumes for each owner and non-owner identified below. State the name of the individual, title, race and gender and percentage ownership if any. Circle the frequency of each person's involvement as follows: "always, frequently, seldom, or never" in each area.</p> <p>Indicate whether any of the persons listed in this section perform a management or supervisory function for any other business. Identify the person, business, and their title/function. Identify if any of the persons listed above own or work for any other firm(s) that has a relationship with this firm (e.g. ownership interest, shared office space, financial investment, equipment, leases, personnel sharing, etc.) If you answered "Yes," describe the nature of his/her business relationship with that other firm.</p> <p>C. Inventory: Indicate firm inventory in these categories:</p> <p>(1) Equipment and Vehicles State the make and model, and current dollar value of each piece of equipment and motor vehicle held and/or used by your firm. Indicate whether each piece is either owned or leased by your firm or owner, whether it is used as collateral, and where this item is stored.</p> <p>(2) Office Space State the street address of each office space held and/or used by your firm. Indicate whether your firm or owner owns or leases the office space and the current dollar value of that property or its lease.</p> <p>(3) Storage Space State the street address of each storage space held and/or used by your firm. Indicate whether your firm or owner owns or leases the storage space and the current dollar value of that property or its lease. Provide a signed lease agreement for each property.</p> <p>D. Does your firm rely on any other firm for management functions or employee payroll?</p> <p>Check the appropriate box that indicates whether your firm relies on any other firm for management functions or for employee payroll. If you answered "Yes," you may be asked to explain the nature of that reliance and the extent to which the other firm carries out such functions.</p> <p>E. Financial / Banking Information</p> <p>Banking Information. State the name, City and State of your firm's bank. In the space provided, identify the persons able to sign checks on this account. Provide bank authorization and signature cards.</p> <p>Bonding Information. State your firm's bonding limits (in dollars), specifying both the aggregate and project limits.</p>	<p>F. Sources, amounts, and purposes of money loaned to your firm, including the names of persons or firms guaranteeing the loan.</p> <p>State the name and address of each source, the name of person securing the loan, original dollar amount and the current balance of each loan, and the purpose for which each loan was made to your firm. Provide copies of signed loan agreements and security agreements.</p> <p>G. Contributions or transfers of assets to/from your firm and to/from any of its owners or another individual over the past two years:</p> <p>Indicate in the spaces provided, the type of contribution or asset that was transferred, its current dollar value, the person or firm <u>from whom</u> it was transferred, the person or firm <u>to whom</u> it was transferred, the relationship between the two persons and/or firms, and the date of the transfer.</p> <p>H. Current licenses/permits held by any owner or employee of your firm.</p> <p>List the name of each person in your firm who holds a professional license or permit, the type of permit or license, the expiration date of the permit or license, and issuing State of the license or permit. Attach copies of licenses, license renewal forms, permits, and local authority forms.</p> <p>I. Largest contracts completed by your firm in the past three years, if any.</p> <p>List the name of each owner or contractor for each contract, the name and location of the projects under each contract, the type of work performed on each contract, and the dollar value of each contract.</p> <p>J. Largest active jobs on which your firm is currently working.</p> <p>For each active job listed, state the name of the prime contractor and the project number, the location, the type of work performed, the project start date, the anticipated completion date, and the dollar value of the contract.</p> <p>AIRPORT CONCESSION/ACDB/EI APPLICANTS</p> <p>Identify the concession space, address and location at the airport, the value of the property or lease, and fees/lease payments paid to the airport. Provide information concerning any other airport concession businesses the applicant firm or any affiliate owns and/or operates, including name, location, type of concession, and start date of the concession enterprise.</p> <p>AFFIDAVIT & SIGNATURE</p> <p>The Affidavit of Certification must accompany your application for certification. Carefully read the attached affidavit in its entirety. Fill in the required information for each blank space, and sign and date the affidavit in the presence of a Notary Public, who must then notarize the form.</p>
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Section 1: CERTIFICATION INFORMATION				
A. Basic Contact Information				
(1) Contact person and Title: _____		(2) Legal name of firm: _____		
(3) Phone #: (____) _____ - _____		(4) Other Phone #: (____) _____ - _____		
(5) Fax #: (____) _____ - _____		(6) E-mail: _____		
(7) Firm Websites: _____		(8) Street address of firm (No P.O. Box):		
City: _____	County/Parish: _____	State: _____	Zip: _____	
(9) Mailing address of firm (if different):		City: _____		
County/Parish: _____	State: _____	Zip: _____		
B. Prior/Other Certifications and Applications				
(10) Is your firm currently certified for any of the following U.S. DOT programs?				
<input type="checkbox"/> DBE <input type="checkbox"/> ACDBE Names of certifying agencies: _____				
<small>Ⓢ If you are certified in your home state as a DBE/ACDBE, you do <u>not</u> have to complete this application for other states. Ask your state UCP about the interstate certification process.</small>				
List the dates of any site visits conducted by your home state and any other states or UCP members:				
Date ____/____/____ State/UCP Member: _____ Date ____/____/____ State/UCP Member: _____				
(11) Indicate whether the firm or any persons listed in this application have ever been:				
(a) Denied certification or decertified as a DBE, ACDBE, 8(a), SDB, MBE/WBE firm? <input type="checkbox"/> Yes <input type="checkbox"/> No				
(b) Withdrawn an application for these programs, or debarred or suspended or otherwise had bidding privileges denied or restricted by any state or local agency, or Federal entity? <input type="checkbox"/> Yes <input type="checkbox"/> No				
If yes, explain the nature of the action. (If you appealed the decision to DOT or another agency, attach a copy of the decision.)				

Section 2: GENERAL INFORMATION				
A. Business Profile: (1) Give a concise description of the firm's primary activities and the product(s) or service(s) it provides. If your company offers more than one product/service, list the primary product or service first. Please use additional paper if necessary. This description may be used in our database and the UCP online directory if you are certified as a DBE or ACDBE.				

(2) Applicable NAICS Codes for this line of work include: _____				
(3) This firm was established on ____/____/____		(4) I/We have owned this firm since: ____/____/____		
(5) Method of acquisition (Check all that apply):				
<input type="checkbox"/> Started new business <input type="checkbox"/> Bought existing business <input type="checkbox"/> Inherited business <input type="checkbox"/> Secured concession				
<input type="checkbox"/> Merger or consolidation <input type="checkbox"/> Other (explain) _____				
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(6) Is your firm "for profit"? ☐ Yes ☐ No → **STOP!** If your firm is NOT for-profit, then you do NOT qualify for this program and should not fill out this application.
 Federal Tax ID# _____

(7) Type of Legal Business Structure: (check all that apply):
☐ Sole Proprietorship ☐ Limited Liability Partnership
☐ Partnership ☐ Corporation
☐ Limited Liability Company ☐ Joint Venture (Identify all JV partners _____)
☐ Applying as an ACDBE ☐ Other, Describe _____

(8) Number of employees: Full-time _____ Part-time _____ Seasonal _____ Total _____
 (Provide a list of employees, their job titles, and dates of employment, to your application).

(9) Specify the firm's gross receipts for the last 3 years. (Submit complete copies of the firm's Federal tax returns for each year. If there are affiliates or subsidiaries of the applicant firm or owners, you must submit complete copies of these firms' Federal tax returns).

Year _____	Gross Receipts of Applicant Firm \$ _____	Gross Receipts of Affiliate Firms \$ _____
Year _____	Gross Receipts of Applicant Firm \$ _____	Gross Receipts of Affiliate Firms \$ _____
Year _____	Gross Receipts of Applicant Firm \$ _____	Gross Receipts of Affiliate Firms \$ _____

B. Relationships and Dealings with Other Businesses

(1) Is your firm co-located at any of its business locations, or does it share a telephone number, P.O. Box, office or storage space, yard, warehouse, facilities, equipment, inventory, financing, office staff, and/or employees with any other business, organization, or entity? ☐ Yes ☐ No
 If Yes, explain the nature of your relationship with these other businesses by identifying the business or person with whom you have any formal, informal, written, or oral agreement. Also detail the items shared.

(2) Has any other firm had an ownership interest in your firm at present or at any time in the past?
☐ Yes ☐ No If Yes, explain _____

(3) At present, or at any time in the past, has your firm:
 (a) Ever existed under different ownership, a different type of ownership, or a different name? ☐ Yes ☐ No
 (b) Existed as a subsidiary of any other firm? ☐ Yes ☐ No
 (c) Existed as a partnership in which one or more of the partners are/were other firms? ☐ Yes ☐ No
 (d) Owned any percentage of any other firm? ☐ Yes ☐ No
 (e) Had any subsidiaries? ☐ Yes ☐ No
 (f) Served as a subcontractor with another firm constituting more than 25% of your firm's receipts? ☐ Yes ☐ No

(If you answered "Yes" to any of the questions in (2) and/or (3)(a)-(f), you may be asked to provide further details and explain whether the arrangement continues).

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Section 3: MAJORITY OWNER INFORMATION

A. Identify the majority owner of the firm holding 51% or more ownership interest.

(1) Full Name: _____ (2) Title: _____ (3) Home Phone #: _____
 () - _____

(4) Home Address (Street and Number): _____ City: _____ State: _____ Zip: _____

(5) Gender: ☐ Male ☐ Female

(6) Ethnic group membership (Check all that apply):

☐ Black ☐ Hispanic
☐ Asian Pacific ☐ Native American
☐ Subcontinent Asian
☐ Other (specify) _____

(7) U.S. Citizenship:

☐ U.S. Citizen
☐ Lawfully Admitted Permanent Resident

(8) Number of years as owner: _____

(9) Percentage owned: _____ %
 Class of stock owned: _____
 Date acquired: _____

(10) Initial investment to acquire ownership interest in firm:	Type	Dollar Value
	Cash	\$ _____
	Real Estate	\$ _____
	Equipment	\$ _____
	Other	\$ _____

Describe how you acquired your business:

☐ Started business myself
☐ It was a gift from: _____
☐ I bought it from: _____
☐ I inherited it from: _____
☐ Other: _____

(Attach documentation substantiating your investment)

B. Additional Owner Information

(1) Describe familial relationship to other owners and employees: _____

(2) Does this owner perform a management or supervisory function for any other business? ☐ Yes ☐ No
 If Yes, identify: Name of Business: _____ Function/Title: _____

(3)(a) Does this owner own or work for any other firm(s) that has a relationship with this firm? (e.g., ownership interest, shared office space, financial investments, equipment, leases, personnel sharing, etc.) ☐ Yes ☐ No
 Identify the name of the business, and the nature of the relationship, and the owner's function at the firm: _____

(b) Does this owner work for any other firm, non-profit organization, or is engaged in any other activity more than 10 hours per week? If yes, identify this activity: _____

(4)(a) What is the personal net worth of this disadvantaged owner applying for certification? \$ _____


(b) Has any trust been created for the benefit of this disadvantaged owner(s)? ☐ Yes ☐ No
 (If Yes, you may be asked to provide a copy of the trust instrument).

(5) Do any of your immediate family members, managers, or employees own, manage, or are associated with another company? ☐ Yes ☐ No If Yes, provide their name, relationship, company, type of business, and indicate whether they own or manage the company: (Please attach extra sheets, if needed): _____

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Section 3: OWNER INFORMATION, Cont'd.

A. Identify all individuals, firms, or holding companies that hold LESS THAN 51% ownership interest in the firm (Attach separate sheets for each additional owner)

(1) Full Name: _____ (2) Title: _____ (3) Home Phone #: _____
 () - _____

(4) Home Address (Street and Number): _____ City: _____ State: _____ Zip: _____

(5) Gender: ☐ Male ☐ Female

(6) Ethnic group membership (Check all that apply)

☐ Black ☐ Hispanic
☐ Asian Pacific ☐ Native American
☐ Subcontinent Asian
☐ Other (specify) _____

(7) U.S. Citizenship:

☐ U.S. Citizen
☐ Lawfully Admitted Permanent Resident

(8) Number of years as owner: _____

(9) Percentage owned: _____ %
 Class of stock owned: _____
 Date acquired: _____

(10) Initial investment to acquire ownership interest in firm:

Type	Dollar Value
Cash	\$ _____
Real Estate	\$ _____
Equipment	\$ _____
Other	\$ _____

Describe how you acquired your business:

☐ Started business myself
☐ It was a gift from: _____
☐ I bought it from: _____
☐ I inherited it from: _____
☐ Other: _____

(Attach documentation substantiating your investment)

B. Additional Owner Information

(1) Describe familial relationship to other owners and employees: _____

(2) Does this owner perform a management or supervisory function for any other business? ☐ Yes ☐ No
 If Yes, identify: Name of Business: _____ Function/Title: _____

(3)(a) Does this owner own or work for any other firm(s) that has a relationship with this firm? (e.g., ownership interest, shared office space, financial investments, equipment, leases, personnel sharing, etc.) ☐ Yes ☐ No
 Identify the name of the business, and the nature of the relationship, and the owner's function at the firm: _____

(b) Does this owner work for any other firm, non-profit organization, or is engaged in any other activity more than 10 hours per week? If yes, identify this activity: _____

(4)(a) What is the personal net worth of this disadvantaged owner applying for certification? \$ _____


(b) Has any trust been created for the benefit of this disadvantaged owner(s)? ☐ Yes ☐ No
(If Yes, you may be asked to provide a copy of the trust instrument).

(5) Do any of your immediate family members, managers, or employees own, manage, or are associated with another company? ☐ Yes ☐ No If Yes, provide their name, relationship, company, type of business, and indicate whether they own or manage: *(Please attach extra sheets, if needed):* _____

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Section 4: CONTROL


A. Identify your firm's Officers and Board of Directors (If additional space is required, attach a separate sheet).

	Name	Title	Date Appointed	Ethnicity	Gender
(1) Officers of the Company	(a)				
	(b)				
	(c)				
	(d)				
(2) Board of Directors	(a)				
	(b)				
	(c)				
	(d)				

(3) Do any of the persons listed above perform a management or supervisory function for any other business?
☐ Yes ☐ No If Yes, identify for each:

Person: _____ Title: _____
 Business: _____ Function: _____

Person: _____ Title: _____
 Business: _____ Function: _____

(4) Do any of the persons listed in section A above own or work for any other firm(s) that has a relationship with this firm? (e.g., ownership interest, shared office space, financial investments, equipment, leases, personnel sharing, etc.)
☐ Yes ☐ No If Yes, identify for each:

Firm Name: _____ Person: _____
 Nature of Business Relationship: _____

B. Duties of Owners, Officers, Directors, Managers, and Key Personnel

1. (Identify your firm's management personnel who control your firm in the following areas. (Attach separate sheets as needed).)

	Majority Owner (51% or more)				Minority Owner (49% or less)			
	A = Always F = Frequently	S = Seldom N = Never	Name:	Title:	Name:	Title:	Percent Owned:	Percent Owned:
Sets policy for company direction/scope of operations	A	F	S	N	A	F	S	N
Bidding and estimating	A	F	S	N	A	F	S	N
Major purchasing decisions	A	F	S	N	A	F	S	N
Marketing and sales	A	F	S	N	A	F	S	N
Supervises field operations	A	F	S	N	A	F	S	N
Attend bid opening and lettings	A	F	S	N	A	F	S	N
Perform office management (billing, accounts receivable/payable, etc.)	A	F	S	N	A	F	S	N
Hires and fires management staff	A	F	S	N	A	F	S	N
Hire and fire field staff or crew	A	F	S	N	A	F	S	N
Designates profits spending or investment	A	F	S	N	A	F	S	N
Obligates business by contract/credit	A	F	S	N	A	F	S	N
Purchase equipment	A	F	S	N	A	F	S	N
Signs business checks	A	F	S	N	A	F	S	N

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2. Complete for all Officers, Directors, Managers, and Key Personnel who control the following functions for the firm. (Attach separate sheets as needed).

A = Always F = Frequently S = Seldom N = Never	Officer/Director/Manager/Key Personnel				Officer/Director/Manager/Key Personnel			
	Name:	Title:	Race and Gender:	Percent Owned:	Name:	Title:	Race and Gender:	Percent Owned:
Sets policy for company direction/scope of operations	A	F	S	N	A	F	S	N
Bidding and estimating	A	F	S	N	A	F	S	N
Major purchasing decisions	A	F	S	N	A	F	S	N
Marketing and sales	A	F	S	N	A	F	S	N
Supervises field operations	A	F	S	N	A	F	S	N
Attend bid opening and lettings	A	F	S	N	A	F	S	N
Perform office management (billing, accounts receivable/payable, etc.)	A	F	S	N	A	F	S	N
Hires and fires management staff	A	F	S	N	A	F	S	N
Hire and fire field staff or crew	A	F	S	N	A	F	S	N
Designates profits spending or investment	A	F	S	N	A	F	S	N
Obligates business by contract/credit	A	F	S	N	A	F	S	N
Purchase equipment	A	F	S	N	A	F	S	N
Signs business checks	A	F	S	N	A	F	S	N

Do any of the persons listed in B1 or B2 perform a management or supervisory function for any other business? If Yes, identify the person, the business, and their title/function: _____

Do any of the persons listed above own or work for any other firm(s) that has a relationship with this firm? (e.g., ownership interest, shared office space, financial investment, equipment, leases, personnel sharing, etc.) If Yes, describe the nature of the business relationship: _____

C. Inventory: Indicate your firm's inventory in the following categories (Please attach additional sheets if needed):

1. Equipment and Vehicles

Make and Model	Current Value	Owned or Leased by Firm or Owner?	Used as collateral?	Where is item stored?
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				

2. Office Space

Street Address	Owned or Leased by Firm or Owner?	Current Value of Property or Lease

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Street Address	Owned or Leased by Firm or Owner?	Current Value of Property or Lease
<p>3. Storage Space <i>(Provide signed lease agreements for the properties listed)</i></p>		
<p>D. Does your firm rely on any other firm for management functions or employee payroll? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>		
<p>E. Financial/Banking Information <i>(Provide bank authorization and signature cards)</i></p>		
<p>Name of bank: _____ City and State: _____</p>		
<p>The following individuals are able to sign checks on this account: _____</p>		
<p>Name of bank: _____ City and State: _____</p>		
<p>The following individuals are able to sign checks on this account: _____</p>		
<p>Bonding Information. If you have bonding capacity, identify the firm's bonding aggregate and project limits: Aggregate limit \$ _____ Project limit \$ _____</p>		
<p>F. Identify all sources, amounts, and purposes of money loaned to your firm including from financial institutions. Identify whether you the owner and any other person or firm loaned money to the applicant DBE/ACDBE. Include the names of any persons or firms guaranteeing the loan, if other than the listed owner. (Provide copies of signed loan agreements and security agreements).</p>		
Name of Source	Address of Source	Name of Person Guaranteeing the Loan
Original Amount	Current Balance	Purpose of Loan
1. _____		
2. _____		
3. _____		
<p>G. List all contributions or transfers of assets to/from your firm and to/from any of its owners or another individual over the past two years (Attach additional sheets if needed):</p>		
Contribution/Asset	Dollar Value	From Whom Transferred
To Whom Transferred	Relationship	Date of Transfer
1. _____		
2. _____		
3. _____		
<p>H. List current licenses/permits held by any owner and/or employee of your firm (e.g. contractor, engineer, architect, etc.) (Attach additional sheets if needed):</p>		
Name of License/Permit Holder	Type of License/Permit	Expiration Date
State		
1. _____		
2. _____		
3. _____		
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I. List the three largest contracts completed by your firm in the past three years, if any:

Name of Owner/Contractor	Name/Location of Project	Type of Work Performed	Dollar Value of Contract
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____

J. List the three largest active jobs on which your firm is currently working:

Name of Prime Contractor and Project Number	Location of Project	Type of Work	Project Start Date	Anticipated Completion Date	Dollar Value of Contract
1. _____	_____	_____	_____	_____	_____
2. _____	_____	_____	_____	_____	_____
3. _____	_____	_____	_____	_____	_____

AIRPORT CONCESSION (ACDBE) APPLICANTS ONLY MUST COMPLETE THIS SECTION

Identify the following information concerning the ACDBE applicant firm:

<u>Concession Space</u>	<u>Address / Location at Airport</u>	<u>Value of Property or Lease</u>	<u>Fees/Lease Payments Paid to the Airport</u>


Provide information concerning any other airport concession businesses the applicant firm or any affiliate owns and/or operates, including name, location, type of concession, and start date of concession

<u>Name of Concession</u>	<u>Location</u>	<u>Type of Concession</u>	<u>Start Date of Concession</u>

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AFFIDAVIT OF CERTIFICATION	
<i>This form must be signed and notarized for each owner upon which disadvantaged status is relied.</i>	
A MATERIAL OR FALSE STATEMENT OR OMISSION MADE IN CONNECTION WITH THIS APPLICATION IS SUFFICIENT CAUSE FOR DENIAL OF CERTIFICATION, REVOCATION OF A PRIOR APPROVAL, INITIATION OF SUSPENSION OR DEBARMENT PROCEEDINGS, AND MAY SUBJECT THE PERSON AND/OR ENTITY MAKING THE FALSE STATEMENT TO ANY AND ALL CIVIL AND CRIMINAL PENALTIES AVAILABLE PURSUANT TO APPLICABLE FEDERAL AND STATE LAW.	
<p>I _____ (full name printed), swear or affirm under penalty of law that I am _____ (title) of the applicant firm _____ and that I have read and understood all of the questions in this application and that all of the foregoing information and statements submitted in this application and its attachments and supporting documents are true and correct to the best of my knowledge, and that all responses to the questions are full and complete, omitting no material information. The responses include all material information necessary to fully and accurately identify and explain the operations, capabilities and pertinent history of the named firm as well as the ownership, control, and affiliations thereof.</p> <p>I recognize that the information submitted in this application is for the purpose of inducing certification approval by a government agency. I understand that a government agency may, by means it deems appropriate, determine the accuracy and truth of the statements in the application, and I authorize such agency to contact any entity named in the application, and the named firm's bonding companies, banking institutions, credit agencies, contractors, clients, and other certifying agencies for the purpose of verifying the information supplied and determining the named firm's eligibility.</p> <p>I agree to submit to government audit, examination and review of books, records, documents and files, in whatever form they exist, of the named firm and its affiliates, inspection of its places(s) of business and equipment, and to permit interviews of its principals, agents, and employees. I understand that refusal to permit such inquiries shall be grounds for denial of certification.</p> <p>If awarded a contract, subcontract, concession lease or sublease, I agree to promptly and directly provide the prime contractor, if any, and the Department, recipient agency, or federal funding agency on an ongoing basis, current, complete and accurate information regarding (1) work performed on the project; (2) payments; and (3) proposed changes, if any, to the foregoing arrangements.</p> <p>I agree to provide written notice to the recipient agency or Unified Certification Program of any material change in the information contained in the original application within 30 calendar days of such change (e.g., ownership changes, address/telephone number, personal net worth exceeding \$1.32 million, etc.).</p>	<p>I acknowledge and agree that any misrepresentations in this application or in records pertaining to a contract or subcontract will be grounds for terminating any contract or subcontract which may be awarded; denial or revocation of certification; suspension and debarment; and for initiating action under federal and/or state law concerning false statement, fraud or other applicable offenses.</p> <p>I certify that I am a socially and economically disadvantaged individual who is an owner of the above-referenced firm seeking certification as a Disadvantaged Business Enterprise or Airport Concession Disadvantaged Business Enterprise. In support of my application, I certify that I am a member of one or more of the following groups, and that I have held myself out as a member of the group(s): (Check all that apply):</p> <p><input type="checkbox"/> Female <input type="checkbox"/> Black American <input type="checkbox"/> Hispanic American <input type="checkbox"/> Native American <input type="checkbox"/> Asian-Pacific American <input type="checkbox"/> Subcontinent Asian American <input type="checkbox"/> Other (specify) _____</p> <p>I certify that I am socially disadvantaged because I have been subjected to racial or ethnic prejudice or cultural bias, or have suffered the effects of discrimination, because of my identity as a member of one or more of the groups identified above, without regard to my individual qualities.</p> <p>I further certify that my personal net worth does not exceed \$1.32 million, and that I am economically disadvantaged because my ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same or similar line of business who are not socially and economically disadvantaged.</p> <p>I declare under penalty of perjury that the information provided in this application and supporting documents is true and correct.</p> <p>Signature _____ (DBE/ACDBE Applicant) (Date) _____</p> <p><u>NOTARY CERTIFICATE</u></p>
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UNIFORM CERTIFICATION APPLICATION SUPPORTING DOCUMENTS CHECKLIST	
<p>In order to complete your application for DBE or ACDBE certification, you must attach copies of all of the following REQUIRED documents. A failure to supply any information requested by the UCP may result in your firm denied DBE/ACDBE certification.</p>	
<u>Required Documents for All Applicants</u>	
<input type="checkbox"/> Résumés (that include places of employment with corresponding dates), for all owners, officers, and key personnel of the applicant firm	<input type="checkbox"/> Corporate by-laws and any amendments
<input type="checkbox"/> Personal Net Worth Statement for each socially and economically disadvantaged owners comprising 51% or more of the ownership percentage of the applicant firm.	<input type="checkbox"/> Corporate bank resolution and bank signature cards
<input type="checkbox"/> Personal Federal tax returns for the past 3 years, if applicable, for each disadvantaged owner	<input type="checkbox"/> Official Certificate of Formation and Operating Agreement with any amendments (for LLCs)
<input type="checkbox"/> Federal tax returns (and requests for extensions) filed by the firm and its affiliates with related schedules, for the past 3 years.	<u>Optional Documents to Be Provided on Request</u>
<input type="checkbox"/> Documented proof of contributions used to acquire ownership for each owner (e.g., both sides of cancelled checks)	<p>The UCP to which you are applying may require the submission of the following documents. If requested to provide these documents, you must supply them with your application or at the on-site visit.</p>
<input type="checkbox"/> Signed loan and security agreements, and bonding forms	<input type="checkbox"/> Proof of citizenship
<input type="checkbox"/> List of equipment and/or vehicles owned and leased including VIN numbers, copy of titles, proof of ownership, insurance cards for each vehicle.	<input type="checkbox"/> Insurance agreements for each truck owned or operated by your firm
<input type="checkbox"/> Title(s), registration certificate(s), and U.S. DOT numbers for each truck owned or operated by your firm	<input type="checkbox"/> Audited financial statements (if available)
<input type="checkbox"/> Licenses, license renewal forms, permits, and haul authority forms	<input type="checkbox"/> Personal Federal Tax returns for the past 3 years, if applicable, for other disadvantaged owners of the firm.
<input type="checkbox"/> Descriptions of all real estate (including office/storage space, etc.) owned/leased by your firm and documented proof of ownership/signed leases	<input type="checkbox"/> Trust agreements held by any owner claiming disadvantaged status
<input type="checkbox"/> Documented proof of any transfers of assets to/from your firm and/or to/from any of its owners over the past 2 years	<input type="checkbox"/> Year-end balance sheets and income statements for the past 3 years (or life of firm, if less than three years)
<input type="checkbox"/> DBE/ACDBE and SBA 8(a), SDB, MBE/WBE certifications, denials, and/or decertifications, if applicable; and any U.S. DOT appeal decisions on these actions.	<u>Suppliers</u>
<input type="checkbox"/> Bank authorization and signatory cards	<input type="checkbox"/> List of product lines carried and list of distribution equipment owned and/or leased
<input type="checkbox"/> Schedule of salaries (or other remuneration) paid to all officers, managers, owners, and/or directors of the firm	
<input type="checkbox"/> List of all employees, job titles, and dates of employment.	
<input type="checkbox"/> Proof of warehouse/storage facility ownership or lease arrangements	
<u>Partnership or Joint Venture</u>	
<input type="checkbox"/> Original and any amended Partnership or Joint Venture Agreements	
<u>Corporation or LLC</u>	
<input type="checkbox"/> Official Articles of Incorporation (signed by the state official)	
<input type="checkbox"/> Both sides of all corporate stock certificates and your firm's stock transfer ledger	
<input type="checkbox"/> Shareholders' Agreement(s)	
<input type="checkbox"/> Minutes of all stockholders and board of directors meetings	
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[79 FR 59603, Oct. 2, 2014]

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Appendix G to Part 26—Personal Net Worth Statement

U.S. Department of Transportation		Personal Net Worth Statement For DBE/ACDBE Program Eligibility		OMB APPROVAL NO: EXPIRATION DATE:	
This form is used by all participants in the U.S. Department of Transportation's Disadvantaged Business Enterprise (DBE) Programs. Each individual owner of a firm applying to participate as a DBE or ACDBE, whose ownership and control are relied upon for DBE certification must complete this form. Each person signing this form authorizes the Unified Certification Program (UCP) recipient to make inquiries as necessary to verify the accuracy of the statements made. The agency you apply to will use the information provided to determine whether an owner is economically disadvantaged as defined in the DBE program regulations 49 C.F.R. Parts 23 and 26. Return form to appropriate UCP certifying member, not U.S. DOT.					
Name				Business Phone	
Residence Address (As reported to the IRS) City, State and Zip Code				Residence Phone	
Business Name of Applicant Firm					
Spouse's Full Name (Marital Status: Single, Married, Divorced, Union)					
ASSETS (Omit Cents)		LIABILITIES (Omit Cents)			
Cash and Cash Equivalents	\$	Loan on Life Insurance (Complete Section 5)	\$		
Retirement Accounts (IRAs, 401Ks, 403Bs, Pensions, etc.) (Report full value minus tax and interest penalties that would apply if assets were distributed today) (Complete Section 3)	\$	Mortgages on Real Estate Excluding Primary Residence Debt (Complete Section 4)	\$		
Brokerage, Investment Accounts	\$	Notes, Obligations on Personal Property (Complete Section 6)	\$		
Assets Held in Trust	\$	Notes & Accounts Payable to Banks and Others (Complete Section 2)	\$		
Loans to Shareholders & Other Receivables (Complete section 6)	\$	Other Liabilities (Complete Section 8)	\$		
Real Estate Excluding Primary Residence (Complete Section 4)	\$	Unpaid Taxes (Complete Section 8)	\$		
Life Insurance (Cash Surrender Value Only) (Complete Section 5)	\$				
Other Personal Property and Assets (Complete Section 6)	\$				
Business Interests Other Than the Applicant Firm (Complete Section 7)	\$				
Total Assets	\$	Total Liabilities	\$		
		NET WORTH			
Section 2: Notes Payable to Banks and Others					
Name of Noteholder(s)	Original Balance	Current Balance	Payment Amount	Frequency (monthly, etc.)	How Secured or Endorsed Type of Collateral

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Section 3. Brokerage and custodial accounts, stocks, bonds, retirement accounts. (Full Value) (Use attachments if necessary)				
Name of Security / Brokerage Account / Retirement Account	Cost	Market Value Quotation/Exchange	Date of Quotation/Exchange	Total Value

Section 4. Real Estate Owned (Including Primary Residence, Investment Properties, Personal Property Leased or Rented for Business Purposes, Farm Properties, or any Other Income Producing property). (List each parcel separately. Add additional sheets if necessary)			
	Primary Residence	Property B	Property C
Type of Property			
Address			
Date Acquired and Method of Acquisition (purchase, inherit, divorce, gift, etc.)			
Names on Deed			
Purchase Price			
Present Market Value			
Source of Market Valuation			
Name of all Mortgage Holders			
Mortgage Acc. # and balance (as of date of form)			
Equity line of credit balance			
Amount of Payment Per Month/Year (Specify)			

Section 5. Life Insurance Held (Give face amount and cash surrender value of policies, name of insurance company and beneficiaries)				
Insurance Company	Face Value	Cash Surrender Amount	Beneficiaries	Loan on Policy Information

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Section 6. Other Personal Property and Assets (Use attachments as necessary)				
Type of Property or Asset	Total Present Value	Amount of Liability (Balance)	Is this asset insured?	Lien or Note amount and Terms of Payment
Automobiles and Vehicles (including recreation vehicles, motorcycles, boats, etc.) include personally owned vehicles that are leased or rented to businesses or other individuals.				
Household Goods / Jewelry				
Other (List)				
Accounts and Notes Receivable				
Section 7. Value of Other Business Investments, Other Businesses Owned (excluding applicant firm) Sole Proprietorships, General Partners, Joint Ventures, Limited Liability Companies, Closely-held and Public Traded Corporations				
Section 8. Other Liabilities and Unpaid Taxes (Describe)				
Section 9. Transfer of Assets: Have you within 2 years of this personal net worth statement, transferred assets to a spouse, domestic partner, relative, or entity in which you have an ownership or beneficial interest including a trust? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, describe				
<p>I declare under penalty of perjury that the information provided in this personal net worth statement and supporting documents is complete, true and correct. I certify that no assets have been transferred to any beneficiary for less than fair market value in the last two years. I recognize that the information submitted in this application is for the purpose of inducing certification approval by a government agency. I understand that a government agency may, by means it deems appropriate, determine the accuracy and truth of the statements in the application and this personal net worth statement, and I authorize such agency to contact any entity named in the application or this personal financial statement, including the names banking institutions, credit agencies, contractors, clients, and other certifying agencies for the purpose of verifying the information supplied and determining the named firm's eligibility. I acknowledge and agree that any misrepresentations in this application or in records pertaining to a contract or subcontract will be grounds for terminating any contract or subcontract which may be awarded, denial or revocation of certification, suspension and debarment, and for instituting action under federal and/or state law concerning false statement, fraud or other applicable offenses.</p>				
<div style="text-align: center;"> NOTARY CERTIFICATE (Insert applicable state acknowledgment, affirmation, or oath) </div>				
<div style="display: flex; justify-content: space-between;"> Signature (DBE/ACDBE Owner) Date </div>				
In collecting the information requested by this form, the Department of Transportation complies with Federal Freedom of Information and Privacy Act (5 U.S.C. 552 and 552a) provisions. The Privacy Act provides comprehensive protections for your personal information. This includes how information is collected, used, disclosed, stored, and discarded. Your information will not be disclosed to third parties without your consent. The information collected will be used solely to determine your firm's eligibility to participate in the Disadvantaged Business Enterprise (DBE) Program or Airport Concessionaire DBE Programs as defined in 49 C.F.R. Parts 23 and 25. You may review DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477).				

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General Instructions for Completing the Personal Net Worth Statement for DBE/ACDBE Program Eligibility

Please do not make adjustments to your figures pursuant to U.S. DOT regulations 49 C.F.R. Parts 23 and 26. The agency that you apply to will use the information provided on your completed Personal Net Worth (PNW) Statement to determine whether you meet the economic disadvantage requirements of 49 C.F.R. Parts 23 and 26. If there are discrepancies or questions regarding your form, it may be returned to you to correct and complete again.

An individual's personal net worth according to 49 C.F.R. Parts 23 and 26 includes only his or her own share of assets held separately, jointly, or as community property with the individual's spouse and excludes the following:

- Individual's ownership interest in the applicant firm;
- Individual's equity in his or her primary residence;
- Tax and interest penalties that would accrue if retirement savings or investments (e.g., pension plans, Individual Retirement Accounts, 401(k) accounts, etc.) were distributed at the present time.

Indicate on the form, if any items are jointly owned. If the personal net worth of the majority owner(s) of the firm exceeds \$1.32 million, as defined by 49 C.F.R. Parts 23 and 26, the firm is not eligible for DBE or ACDBE certification. If the personal net worth of the majority owner(s) exceeds the \$1.32 million cap at any time after your firm is certified, the firm is no longer eligible for certification. Should that occur, it is your responsibility to contact your certifying agency in writing to advise that your firm no longer qualifies as a DBE or ACDBE. You must fill out all line items on the Personal Net Worth Statement.

If necessary, use additional sheets of paper to report all information and details. If you have any questions about completing this form, please contact one of the UCP certifying agencies.

Assets

All assets must be reported at their current fair market values as of the date of your statement. *Assessor's assessed value for real estate, for example, is not acceptable.* Assets held in a trust should be included.

Cash and Cash Equivalents: On page 1, enter the total amount of cash or cash equivalents in bank accounts, including checking, savings, money market, certificates of deposit held domestic or foreign. Provide copies of the bank statement.

Retirement Accounts, IRA, 401Ks, 403Bs, Pensions: On page 1, enter the full value minus tax and interest penalties that would apply if assets were distributed as of the date of the form. Describe the number of shares, name of securities, cost market value, date of quotation, and total value in section 3 on page 2.

Brokerage and Custodial Accounts, Stocks, Bonds, Retirement Accounts: Report total value on page 1, and on page 2, section 3, enter the name of the security, brokerage account, retirement account, etc.; the cost, market value of the asset; the date of quotation; and total value as of the date of the PNW statement.

Assets Held in Trust: Enter the total value of the assets held in trust on page 1, and provide the names of beneficiaries and trustees, and other information in Section 6 on page 3.

Loans to Shareholders and Other Receivables not listed: Enter amounts loaned to you from your firm, from any other business entity in which you hold an ownership interest, and other receivables not listed above. Complete Section 6 on page 3.

Real Estate: The total value of real estate excluding your primary residence should be listed on page 1. In section 4 on page 2, please list your primary residence in column 1, including the address, method of acquisition, date of acquired, names of deed, purchase price, present fair market value, source of market valuation, names of all mortgage holders, mortgage account number and balance, equity line of credit balance, and amount of payment. List this information for all real estate held. Please ensure that this section contains all real estate owned, including rental properties, vacation properties, commercial properties, personal property leased or rented for business purposes, farm properties and any other income producing properties, etc. Attach additional sheets if needed.

Life Insurance: On page 1, enter the cash surrender value of this asset. In section 5 on page 2, enter the name of the insurance company, the face value of the policy, cash surrender value, beneficiary names, and loans on the policy.

Other Personal Property and Assets: Enter the total value of personal property and assets you own on page 1. Personal property includes motor vehicles, boats, trailers, jewelry, furniture, household goods, collectibles, clothing, and personally owned vehicles that are leased or rented to businesses or other individuals. In section 6 on page 3, list these assets and enter the present value, the balance of any liabilities, whether the asset is insured, and lien or note information and terms of payments. For accounts and notes receivable, enter the total value of all monies owed to you personally, if any. This should include shareholder loans to the applicant firm, if those exist. If the asset is insured, you may be asked to provide a copy of the policy. You may also be asked to provide a copy of any liens or notes on the property.

Other Business Interests Other than Applicant Firm: On page 1, enter the total value of your other business investments (excluding the applicant firm). In section 7 on page 3, enter information concerning the businesses you

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DIVISION 1 - REFERENCED DOCUMENTS

hold an ownership interest in, such as sole proprietorships, partnerships, joint ventures, corporations, or limited liability corporations (other than the applicant firm). Do not reduce the value of these entries by any loans from the outside firm to the DBE/ACDBE applicant business.

Liabilities

Mortgages on Real Estate: Enter the total balance on all mortgages payable on real estate on page 1.

Loans on Life Insurance: Enter the total value of all loans due on life insurance policies on page 1, and complete section 5 on page 2.

Notes & Accounts Payable to Bank and Others: On page 1, section 2, enter details concerning any liability, including name of noteholders, original and current balances, payment terms, and security/collateral information. The entries should include automobile installment accounts. This should not, however, include any mortgage balances as this information is captured in section 4. Do not include loans for your business or mortgages for your properties in this section. You may be asked to submit copy of note/security agreement, and the most recent account statement.

Other Liabilities: On page 1, enter the total value due on all other liabilities not listed in the previous entries. In section 8, page 3, report the name of the individual obligated, names of co-signers, description of the liability, the name of the entity owed, the date of the obligation, payment amounts and terms. Note: Do not include contingent liabilities in this section. Contingent liabilities are liabilities that belong to you only if an event(s) should occur. For example, if you

have co-signed on a relative's loan, but you are not responsible for the debt until your relative defaults, that is a contingent liability. Contingent liabilities do not count toward your net worth until they become actual liabilities.

Unpaid Taxes: Enter the total amount of all taxes that are currently due, but are unpaid on page 1, and complete section 8 on page 3. Contingent tax liabilities or anticipated taxes for current year should not be included. Describe in detail the name of the individual obligated, names of co-signers, the type of unpaid tax, to whom the tax is payable, due date, amount, and to what property, if any, the tax liens attaches. If none, state "NONE." You must include documentation, such as tax liens, to support the amounts.

Transfers of Assets:

Transfers of Assets: If you checked the box indicating yes on page 3 in this category, provide details on all asset transfers (within 2 years of the date of this personal net worth statement) to a spouse, domestic partner, relative, or entity in which you have an ownership or beneficial interest including a trust. Include a description of the asset; names of individuals on the deed, title, note or other instrument indicating ownership rights; the names of individuals receiving the assets and their relation to the transferor; the date of the transfer; and the value or consideration received. Submit documentation requested on the form related to the transfer.

Affidavit

Be sure to sign and date the statement. The Personal Net Worth Statement must be notarized.

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DIVISION 1 - REFERENCED DOCUMENTS

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DIVISION 1 – PROJECT CONTRACT SPECIFICATIONS

FEDERAL PREVAILING WAGE RATES

STATE OF MAINE

**ANDROSCOGGIN COUNTY – HIGHWAY
ME20240045 - 01/05/2024**

and

**ANDROSCOGGIN COUNTY – BUILDING
ME20240004 - 11/15/2024**

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Superseded General Decision Number: ME20230045

State: Maine

Construction Type: Highway

County: Androscoggin County in Maine.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 14026 generally applies to the contract.. The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">. Executive Order 13658 generally applies to the contract.. The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
0 01/05/2024

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 18.95	3.23
CEMENT MASON/CONCRETE FINISHER...	\$ 19.27	1.13
ELECTRICIAN.....	\$ 25.21	5.63
HIGHWAY/PARKING LOT STRIPING:		
Laborer.....	\$ 15.53 **	2.04
INSTALLER - GUARDRAIL.....	\$ 19.98	2.55
IRONWORKER, REINFORCING.....	\$ 21.85	0.00
IRONWORKER, STRUCTURAL.....	\$ 22.33	4.50
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	\$ 16.71 **	0.63
LABORER: Common or General.....	\$ 14.65 **	1.64
LABORER: Epoxy Injector (Concrete).....	\$ 13.43 **	1.15
LABORER: Wheelman.....	\$ 22.87	3.79
OPERATOR:		
Backhoe/Excavator/Trackhoe.....	\$ 20.09	3.20
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	\$ 21.03	3.43
OPERATOR: Broom/Sweeper.....	\$ 19.52	0.00
OPERATOR: Bulldozer.....	\$ 21.71	5.67
OPERATOR: Grader/Blade.....	\$ 27.40	8.13
OPERATOR: Loader.....	\$ 19.52	3.19
OPERATOR: Mechanic.....	\$ 24.69	8.18
OPERATOR: Milling Machine.....	\$ 28.51	5.44
OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....	\$ 20.86	3.73
OPERATOR: Roller (Earth).....	\$ 14.74 **	1.29
OPERATOR: Roller Asphalt.....	\$ 19.14	3.43
TRAFFIC CONTROL: Flagger.....	\$ 9.06 **	0.00
TRAFFIC CONTROL:		
Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....	\$ 17.02 **	5.37
TRUCK DRIVER: Dump Truck.....	\$ 15.60 **	1.38

WELDERS - Receive rate prescribed for craft performing

operation to which welding is incidental.

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.20) or 13658 (\$12.90). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal

process described here, initial contact should be with the
Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an
interested party (those affected by the action) can request
review and reconsideration from the Wage and Hour Administrator
(See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the
interested party's position and by any information (wage
payment data, project description, area practice material,
etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an
interested party may appeal directly to the Administrative
Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

State: Maine

Construction Type: Building

County: Androscoggin County in Maine.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none">◆ Executive Order 14026 generally applies to the contract.◆ The contractor must pay all covered workers at least \$17.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2024.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none">◆ Executive Order 13658 generally applies to the contract.◆ The contractor must pay all covered workers at least \$12.90 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours performing on that contract in 2024.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	07/26/2024
1	08/23/2024
2	11/15/2024

CARP0349-002 03/01/2024

	Rates	Fringes
CARPENTER.....	\$ 28.72	19.38

ELEC0567-002 06/01/2024

	Rates	Fringes
ELECTRICIAN.....	\$ 37.43	20.07

ELEV0004-002 01/01/2024

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 71.21	37.885+a+b

a. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day.

b. VACATION: 6% under 5 years based on regular hourly rate for all hours worked. 8% over 5 years based on regular hourly rate for all hours worked.

* IRON0007-003 09/16/2024

	Rates	Fringes
IRONWORKER.....	\$ 31.95	25.00

LAB00327-005 12/01/2023

	Rates	Fringes
LABORER: Mason Tender - Cement/Concrete.....	\$ 22.15	19.72

PLUM0131-001 06/03/2024

	Rates	Fringes
PIPEFITTER.....	\$ 43.76	25.44

PLUM0716-002 08/01/2024

	Rates	Fringes
PLUMBER.....	\$ 38.75	22.96

SUME2022-001 06/26/2024

	Rates	Fringes
BRICKLAYER.....	\$ 33.00	11.13
CEMENT MASON/CONCRETE FINISHER...	\$ 20.00	0.00
LABORER: Common or General.....	\$ 18.66	11.38
OPERATOR: Backhoe/Excavator/Trackhoe.....	\$ 23.83	4.21

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

State Adopted Rate Identifiers

Classifications listed under the ""SA"" identifier indicate that the prevailing wage rate set by a state (or local) government was adopted under 29 C.F.R. 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 01/03/2024 reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for

the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

DIVISION 2

SPECIAL PROVISIONS

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**SPECIAL PROVISIONS/SUPPLEMENTAL GENERAL CONDITIONS FOR
FEDERALLY OBLIGATED AVIATION PROJECTS**

PART A – PROJECT SPECIFIC CLAUSES

1. **DBE DIRECTORY.** The latest edition of the DBE Directory can be obtained from the **MaineDOT Civil Rights Office** at the following address:

<http://maine.gov/mdot/civilrights/dbe/>

Contractors that do not have access to the internet may obtain a copy by contacting the Engineer.

2. **WAGE RATES.** U.S. Department of Labor Davis-Bacon wage rates are applicable to this Contract and are included in Division 1 – Federal Wage Schedules.

It is the Contractors responsibility to reviews the wages rates and labor classifications included within the contract documents. If it appears that a labor classification is required but not provided, the Contractor shall notify the Engineer prior to the start of construction.

3. **CONTACT WITH THE AIRPORT.** From the time of advertising until the actual bid opening for this Contract, the only contact with the Airport will be as described in the Invitation for Bids.

4. **SUSPENSION OF WORK.** The Contractor is hereby notified that in the absence of the Engineer, the Airport's Safety Officer and the Airport Operator shall each have the authority to suspend work when they determine that a serious safety or environmental violation exists on the job site. The period of time when work is suspended due to a serious safety or environmental violation will not be justification for an extension of time or the award of damages to the Contractor.

5. **CONTRACT DOCUMENTS.** The Contractor's attention is directed to the following documents that make up the Contract Documents and are effective for this Contract:

Table of Contents
Invitation to Bid
Instructions to Bidders
Bid Proposal
Bid Bond
ALL MJ Bidding Requirement and Proposal Forms (see Bidder's Certification Form)

Award of Contract and Execution of Contract Bonds
Contract with Insurance Provisions
Performance Bond
Payment Bond
Notice of Award
Notice to Proceed
Contractor's Guaranty
ALL MJ Contract Execution Forms

DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

Division 1 – Project Contract Specifications

FAA General Provisions

FAA Required Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects

Reference Documents:

41 CFR – 60-4.2 & 4.3

49 CFR 26 – Title 49: Transportation

US Department of Labor – Davis-Bacon Wage Rates

State Prevailing Wage Rates (if applicable)

Division 2 - Special Provisions:

Special Provisions/Supplemental General Provisions

Construction Safety and Phasing Plan

AC 150/5370-2G - Operational Safety on Airports During Construction (included)

Geotechnical Reports

Permits:

Maine Department of Environmental Protection Permits

Site Location of Development Act and Natural Resources Protection Act

National Resource Protection Act Permit (if applicable)

Division 3 - Technical Specifications

Plans

Addendums, Request For Information responses, and Field Issued Sketches

6. **DAILY LIST OF WORKERS.** The Contractor shall provide a daily list of workers on the site in accordance with Part C. General Aviation Clauses, Section 3 Disadvantaged Business Enterprise, Subsection 3.1 paragraph viii. of this Special Provisions/Supplemental General Provisions.
7. **UTILITIES.** The Contractor shall coordinate with all utilities the service the Airport and surrounding area. No disturbance of utility facilities is anticipated as part of this project.
8. **PERMIT AND REGULATION COMPLIANCE.** The Contractor shall comply with all project permits, general permits, state laws, and state and local regulations. Any fines assessed against the Airport and related expenses due to non-compliance with the permits, laws, rules, and regulations cited in the Contract Documents and caused by the Contractor and their personnel, Subcontractors and Vendors shall be paid for by the Contractor.

For permit requirements refer to copies of the permits in Division 2 - Special Provisions of the Contract Documents.

9. **WORK AREAS.** In order to enhance safety during construction and minimize the impacts on Airport operations caused by construction, the Project has been divided into different work areas as required for project execution. For additional detail of the phases, work zones and restrictions, please refer to:

DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

- a) Project Plan Set: Refer to project phasing and work zone plans, notes and details.
- b) CSPP Drawings: The CSPP drawings as included in the contract drawings.
- c) Construction Safety and Phasing Plan (CSPP): Refer to the Construction Safety and Phasing Plan in Division 2 of the Contract Documents for additional detail, as applicable.
- d) Contractor Provided Safety Plan Compliance Document (SPCD): The SPCD, as reviewed and approved by the Engineer, shall become part of the work area restrictions, as applicable.

- 10. WORK AREA REQUIREMENTS.** A general outline of the safety precautions, pre-work requirements and administrative requirements required prior to being allowed to work in any of the specified work areas is provided within the CSPP documents in Division 2 of the Contract Documents. The work area requirements are not intended to describe every work element or every detail of work, but rather provide the Contractor with an outline of Airport safety measures, safety protocols and operational requirements during the progression of work.

As part of the SPCD preparation, the Contractor shall propose the actual sequencing of the work in all work areas subject to the conditions indicated and specified within the CSPP. If requested, the Contractor may make necessary changes in the sequencing in order to facilitate Airport operation and safety within a work zone. The Contractor may sequence that time, with coordination with the Airport and the Engineer, as required as long as that time falls within the specified total contract time for the work area.

- 11. PROJECT DURATION.** Upon execution of the Contract, the Sponsor will issue a written “Notice to Proceed” which will specify an effective date for the Contractor to begin work at the site. All work under this Contract must be completed within Total Contract Time of **as identified in the “Notice to Proceed.”**

For additional work area duration requirements and restrictions refer to any phasing notes on the plan sheets of the Contract Documents and the Construction Safety and Phasing Plan (CSPP).

It shall be understood that it is the Contractor's responsibility to schedule and request stoppages in contract time for each respective work area. Further, it is understood that if it is determined to be in the best interest of the Owner and the Airport, the request for a Contract time stoppage can and will be denied. During a Contract time stoppage, no work may commence in that work area until a request is made to resume work and Contract time. If work is performed without an official restart of the Contract time it is agreed that the work performed is at the Contractor's expense and is not eligible for measurement of payment.

It shall be clearly understood that the Contract time is contractual, and if the time is exceeded, liquidated damages will be assessed. Requests for additional Contract time will only be granted for the following reasons:

- 1) Additional work is authorized by change order.
- 2) Delays or postponements of critical path work per the approved construction schedule are requested by the Owner.

DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

- 3) Material delivery delays, which are documented and are beyond the Contractor's control. Material delivery delays, which are not documented, and not accounted for or identified in the Contractor's schedule, will not be considered a valid justification to extend the Contract time.

- 12. LIQUIDATED DAMAGES.** If the work remains incomplete after the times specified in the Allowable Project Duration for the Total Contract Time or the Contract Time Within a Work Area, the Contractor agrees to pay the Owner as liquidated damages in the following amounts:

The Liquidated Damages amount listed in the CONTRACT per day for each and every calendar day that the work remains incomplete beyond the Total Contract Time listed for the Project Duration.

The amount to be assessed as Liquidated Damages listed shall be in accordance with Division 1 - FAA General Provisions Section 80-08.

Liability for Liquidated Damages. The Contractor covenants and agrees that should the amount of monies due, or that may become due the Contractor, are to be less than the amount of ascertained liquidated damages, the Contractor and the Contractor's surety shall be liable to the Owner for the deficiency.

For Working Day Only contracts, should the Contractor elect to work on Saturdays, Sundays, or Holidays after the Contract Completion Date, the Contractor will be charged liquidated damages for such days worked.

- 13. ADDITIONAL RESIDENT PROJECT REPRESENTATIVE SERVICES.** The Owner has established a Resident Project Representative budget based on the work hours made available to the Contractor. If the Contractor's work schedule exceeds the Total Contract Time for the project, the Contractor agrees to pay the Owner the additional cost for the Resident Project Representative in excess of the budgeted hours. The typical weekly Resident Project Representative budget is up to sixty (60) hours per week. The cost to the Contractor shall be based on the Resident Project Representative's actual billing rate, plus expenses and fifteen percent (15%) profit in effect at the time the services were provided. For budgeting purposes, an hourly rate of \$160.00/hour is recommended. It shall be understood that these charges are in addition to any other damage claims available to the Owner (Liquidated Damages, Breach of Contract, etc, as described within the Contract Documents).

- 14. MONTHLY DBE REPORTING.** The Contractor shall submit monthly Disadvantaged Business Enterprise (DBE) reports. The Contractor shall use MJ Form 208 *Subcontractor/Supplier DBE Project Expenditure Report* as included within this Specification. The report shall be submitted regardless if any DBE participation took place during the period indicated. In general, MJ Form 208 is to be submitted with the Contractor's Periodic Cost Estimate, but the form must be submitted monthly, even if no Periodic Cost Estimates are submitted.

The Contractor shall continually monitor their DBE participation on the Project. If it appears that the actual DBE participation will be lower than indicated in the Contractor's DBE Letter of Intent, the Contractor shall promptly provide written notification, and indicate just reason for the change. The Contractor shall further provide additional Good Faith Effort documentation that

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effort was made to replace this DBE participation as outlined in the Division 1 – Referenced Documentation.

Monthly DBE reports will be required prior to the acceptance of any Periodic Cost Estimate (PCE). Retainage for the Project will not be released until all Project monthly DBE reporting documentation has been submitted to and approved by the Engineer.

15. COORDINATION OF CONTRACT DOCUMENTS.

- (a) General. The various sections of the Contract Documents are essential parts of the Contract; a requirement occurring in one is as binding as though occurring in all. The Contract Documents are complementary and intended to describe and provide for a complete work product. In case of discrepancy, precedence of the Contract Documents will be determined in the following order:

Contract Document Order of Precedence

1. Project Permits. In the event of a conflict between permit requirements, the more protective or stringent shall take precedence as determined by the Engineer.
2. Contract
3. FAA Required Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects
4. Invitation to Bid
5. Special Provisions – Supplemental General Provisions
6. Other Special Provisions documents.
7. FAA – Technical Specifications
8. FAA – General Provisions
9. Contract Plans
 - a. Calculated or Stated Dimensions
 - b. Scaled Dimensions
10. Cited Standards for Materials or Testing
11. Cited FAA Advisory Circulars and Orders
12. Any Other Specifications Adopted by Reference

Addendum, Request for Information responses and Field Issued Sketches items take on the precedence of the item they are revising or the section into which they are added.

- (b) No Advantage from Errors or Omissions in Contract Documents. Neither the Contractor nor the Owner shall take advantage or be afforded any benefit as the result of apparent error(s) or omission(s) in the Contract Documents. If either party discovers error(s) or omission(s), it shall immediately notify the other. Failure of a bidder to notify the Owner or apparent error(s) or omission(s) in the Contract Documents during the bid process may result in their bid being determined to be non-responsive.

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- (c) Corrections to Contract Documents. The Engineer will make corrections and interpretations deemed necessary and appropriate to fulfill the intent of the Contract Documents. When there is an apparent absence or mention of a detail or an apparent omission of a detailed description in the Contract Documents, the detail or description shall be interpreted/understood/determined using the best general engineering and construction practice.
 - (d) Effect of Other Specifications/Standards. Other specifications (e.g. ASTM, NDS, CRSI, ACI) cited by reference shall become effective only if the work or material covered by them is not included in the Contract Documents. Specifications so referenced shall be the latest revision in effect on the date of advertisement for bids.
16. **BID VALID PERIOD.** No bids may be withdrawn by the Bidder prior to the date listed in the Invitation to Bid.
17. **SPECIALTY ITEMS.** The following items are considered “Specialty Items” in this project:
- a. **None anticipated.**
18. **GENERAL SURETY REQUIREMENTS:**

The Proposal Surety shall be as specified in the Invitation to Bid; only the Bid Bond as bound within these documents or a Cashier's Check is acceptable. Upon request of the bidder, the Owner may choose to accept the AIA Bid Bond form. Each separate Proposal shall be accompanied by a Cashier's Check or Proposal Bond on the form provided herein in the amount of Five Percent (5 %) of the total amount bid, made payable to the Owner. If a Proposal Bond is provided in lieu of a Cashier's Check, it must be accompanied by a Surety's Bond Affidavit indicating that the person signing the bond on behalf of the Surety has full legal authority to do so.

If a Surety Bond is provided, the Surety Company issuing the bond shall be listed on the current United States Department of the Treasury “Department of the Treasury’s listing of approved Sureties (Department Circular 570)” as authorized to do business in the State of Maine. Bids submitted without Bid Security will be rejected as nonresponsive.

100% Contract Payment and 100% Performance Bonds shall be as specified in Section 30-05 of the General Provisions, and must be accompanied by a Surety's Bond Affidavit indicating that the person signing the bond on behalf of the Surety has full legal authority to do so. The Surety Company issuing the bond shall be listed on the current United States Department of the Treasury “Department of the Treasury’s listing of approved Sureties (Department Circular 570)” as authorized to do business in the State of Maine. These Bonds are required from the Contractor guaranteeing that the Contract, including the various guarantee periods thereunder, will be faithfully performed and that Contractor will promptly make payment to all persons supplying them labor, materials, supplies, and services used directly or indirectly by the Contractor in the prosecution of the work provided for in the Contract.

If, at any time after the execution of the Contract and the Contract Bonds, as above required, the Owner deems the Surety or Sureties upon such Bond or Bonds is unsatisfactory, or if, for any reasons, such Bond or Bonds cease(s) to be adequate to cover the performance of the work or prompt payment as above specified, Contractor shall, at its expense and within fifteen (15) days written notice from the Owner to do so, furnish additional Bond or Bonds in such form and amount

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and with such Surety and Sureties as shall be satisfactory to the Owner. In such event, no further payment to the Contractor shall be deemed due under the Agreement until such new or additional bond or bonds are furnished in a manner and form satisfactory to the Owner.

The Bidder to whom the Contract is awarded must deposit with the Owner at the date of substantial completion of the Contract a Maintenance Surety Bond in a sum equal to Fifteen Percent (15%) of the adjusted Contract amount at completion of work, guaranteeing against defective workmanship and materials for a period of one year from the date of substantial completion. The bond shall be in the form acceptable to the Owner and the Surety Company issuing the bond shall be listed on the current United States Department of the Treasury “Department of the Treasury’s listing of approved Sureties (Department Circular 570)” as authorized to do business in the State of Maine. The Contractor shall be responsible for obtaining and maintaining the Bond in force from the date of substantial completion until the expiration of the one year maintenance period.

19. **RETAINAGE.** The Retainage Percentage for this project, as defined in Division 1 – FAA General Provisions Section 90-06 Partial Payments, shall be no more than Ten Percent (10%) or the maximum percentage allowed by applicable law.

PART B – FAA REQUIRED CONTRACT PROVISIONS CLAUSES

ORIGINAL REFERENCE DOCUMENT:

Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects
(Current as of May 24, 2023)

Link: https://www.faa.gov/airports/aip/procurement/federal_contract_provisions/may_2023

1. ACCESS TO RECORDS AND REPORTS

(This section must be incorporated in all construction contracts and subcontracts)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-2

2. NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-3

Required to provide MJ Form 100 *Affirmative Action Certification* as part of the Bidder's Certifications.

3. BREACH OF CONTRACT TERMS

(This section must be incorporated in all construction contracts and subcontracts that exceed \$250,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-4

See "Termination of Contract" and "Termination of Contract for Convenience" in this section.

4. BUY AMERICAN PREFERENCE

(This section must be incorporated in all construction contracts and subcontracts)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-5

Required to provide MJ Form 101 *Certificate of Buy American Compliance for Construction Products* as part of the Bidder's Certifications.

Required to provide MJ Form 205 *Contractor/Subcontractor/Supplier Buy American Certification* as part of the Submittal Process.

FAA Buy American Reference Info: https://www.faa.gov/airports/aip/buy_american/
(Including detailed explanation of Waiver Process and Buy American Conformance Lists)

Required Documentation

The FAA Buy American Requests. All applications (requests) for an FAA Buy American Preference Waiver includes, at minimum, a completed Content Percentage Worksheet and Final Assembly Questionnaire. Additional information may be requested from the applicant by the FAA. Airport Sponsors, consultants, construction contractors, or equipment manufacturers are responsible for completing and submitting waiver applications. The FAA is unable to make a determination on waiver requests with incomplete information. Sponsors must confirm with the bidder or offeror to assess the adequacy of the waiver request and associated information prior to forwarding a waiver request to the FAA for action. All FAA waivers forms are available from the FAA Buy American Requirements webpage.

Proprietary Confidentiality. Exemption 4 of the Freedom of Information Act protects "trade secrets and commercial or financial information obtained from a person [that is] privileged or

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confidential. Proprietary manufacturing and design information submitted to the Federal Aviation Administration for the purposes of receiving a Buy American Waiver shall not be disclosed outside the FAA. The FAA will provide a written notification to the Airport Sponsor, manufacturer(s), contractor(s) or supplier(s) when a waiver determination is complete.

Timing of Waiver Requests. Sponsors desiring a Type 2 waiver should submit their waiver request, with justification, before issuing a solicitation for bids or a request for proposal for a project.

The Sponsor must submit a Type 2, Type 3, or Type 4 waiver request prior to executing the contract. The FAA will generally not consider waiver requests after execution of the contract except where extraordinary and extenuating circumstances exist.

The Buy American Notice of Determination (NOD) Process. The FAA Reauthorization Act of 2018 requires that all approved waivers must be posted to the FAA’s website and remain posted for public comment for 10 days, before becoming effective. All FAA waivers must complete the NOD process. Sponsors are encouraged to wait until approved waivers become effective before executing AIP projects.

Buy American Conformance Lists. The FAA Office of Airports maintains listings of projects and products that have received a waiver from the Buy American Preference requirements for project specific and nationwide use. Each of these conformance lists is available online at www.faa.gov/airports/aip/buy_american/. Products listed on the FAA Nationwide Buy American Conformance list do not require additional submittal of domestic content information. Nationwide waivers expire five years from the date issued, unless revoked earlier by the FAA.

5. **CIVIL RIGHTS – GENERAL**

(This section must be incorporated in all construction contracts and subcontracts)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-8

6. **CIVIL RIGHTS – TITLE VI ASSURANCES**

(This section must be incorporated in all construction contracts and subcontracts)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-8

7. **CLEAN AIR AND WATER POLLUTION CONTROL**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$250,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-11

8. **CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$100,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-12

9. **COPELAND “ANTI-KICKBACK” ACT**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$2,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-13

10. **DAVIS-BACON REQUIREMENTS**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$2,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-14

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11. **DEBARMENT AND SUSPENSION (NON-PROCUREMENT)**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$25,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-19

Required to provide MJ Form 102 *Certification of Offeror/Bidder Regarding Debarment* as part of the Bidder's Certifications.

12. **DISADVANTAGED BUSINESS ENTERPRISE**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$250,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-20

Required to provide MJ Form 103 *Proposed DBE Utilization* as part of the Bidder's Certifications.

Required to provide MJ Form 104 *Subcontractor/Supplier DBE – Letter of Intent* as part of the Bidder's Certifications.

Required to provide MJ Form 105 *Prime Contractor – DBE Reporting Information Form* as part of the Bidder's Certifications.

Required to provide MJ Form 106 *Subcontractor/Supplier – DBE Reporting Information Form* as part of the Bidder's Certifications.

13. **DISTRACTED DRIVER**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-22

14. **PROHIBITION OF CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-23

15. **EQUAL EMPLOYMENT OPPORTUNITY**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-24

16. **FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-30

17. **LOBBYING AND INFLUENCING FEDERAL EMPLOYEES**

(This section must be incorporated in all construction contracts and subcontracts that exceed \$100,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-31

Required to provide MJ Form 107 *Certification Regarding Lobbying* as part of the Bidder's Certifications.

18. **PROHIBITION OF SEGREGATED FACILITIES**

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-32

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Required to provide MJ Form 108 *Prohibition of Segregated Facilities* as part of the Bidder's Certifications.

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19. OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-33

20. PROCUREMENT OF RECOVERED MATERIALS

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-34

21. RIGHT TO INVENTIONS

NOT APPLICABLE TO THIS CONTRACT.

22. SEISMIC SAFETY

NOT APPLICABLE TO THIS CONTRACT.

23. TAX DELINQUENCY AND FELONY CONVICTIONS

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-35

Required to provide MJ Form 109 *Certification of Offeror/Bidder Regarding Tax Delinquency and Felony Convictions* as part of the Bidder's Certifications.

24. TERMINATION OF CONTRACT

(This section must be incorporated in all construction contracts and subcontracts that exceed \$10,000.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-36

25. TRADE RESTRICTION CERTIFICATION

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-38

26. VETERAN'S PREFERENCE

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-40

27. DOMESTIC PREFERENCE FOR PROCUREMENT

(This section must be incorporated in all construction contracts and subcontracts.)

Refer to Division 1 – FAA Required Contract Provisions for AIP Projects Section – Page RCP-41

PART C – GENERAL AVIATION CLAUSES

1. FORMS

The Special Provisions Section of these Specifications references most of the forms as provided in Division 1 and Division 2 of the Contract which are required for use during the project and referenced throughout the Contract Documents. Most of the forms have been assigned unique form numbers to assist the Contractor in locating the correct form. After award of the Contract, the Prime Contractor may request electronic copies of some or all the forms contained in Division 1 and Division 2.

2. SHOP DRAWINGS AND SUBMITTALS

- 2.1. Submittals shall include but not be limited to: shop drawings, schedules, samples, and manufacturer's literature as required by the Specifications or requested by the Resident Engineer.

No work shall be fabricated until such approval has been received. Work performed without shop drawing approval is at the Contractor's own risk.

- 2.2. All submissions shall include Form MJ-206 "CONTRACTOR SUBMITTAL FORM" as a cover sheet to the submittal information.

For submittals generated from Subcontractors, two (2) submittal forms are required, one (1) Form MJ-206 from the Contractor and one (1) Form MJ-207 "SUBCONTRACTOR SUBMITTAL FORM" from the Subcontractor.

Submittals received without the completed submittal form(s) will be returned to the Contractor as incomplete and not reviewed. Contractor submittal forms shall be printed on colored paper of the Contractor's choice and shall remain the same color throughout the project.

Contractor submittal forms MJ-206 and MJ-207 are provided in Division 1 "Contract Execution Forms" as referenced above.

- 2.3. Submissions made directly by Subcontractors will not be accepted. All business concerning approval will be conducted through the Contractor.

The Contractor shall submit for the approval of the Resident Engineer, the following number of submittal copies:

Single Digital Copy (Which is the preferable method)

The Contractor may submit Submittals via email, or other Engineer approved method, using Adobe Acrobat (.pdf) format. In the event that Submittals are submitted via email, it shall be the Contractor's responsibility to ensure that the Submittal is received by the Engineer.

If Hard Copies of Submittals are used:

- Four (4) copies for the Resident Project Representative/Engineer
- Plus the number of copies required by the Contractor/Subcontractor

- 2.4. Submissions shall be made sufficiently in advance of construction requirements to allow ample time for checking, resubmitting and rechecking without causing delay in the work. Failure to submit shop drawings in a timely manner shall not be considered as a valid reason for a Contract time extension.

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- 2.5. Each submission, including the submission of Subcontractors shall be checked by the Contractor for accuracy and compliance with the Contract Documents. The certification on the submittal form shall constitute as evidence of such checking and coordination. Submissions without this certification will not be considered for review by the Resident Project Representative.

Submittal certification shall include one (1) of the following:

2.5.1. Submitted "as specified" for the product

2.5.2. Submitted "AS EQUAL" to the product specified

2.5.3. Submitted "IN SUBSTITUTION" for the product specified

2.5.4. "OTHER"

- A. Submitted "as specified" shall mean the Contractor is certifying that the submittal item or system is of the same manufacture and model number, or performance standard as specified and is in all ways identical to the Contract Documents in form and function. For these items, manufacturer's data sheets shall be attached to the Contractor submittal form.
- B. Submitted "AS EQUAL" to the product or system specified shall mean the Contractor is certifying the proposed submittal, although supplied by a manufacturer other than the one specified for the item meets or exceeds the physical requirements, function, specifications, quality, speed, reliability, service life, safety, and/or maintenance costs of the product specified, and is capable of being incorporated into the overall project without design revisions and will perform equally or better than the specified item. For these items, manufacturer's data sheets shall be attached to the Contractor submittal to demonstrate that the performance, durability and/or maintenance standards of the product are as specified.
- C. Submitted "IN SUBSTITUTION" to the product or system specified means the Contractor is proposing an item or system of different physical requirements, specifications, quality, reliability, and/or maintenance costs, than the product specified. For a submission "IN SUBSTITUTION" of the product or system specified, the following information and procedure shall be followed to determine if the Owner's requirements will be satisfied:
 - a. Design the system to meet or exceed the operational requirements, physical requirements, specifications, quality, reliability, maintenance costs, and ease of operation of the specified system.
 - b. Submit full Specifications for the system and all components in the form of shop drawings for review by the Owner and the Engineer.
 - c. Submit a revised design for the system, stamped by a licensed Professional Engineer within the state in which the work is to be performed.
 - d. Submit revised details for any and all components of the proposed system that are different than those of the specified system. A licensed Professional Engineer within the state in which the work is to be performed shall stamp details.
 - e. Demonstrate the proposed system to the satisfaction of the Owner and Engineer.
 - f. Reimburse the Engineer at the rate of \$200.00 per hour for Project Managers and \$145.00 per hour plus expenses for Project Engineers for all time spent reviewing,

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discussing and otherwise being involved with the substitute system. The payment shall be made based on an estimate of the time required and shall be paid in advance of the review. If the estimated amount is exceeded, additional amounts must be provided by the Contractor for the review to continue. Upon completion of the review, a summary invoice will be provided to the Contractor indicating the hours spent and amount billed. Any money not spent on the review will be returned to the Contractor.

- g. Provide a credit satisfactory to the Owner for any cost savings associated with the substitution. The Contractor should anticipate providing a credit equal to one-half of the cost differential between the specified system and the system proposed for substitution.

Acceptance of any alternate item or system will be at the discretion of the Owner. Upon acceptance or rejection of a system or component thereof, the Engineer shall provide a written response to the Contractor in the form of a shop drawing review.

- D. Submitted Certified as "OTHER". The Contractor shall provide information to demonstrate the proposed item or system will satisfy the design intent and provide the Owner performance, reliability and maintenance ease over its anticipated service life that exceeds that of the specified product. The final determination of suitability shall be the sole responsibility of the Owner.

- 2.6. Changes on the submitted shop drawings that deviate from the Project Plans and Specifications must be brought to the Owner's and Resident Project Representative's attention, in writing, prior to review. Changes must be clearly visible on the shop drawings in the form of written notation, ballooning, or highlighting the intended change. A written description for the proposed change must also be included and submitted on company letterhead. Changes to drawings and details not submitted in accordance with these requirements will not be recognized as an approved deviation from the Design of Record. Construction repairs, renovations, or replacements required as a result of shop drawing and submittal deviations that are not documented in accordance with these requirements are subject to removal and/or replacement by the Contractor, at the sole cost of the Contractor. The Contractor shall not be relieved of responsibility for errors or omissions in shop drawings, product data, samples or similar submittals by the Resident Project Representative's actions.
- 2.7. Shop drawings for pipe, fittings, and masonry items shall consist of certificates of conformance of affidavits from the manufacturer's signifying that all materials conform to the Specifications.
- 2.8. The Contractor shall allow for sufficient time within the project schedule for shop drawing review and processing. Items requiring long lead times which impact the start or completion of the project shall be identified, brought to the Engineer's attention and noted on the shop drawing submission. Additional Contract time will not be provided for failure to submit shop drawings for approval in a timely manner.
- 2.9. The Owner reserves the right to back charge the Contractor for expenses incurred in reviewing and returning incomplete shop drawings. Expenses shall include the costs of the Engineer at the rate of \$200.00 per hour for Project Managers and \$150.00 per hour plus expenses for Project Engineer's for the actual time incurred. The Contractor will be provided documentation of the expenses incurred. Contractor back charges will be deducted from payments due to the Contractor.

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- 2.10. The Contractor shall submit all required Buy American Preferences documentation with each shop drawing as outlined in Appendix Y of FAA Order 5100-38D (AIP Handbook) dated February 26, 2019 (or current version) included in this Contract Document (Division 1 – Referenced Documents) and as required by the Owner or the Resident Project Representative. Delays caused by the Buy American Preferences program shall be expected and the Contractor agrees to make no monetary claim for delays, interferences or hindrances of any kind in the performance of this Contract occasioned by any act or omission to act of the Owner or any of its Representatives.

Each shop drawing and submittal shall be accompanied by a signed copy of Form MJ-205 “Contractor / Subcontractor / Supplier Buy American Certification.” A blank copy of this form is included in Division 1 - “Contract Execution Forms” Section referenced above.

3. DISADVANTAGED BUSINESS ENTERPRISE (DBE) AND SMALL BUSINESS PROGRAMS

The **City of Auburn, Maine** for the **Auburn-Lewiston Municipal Airport (SPONSOR)** has established a DBE program in accordance with 49 CFR Part 26 (Part 26) and the U. S. Department of Transportation (USDOT) regulations.

3.1. DBE PROGRAM:

It is the policy of the **SPONSOR** to help ensure that DBEs, as defined in Part 26, have an equal opportunity to receive and participate in FAA - assisted contracts. It is also our policy:

- To help ensure nondiscrimination in the award and administration of FAA - assisted contracts;
- To create a level playing field on which DBEs can compete fairly for FAA - assisted contracts;
- To help ensure that the DBE program is narrowly tailored in accordance with applicable law. To help ensure that only firms that fully meet Part 26 eligibility standards are permitted to participate as DBE firms;
- To help remove barriers to the participation of DBEs in DOT assisted contracts;
- To assist the development of firms that can compete successfully in the marketplace outside the DBE program; and,
- To help ensure that all firms, from prime contractors to subcontractors, understand and respect their obligations relative to all aspects of the DBE program, and that deviations from the requirements of the regulation may be subject to applicable state and federal enforcement sanctions

The **SPONSOR** has delegated a DBE Liaison Officer. In that capacity, they are responsible for implementing all aspects of the DBE program. Implementation of the DBE program is accorded the same priority as compliance with all other legal obligations incurred by the **SPONSOR** in its financial assistance agreements with the Department of Transportation. A Copy of the **SPONSOR’s** – “DBE Program” is on file at the **SPONSOR’s** administrative offices.

The **SPONSOR** has chosen to have a Race-Neutral DBE program for federal fiscal year 2024. A Race-Neutral program is one where the Airport works to create a level playing field where all

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firms, including DBE's and small businesses, can compete for work. A Race-Neutral DBE program does not include project specific DBE goals.

Although Contractors do not have a project specific goal for DBE participation on a Race-Neutral project, Contractors must still comply with the requirements of 49 CFR Part 26 and the AIP Federal Contract Provisions contained in Division 1 – FAA Required Contract Provisions for AIP Projects.

Some of these FAA Required Contract Provisions for AIP Projects requirements include:

- i. **Seeking Subcontractors and Suppliers:** Bidders must make a good faith effort to provide notice to all firms, including small businesses and DBE's, of upcoming opportunities to supply materials or subcontract on federally funded projects. Some examples of good faith efforts would be: contacting all firms on the state DBE or minority contractor listing to notify them of opportunities; compiling lists of firms that have previously shown an interest in working on federally funded projects and contacting them when bidding projects; using services like Construction Summary to advertise for suppliers and subcontractors; and before the start of the "bidding season" place ads in newspapers and on the company web site to solicit letters of interest from firms.

Despite the fact that there is no project specific DBE goal for this project, the Contractor must still utilize the Good Faith Effort guidelines and procedures in 49 CFR Part 26 including Appendix A.

- ii. **Prompt Payment:** Prime Contractor can level the playing field for all Subcontractors and Suppliers by paying them promptly for satisfactory completion of their work. Contractors are encouraged to pay Subcontractors and Suppliers as quickly as possible. **Contractors are required to pay all Subcontractors and Suppliers in accordance with the Prompt Payment** clause stated in this Division 1 – FAA Required Contract Provisions for Obligated Sponsors and Airport Improvement Program Projects – Disadvantaged Business Enterprise Section.
- iii. **Identification of DBE and Small Business Contractors Included in the Bid:** The Prime Contractor is required to provide the anticipated DBE and Small Business utilization that is included in their bid. Form MJ-103A "Proposed Disadvantaged Business Enterprise (DBE) and Small Business Utilization – Race Neutral Projects" or Form MJ-103B "Proposed Disadvantaged Business Enterprise (DBE) and Small Business Utilization – Race Conscious Projects" must be filled in and included with the Prime Contractor's bid. The form must include the percentage of DBE participation and Small Business participation that the Prime Contractor anticipates achieving for the project. The form must include the name, proposed work, and dollar amount of the work that the DBE or Small Business will be providing.

For each DBE or Small Business listed on Form MJ-103A/103B, the Contractor must also submit a copy of Form MJ-105 "Prime Contractor – DBE/Small Business Reporting Information Form" (if the Prime Contractor is a DBE or Small Business) or MJ-106 "Subcontractor / Supplier DBE / Small Business Reporting Information Form" with detailed information on the firm.

As part of the bid opening, the Contractor must submit signed copies of Form MJ-104 "Subcontractor / Supplier Disadvantaged Business Enterprise (DBE) and Small Business –

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Letter of Intent” for each DBE or Small Business firm listed in on Form MJ-103A/103B.

- iv. **DBE and Small Business Termination and Substitution:** Contractors must utilize the all DBE and Small Business Subcontractors and Suppliers for the work and for the payment amount listed in their bids. The work or payment amount of DBE and Small Business Subcontractors and Suppliers may not be reduced, switched to a different contractor, or eliminated unless a written request is made to the Owner and the Owner approves the change.

If a substitution or a change in the work or payment amount of DBE and Small Business Subcontractors and Suppliers is requested, the work or payment shall be shifted to another DBE or Small Business Subcontractor or Supplier. Any change or substitution of subcontractors, suppliers, or joint venture partners requires the approval of the Owner. **The Contractor shall submit a copy of Form MJ-210 “Change of Subcontractor/Supplier” to the Engineer to request permission to change or substitution of subcontractors, suppliers, or joint venture partners.** If another DBE or Small Business Subcontractor or Supplier cannot be found by the Contractor, they must provide documentation of Good Faith Effort as outlined in 49 CFR Part 26 including Appendix A.

The DBE and Small Business termination or substitution process is complicated and time consuming. The Contractor is not entitled to any contract time extensions as a result of the process. The Contractor may not make any delay claims against the Owner nor will the Contractor be entitled to receive any additional compensation due to the termination or substitution of a Subcontractor or a Supplier.

Failure to comply with the requirements of this section may result in the Contractor’s termination for cause.

- v. **Commercially Useful Function:** DBE’s and Small Businesses must perform a commercially useful function as defined by 49 CFR Part 26 to be counted in the calculation of DBE or Small Business accomplishments. In particular, DBE’s and Small Businesses may not use any of the Prime Contractor’s employees, equipment, or materials in the performance of their work.
- vi. **Calculating DBE Participation:** The Contractor shall consult 49 CFR Part 26 and understand the way DBE participation is counted on FAA funded projects such as this project. Only DBE’s certified by the State’s Identified Unified Certification Program shall be considered as DBE’s for this project (refer to Part A – Section 1 of this Special Provision/Supplemental General Provisions for DBE Directory location). DBE firms that are certified in other states and firms that think that they may be eligible to be certified as a DBE in this state are encouraged to contact the Project Locations State Agency/Department to be included in that State’s Unified Certification Program.
- vii. **List of Potential Subcontractors and Suppliers:** All bidders shall provide information on all firms that they contacted or considered as a potential Subcontractor or Supplier on this project. The Contractor shall provide a copy of Form BC3 – Bidder’s Proposed List of Subcontractors and Suppliers, in addition to the requirements outlined above for DBE subcontractors/suppliers. **This information must be provided with the Contractor’s bid.** Failure to provide this information with the bid may result in the Owner declaring the bid non-responsive and rejecting it.
- viii. **Construction Phase Information (Daily Worker List):** During the on-site construction work,

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the Prime Contractor shall instruct all their employees as well as all employees of all subcontractors and other on-site personnel to sign in each day at the Contractor's office trailer. In addition, the Contractor shall provide the Resident Project Representative with a daily list of workers and equipment on site.

3.2. SMALL BUSINESS PROGRAM:

It is the policy of the **SPONSOR** to facilitate competition by small business concerns, taking all reasonable steps to eliminate obstacles to their participation in federally funded projects, including unnecessary and unjustified bundling of contract requirements that may preclude small business participation in procurements as prime contractors or subcontractors.

A Small Business is defined in 49 CFR Part 26.5 and 13 CFR Part 121 and the average annual gross receipts can, in some cases, be over \$19 million.

A DBE is typically also a Small Business and, if they qualify as both, they may be counted toward both the DBE and Small Business participation on this project.

The Contractor shall make all reasonable efforts to eliminate obstacles to small business participation in making portions of their work available to subcontractors. Methods that may be used include unbundling large tasks, using small business and DBE directories to solicit proposals from small businesses, and making all potential subcontractors and suppliers aware of prompt payment clauses contained in this project.

4. SUBLETTING WORK TO SUBCONTRACTORS AND SUPPLIERS OR ASSIGNMENT OF CONTRACT

- 4.1. **GENERAL:** The Contractor shall not sublet, assign, sell, transfer, or otherwise dispose of the Contract or any portion thereof, or of its right, title, or interest therein to any individual, firm, corporation, or other entity without the written consent of the **SPONSOR**. The Contractor must file with the **SPONSOR** copies of all executed subcontracts and other documents. An approved subcontractor shall not in turn sublet or assign any of the work pertaining to the subcontract without the Contractor obtaining further permission from the **SPONSOR**. In no event shall the **SPONSOR** approval release the Contractor from responsibility and liability under the Contract and bonds.

Any work or material supply that costs \$10,000 or more and is included in this project that the Prime Contractor wants to sublet to another firm must be approved by the **SPONSOR** in writing. Any Subcontractors or Suppliers that will be doing work or supplying material that is sublet and approved by the **SPONSOR** must have a signed contract with the Prime Contractor or a lower tier Subcontractor or Supplier before they may begin work or deliver material to the project site. The **SPONSOR** reserves the right to reject the use of any Subcontractor or Supplier that they feel is not in best interests of the **SPONSOR**.

The Contractor must file the Forms outlined in subsection 4.5 of this Section (below) to obtain the SPONSORS' permission to utilize subcontractors and suppliers.

- 4.2. **PERFORMANCE OF THE CONTRACT WORK:** The Contractor shall perform Contract work with its own organization amounting to at least **30 percent** of the total Contract work amount, minus "Specialty Items." The Contractor's own organization includes only workers employed and paid directly by the Contractor and equipment owned, leased, or rented by it from

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a non-debarred individual or entity, with or without operators. The term “own organization” does not include employees or equipment of a subcontractor, assignee, agent, or supplier of the Contractor. When determining whether the Contractor is in compliance with this requirement, the following shall apply:

- (1) The cost of materials and manufactured products to be purchased or produced under the Contract shall be included in the amount upon which the percent requirement is computed.
- (2) The percentage of subcontracted work shall be based on the Contract, rather than subcontract, unit prices. If only a part of a Contract item is to be sublet, its proportional value shall be determined on the same basis.
- (3) When a firm sells materials to a Contractor and performs the work of incorporating the materials into the project, these actions must be considered in combination and as constituting a single subcontract.

4.3. **“SPECIALTY” ITEMS:** The cost of “Specialty Items” may be deducted from the total Contract price before computing the amount of work required to be performed by the Contractor’s own organization. Specialty items will be designated, as such in Part A, Section 17 of this Special Provision/Supplemental General Provision and may be performed by subcontract.

4.4. **PERFORMANCE REQUIREMENTS:** The Contractor and its subcontractor(s) shall, in the staffing and administration of the Contract, comply with the following performance requirements:

(1) Commercially Useful Function. The Contractor and all subcontractor(s) must each perform a “commercially useful function”. This means that the Contractor or Subcontractor is responsible for the execution of a distinct element of the work of a Contract and carries out its responsibilities by actually performing, managing, and supervising the work involved. The Contractor or Subcontractor must have the latitude to independently:

- a. Select contracts to be bid;
- b. Determine prices to be quoted;
- c. Select material suppliers;
- d. Hire, fire, supervise, and pay employees; and
- e. Direct or cause the direction of the management and policies of the firm.

The Contractor/subcontractor may not broker work for another firm or act as a bidding conduit.

(2) Contractor to Furnish Competent Representative; Safety Officer; Others. To ensure that any subcontracted work is performed in accordance with the Contract requirements, the Contractor shall be required to furnish:

- a. A competent, reliable, English-speaking representative employed by the Contractor who has full authority to direct performance of the work in accordance with the Contract requirements and who is responsible for all construction operations on the project regardless of who performs the work.
- b. A competent, reliable, English-speaking employee designated as the safety officer who is authorized to receive orders and to issue binding directions concerning safety to all persons except Sponsor representatives associated with the project, whether employed by the Contractor, subcontractors, or material suppliers.

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- c. Such other individual(s) from the Contractor's organization as the SPONSOR's Construction Engineer determines are necessary to ensure the performance of the Contract, e.g., supervisory, managerial and engineering personnel.

(3) Employees on Payroll. The Contractor/subcontractor is not permitted to place on the payroll the employees of another firm for the purpose of avoiding Federal or State regulations or the provisions of the Contract.

- 4.5. **SUBLETTING WORK TO SUPPLIERS:** Suppliers that the Contractor or a lower tier Subcontractor or Supplier plans to sublet work to must be approved by the **SPONSOR**. The Prime Contractor must submit a package of information to the **SPONSOR** through the Resident Project Representative at least fourteen (14) calendar days prior to the date that the supplier will be supplying material to the project site.

The Supplier Sublet package shall include the following correctly filled out and executed forms:

- i. Form MJ-204 – “Transmittal Request for Consent to Sublet”;
- ii. Form MJ-202 – “Contractor Acknowledgement Certification”;
- iii. Form MJ-203 – “EEO Officer Notification and Program Compliance Certification”;
- iv. EEO Appointment Letter;
- v. EEO Policy Statement;
- vi. Form MJ-106 – “Subcontractor/Supplier – DBE/Small Business Reporting Information Form”; and
- vii. Form MJ-108 – “Prohibition of Segregated Facilities”.

- 4.6. **SUBLETTING WORK TO SUBCONTRACTORS:** Subcontractors that the Contractor or a lower tier Subcontractor or Supplier plans to sublet work to must be approved by the **SPONSOR**. The Prime Contractor must submit a package of information to the **SPONSOR** through the Resident Project Representative at least fourteen (14) calendar days prior to the date that the supplier will be supplying material to the project site.

The Subcontractor Sublet package shall include the following correctly filled out and executed forms:

- i. Form MJ-204 – “Transmittal Request for Consent to Sublet”;
- ii. Form MJ-201 – “Annual Contractor Assurances – AIP Funded Contracts”;
- iii. Form MJ-202 – “Contractor Acknowledgement Certification”;
- iv. Form MJ-203 – “EEO Officer Notification and Program Compliance Certification”;
- v. EEO Appointment Letter;
- vi. EEO Policy Statement;
- vii. Form MJ-100 – Affirmative Action Certification - “Equal Employment Opportunity Report Statement as Required by 41 CFR 60-1.7(b)”.
- viii. Form MJ-106 – “Subcontractor/Supplier – DBE/Small Business Reporting Information Form”; and
- ix. Form MJ-108 – “Prohibition of Segregated Facilities”.

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Form MJ-201 must be resubmitted by the Prime Contractor and each Subcontractor annually by January 15th.

5. PROOF OF PROMPT PAYMENT

Prompt payment of suppliers and subcontractors is required as outlined in Section 3, Subsection 3.1, paragraph ii. from above in this Part C.

With each Periodic Cost Estimate (PCE), the Prime Contractor shall provide proof of payment of all Subcontractors and Suppliers whose work was included in the previous PCE. Proof of payment shall consist of a copy of a cancelled check or a certificate of payment signed by the Subcontractor or Supplier. The Owner may provide the Contractor with one or more forms to be filled out and returned to the Owner to monitor and track payments.

To track work by Subcontractors and Suppliers, the Prime Contractor shall submit copies of Form MJ-208 “Subcontractor / Supplier Disadvantage Business Enterprise (DBE) and Small Business – Project Expenditure Report” for EVERY approved Subcontractor and Supplier with each PCE even if the Subcontractor or Supplier did not do any work on the project or supply any materials to the project during the period covered by the PCE.

If the Contractor is in violation of this prompt payment requirement, the Owner may withhold the amount due to the Subcontractor or Supplier from future payments due to the Contractor until satisfactory proof of payment is received. If the Contractor is in violation of this prompt payment requirement four (4) or more times, the Owner may terminate the Contract for cause and/or may require the Contractor to pay some or all of their Subcontractors or Suppliers and provide proof of payment before the Subcontractor’s or Supplier’s work can be included on a PCE.

6. EQUAL EMPLOYMENT OPPORTUNITY (EEO) / AFFIRMATIVE ACTION (AF) / NON-DISCRIMINATION

The Offeror's or Bidder’s attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth in Division 1 and also referenced in Part B. Section 17, in this Special Provision/Supplemental General Provision. The Contractor and all Subcontractors and Suppliers shall comply with the EEO, AF, and Non-Discrimination requirements in the “Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects” contained in Division 1 documentation, 41 CFR 60-4 (two sections are contained in Division 1 Referenced Documents), and Federal Executive Order 11246. If the federal requirements and the state requirements conflict, the federal requirements shall govern. Requirements include, but are not limited to:

- 6.1. **SF-100:** The Contractor and all first tier Subcontractors must file SF-100 (EEO-1) by September 30th of each year but in no case later than the start of this project if they employ 50 or more employees at all locations and they have contracts of \$50,000 or more. The Contractor shall confirm these requirements prior to the start of work.
- 6.2. **MINORITY AND FEMALE EMPLOYEE PARTICIPATION:** The Contractor and all Subcontractors must comply with 41 CFR Part 60-4 and Federal Executive Order 11246 in regards to goals for minority and female employees in federally funded projects. Participating Contractors and Subcontractors must:

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- i. Take specific actions as outlined in 41 CFR Part 60-4 to ensure EEO;
- ii. Have an EEO / AF Plan;
- iii. Designate an EEO / AF Officer;
- iv. Periodically notify and train supervisors and others on the Plan;
- v. Recruit minorities and females;
- vi. Maintain EEO / AF records;
- vii. Develop or participate in on-the-job training programs;
- viii. Disseminate their Plan;
- ix. Post their Plan;
- x. Annually evaluate all minorities for promotion; and
- xi. Annually review supervisors' adherence to their Plan.

- 6.3. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are contained in the Invitation for Bids.

These goals are applicable to all of the contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its Federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training shall be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project, for the sole purpose of meeting the contractor's goals, shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

- 6.4. The Contractor shall provide written notification to the US Department of Labor, Director, Office of Federal Contract Compliance Programs (OFCCP), within ten (10) working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of subcontract; and the geographical area in which the subcontract is to be performed.
- 6.5. As used in this notice and in the contract resulting from this solicitation, the "covered area" is noted in Division 1 – FAA Required Contract Provisions, Page RCP-3.

7. MATERIALS, SERVICES, AND FACILITIES

It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide at no cost to the Owner all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the work for the specified item.

Any work to be performed after regular hours, on Sundays or on Legal Holidays, shall be performed without additional expense to the Owner. This includes but is not limited to paying for additional Resident Project Representative time cost incurred by the Owner.

8. CONTRACTOR'S TITLE TO MATERIALS

No materials or supplies for the work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he /she has good title to all materials and supplies used by him/her in the work free from all liens, claims or encumbrances.

9. LUMP SUM AND UNIT PRICES

Only those items for which unit prices are shown in the Bid Form will be considered for separate payment. Compensation for all other work shall be included in the appropriate Contract items.

Quantities listed in the Bid Form are estimated for Bidding purposes only and do not necessarily represent the exact amount of work to be done. Payment for unit price items will be based on the unit prices specified or Bid and the actual amount of work performed.

10. "OR EQUAL" CLAUSE

Whenever materials are identified on the Plans or in the Specifications by reference to manufacturer's or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard; and any material of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the materials so proposed are, in the opinion of the Engineer, of equal substance and function. Such materials shall not be purchased or installed by the Contractor without the Engineer's written approvals through the Shop Drawing process.

11. REPRESENTATIONS OF THE CONTRACTOR

The Contractor represents and warrants:

- a. that they are financially solvent and that they are experienced in and competent to perform the type of work or to furnish the plant, materials, supplies or equipment, to be so performed or furnished by him/her; and
- b. that they are familiar with all Federal, State, municipal and Sponsor laws, ordinances and regulations, which may in any way affect the work or those employed therein, including but not limited to, rulings or actions specifically relating to the work or to the project of which it is a part; and

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- c. that such temporary and permanent work provided by the Contract Documents as is to be done by them can be satisfactorily constructed and used for the purpose for which it is intended, and that such construction will not injure any person or damage any property; and
- d. that they have carefully examined the Plans, Specifications and site of the work, and that from their own investigations, they have satisfied themselves as to the nature and location of the work, the character, quality and quantity of equipment and other facilities needed for the performance of the work, the general and local conditions and all other materials which may in any way affect the work or its performance.

12. **PROTECTION OF WORK AND PROPERTY AND EMERGENCIES**

12.1. **PROTECTION OF WORK AND PROPERTY:** The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Contract. The Contractor shall at all times safeguard and protect their own work and adjacent property from damage. The Contractor shall correct any such damage, loss or injury unless such is caused directly by errors contained in the Contract or caused by the Owner, or the Owner's duly authorized representative.

12.2. **EMERGENCIES:** In case of an emergency which threatens loss or injury of property, and/or safety of life, the Contractor will be allowed to act, without previous instructions from the Resident Project Representative, in a diligent manner. The Contractor shall notify the Resident Project Representative immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted to the Resident Project Representative for approval.

The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in Division 1, General Provisions, Section 40.

Where the Contractor has not taken action but has notified the Engineer of any emergency threatening injury to persons or damage to the work or any adjoining property, the Contractor shall act as instructed or authorized by the Resident Project Representative.

Where the Contractor has not taken action but has notified the Engineer of any emergency threatening injury to persons or damage to the work or any adjoining property, the Contractor shall act as instructed or authorized by the Resident Project Representative.

Any Contractor whose place of business is located outside of the boundary of the city or town where the airport is located and who does not maintain local headquarters 24 hours a day within that city or town must make satisfactory arrangements with the Engineer for taking care of emergencies or complaints which may occur at night, over the weekend, or when the job is shut down. If they do not, the Owner may make arrangements and the cost will be charged to the Contractor. Before the final estimate is certified for payment, the Contractor shall make similar arrange

12.3. **COVID-19 RESTRICTIONS:** The Contractor shall comply with all requirements of the Federal Government, FAA, General State Guidelines, other State Regulations, local regulations, and the **SPONSOR** related to protection of workers and the public from COVID-19. This may include maintaining additional facilities, like hand-washing stations, at the work area and quarantining workers traveling into SPONSOR's work zones. All costs for the Contractor's

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compliance with COVID-19 requirements shall be considered incidental to the project and shall be the full responsibility of the Contractor.

13. PROTECTION AND RESTORATION OF PROPERTY

13.1. **GENERAL:** These requirements are in addition to those contained in Division 1 - FAA General Provisions, Section 70.

The Contractor shall:

- (1) Not enter upon private property for any purpose without obtaining written permission;
- (2) Use every precaution necessary to prevent damage or injury to public and private property;
- (3) Protect all trees, shrubs, and other plants not marked by the Engineer for removal from damage by construction operations.

13.2. **PROTECTION OF EXISTING INFRASTRUCTURE:** The Contractor shall make sure that any portions of the existing airport, roadway and existing structures which are to be retained for public use or travel are left in as good condition as when the Contractor commenced work. The Contractor shall not move or use equipment on any pavement or structure in a manner that may or does cause damage.

13.3. **CONTRACTOR'S RESPONSIBILITY:** The Contractor's responsibility shall not be released until the work has been completed and accepted and the applicable statute of limitations has expired.

13.4. **RESTORATION OF DAMAGED PROPERTY:** When any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work or in consequence of the non-execution thereof on the part of the Contractor, such property shall be restored at the Contractor's expense to a condition similar or equal to that existing before such damage or injury was done or the Contractor shall make good such damage or injury in an acceptable manner.

13.5. **CLEANING TRAFFIC SIGNALS, STREET LIGHTING, AND AIRFIELD LIGHTING:** When the Contractor's operations compromise the functionality of existing traffic signals and/or street or airfield lighting equipment, the Engineer may require the Contractor to clean said equipment prior to project completion. Cleaning of traffic signals shall include all vehicle and pedestrian signal face lenses (inside and outside). Further, the inside of the controller cabinet shall be vacuumed and any vent filter shall be replaced; cleaning of streetlights shall include both the lens (inside and outside) and the reflector. The cleaning of electrical equipment shall be done by a traffic signal/electrical contractor. Any equipment that is damaged in the cleaning process shall be repaired or replaced at the Contractor's expense. The costs for cleaning will not be paid for directly, but will be considered incidental to other items in the Contract.

13.6. **GROUND VIBRATION LIMITS:** The maximum Peak Particle Velocity (PPV) of ground vibration in any of the three mutually perpendicular components of particle velocity for the following structure types shall be limited as follows:

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PPV IN MM/S (IN/SEC)

<u>Type of Structure</u>	<u>Frequencies < 40 Hz</u>	<u>Frequencies > or = 40 Hz</u>
Modern Homes (drywall interior)	19 (0.75)	50 (2.0)
Older Homes (plaster on wood or lath)	13 (0.50)	50 (2.0)
Non-Residential Structures Underground Utilities		

The SPONSOR reserves the right to lower the PPV limit in areas where there may be structures or elements with a higher sensitivity to ground vibration. Adherence to this specification does not waive the Contractor's responsibility for damage as specified in this Subsection and in Part B. Section 22 Seismic Safety (as applicable).

14. **PUBLIC CONVENIENCE AND SAFETY**

14.1. **GENERAL:** The Contractor shall conduct all work so as to ensure the least possible obstruction to traffic. The safety and convenience of the general public and the residents along the highway within the construction area and the protection of persons and property shall be provided for by the Contractor.

14.2. **DUST CONTROL:** The Contractor shall use all necessary dust control on haul road(s) and maintenance yard(s) in the same manner as required for materials sources and disposal areas. Dust control on haul road(s) and maintenance yard(s) shall be performed in accordance with Division 1, General Provisions, and will not be paid for directly, but will be considered incidental to all other Contract items. The Contractor shall perform all dust control directed by the Engineer on the haul road(s) and/or maintenance yard(s); unless otherwise provided, dust control will not be paid for directly, but will be considered incidental to all other Contract items.

The Engineer will direct the use of all necessary dust control within the limits of the construction performed under the Contract. Under those contracts which contain pay items for dust control, the dust control within the construction area shall be performed in accordance with the requirements of Division 1 – General Provisions (and other references herein) and will be paid for under the appropriate Contract item(s). Under those contracts which do not contain pay items for dust control, the necessary dust control shall be performed in accordance with the requirements of Division 1 – General Provisions (and other references herein) and the cost will not be paid for directly, but will be considered incidental to all other Contract items.

14.3. **STORED MATERIALS:** Materials stored within the construction area shall be placed so as to cause a minimum obstruction to the facility users, the traveling public and snow removal operations. Materials shall not be store in any areas regulated by State or Federally Environmental Agency or in buffers unless approved by the Resident Project Representative.

14.4. **FIRE HYDRANTS:** Fire hydrants located within the construction area shall be kept accessible to fire apparatus at all times and no material or obstruction shall be placed within 15 feet of any such hydrants.

14.5. **ADJOINING WAYS:** Sidewalks, gutters, drainage inlets, and portions of highways adjoining the construction shall be obstructed only when necessary. If a sidewalk is

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obstructed, temporary pedestrian access meeting the requirements of ADA and the MUTCD shall be provided around the obstructed area.

- 14.6. **VEHICLE LANE RESTRICTIONS:** When the total useable width of a traveled way will be decreased to 14 feet or less for a period longer than one working day, the Contractor shall notify the Engineer of the date of the first day and the anticipated period of time such a lane restriction will be in effect. This notification shall be provided at least two weeks prior to the beginning of the lane restriction so that the Engineer may provide proper notification to the Oversized/Overweight Section of the Commercial Vehicle Enforcement Unit of the Department of Motor Vehicle and the Agency's Communications Section. When the date of the removal of the restriction becomes known, the Contractor shall notify the Engineer so that notification can be provided to these entities.

15. USE OF EXPLOSIVES

- 15.1. **GENERAL:** The Contractor shall use the utmost care to protect life and property and, whenever directed by the Engineer, shall reduce the number and size of explosive charges. Blasting mats shall be used when required by regulation or deemed necessary. The Contractor shall notify each person, company, corporation, or public utility that owns, leases, or occupies property or structures near the site of the work of plans to use explosives; notice shall be given sufficiently in advance to enable people to take such steps to protect their property or structure from injury as they may deem necessary. Provision of notice shall not relieve the Contractor of responsibility for any damage resulting from the Contractor's blasting operations. All persons within the danger zone of blasting operations shall be warned, a warning whistle shall be sounded, and the zone cleared just prior to blasting. A sufficient number of flaggers shall be stationed outside the danger zone to stop all approaching traffic during blasting operations. Explosives shall be used only during daylight hours and shall be handled only by competent, trained workers; particular care shall be taken to ensure that no unexploded charges remain in the work area unattended and when constructions operations cease for the day. All explosives shall be stored securely, all storage locations shall be clearly marked "DANGEROUS-EXPLOSIVES," and all storage locations shall be supervised and controlled by a competent, trained person at all times. All explosives and highly flammable materials shall be stored and used in strict conformity with all Federal, State, and local laws, rules, and regulations. Attention is directed to VOSHA *Safety and Health Standards for Construction*, Subpart U, Blasting and the Use of Explosives.
- 15.2. **LIABILITY:** Each of the insurance policies required for a project shall include coverage for injury to persons and injury or destruction of any property arising out of the storage and use of explosives.
- 15.3. **INSURANCE:** The Contractor acknowledges full responsibility and assumes full liability for any and all damage or injury to persons or property caused either directly or indirectly by the Contractor's or a subcontractor's use of explosives. The liability of the Contractor shall apply equally to damages or injury to persons or property whether said injury or damage occurs within or outside of the right-of-way. The cost of all precautionary measures shall not be paid for directly, but all costs therefore shall be included in the bid prices for the pay items under the Contract.
- 15.4. **BLASTING CAP DANGER:** The Contractor and/or the Contractor's agents shall take all

DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

precautions necessary to prevent premature explosions of electric blasting caps individually or when they are connected into a circuit.

- 15.5. The Contractor and/or the Contractor's agents acknowledge and are hereby advised of the potential hazard of a premature explosion of electric blasting caps due to propagation of radio frequency energy by transmitters of radio and the related radio services such as television and radar. Mobile and fixed radio, cellular telephone, radar, television, and related transmitters are in general use in the project area, including police departments, fire departments, political subdivisions, utility companies, commercial carriers, private and public enterprises, and individuals.
- 15.6. **WARNING SIGNS; COSTS INCIDENTAL:** Prior to blasting operations the Contractor shall install warning signs in conformance with the MUTCD. Warning signs shall be located in prominent positions at least 1,200 feet from the point of blasting and visible to any person approaching the blasting point. Payment for furnishing, erecting and maintaining warning signs shall be considered incidental to other items in the Contract.
- 15.7. **DOCUMENTATION OF STRUCTURE CONDITION:** It shall be the responsibility of the Contractor to document the existing condition of all structures that have potential for damage. This documentation shall be in the form of a video or pictures, with sufficient description, and shall be supplied to the Engineer prior to any blasting on the project. The costs of preparing this documentation will not be paid for directly, but shall be considered incidental to all Contract items.
- 15.8. **BLAST SURVEYS:** The Contractor shall monitor all blasts and provide a report to the Engineer that shall indicate the Peak Particle Velocity (PPV) of the blast. The PPV sensitivity as reported shall range from less than 0.5 mm/s (0.02 in/s) to more than 125 mm/s (5.0 in/s). The Engineer reserves the right to request more than one instrument to monitor the blasting if there is a need for monitoring in more than one direction from the blasting area. The costs of the monitoring and preparing the reports will not be paid for directly, but shall be considered incidental to all Contract items.

16. PROTECTION AND RESTORATION OF UTILITIES AND SERVICES

- 16.1. **GENERAL.** The Contractor shall take proper precaution during construction to avoid damage to public and private services. These services include, but are not limited to gas, water, sewer and drainage pipes, springs, wells, septic tanks, cesspools, telephone, telegraph, television, and other communication and electrical services. Services may be located on or adjacent to the project, above, on, or under the ground, and may not be shown on the Plans.
- 16.2. **DIG-SAFE.** The Contractor shall comply with the requirements of Dig-Safe laws in the state in which the work will take place.
- 16.3. **NOTICE OF WORK.** At commencement or resumption of construction, the Contractor shall notify the owners, operators, occupants, or lessees of all the public or private services of any work to be done on, over, under, adjacent to, or in proximity to said utilities during the construction of the project. Further, the Contractor shall again notify the aforesaid parties seven (7) to fourteen (14) calendar days in advance of starting such work to enable them to take steps as they may deem necessary to protect their property or structures from damage.

DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

Provision of notice shall not relieve the Contractor of its responsibility for any damages resulting from the Contractor's work.

- 16.4. **OWNER ACCESS.** Owners, employees, or agents of public or private services located within the project limits shall be allowed free and full access with the tools, materials, and equipment necessary to install, operate, maintain, place, replace, relocate, and remove service facilities. No compensation will be paid to the Contractor for any inconvenience caused by working with these parties or around or with their services.
- 16.5. **SERVICE RELOCATION.** The exact location of any service facility relocated within the project limits shall be as directed by the Engineer.
- 16.6. **COOPERATION.** The Contractor shall cooperate with the owners of any of the aforementioned services in order that the service removal and/or relocation operation will progress in a reasonable manner, that duplication or temporary relocation work may be reduced to a minimum, and that services rendered by the concerned parties will not be unnecessarily interrupted.
- 16.7. **SERVICE INTERRUPTION.** If in connection with the work interruption in service occurs, the Contractor shall promptly notify the owner or the owner's authorized representative and cooperate with the owner to promptly restore service. In no case shall interruption to water or sewer service be allowed to exist outside of normal working hours without the substitution of acceptable alternate service.
- 16.8. **FIRE HYDRANTS.** No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.
- 16.9. **RESPONSIBILITY FOR DAMAGE.** The Contractor shall be responsible for all damages done to services from the beginning of construction to the satisfactory completion of the project, including all damages to water supplies and sewage systems, including but not limited to damage to springs and wells, septic tanks, cesspools, and underground pipes, whether located within or outside the project area or whether or not shown on the Plans, except as otherwise provided in the Contract.
- 16.10. **WATER; INVESTIGATION OF CLAIMS.** The SPONSOR will receive and investigate all claims relating to damage to springs, wells, and water supply systems. The Contractor will be notified of the results of the investigation. If it is determined that the damage is the responsibility of the State or the SPONSOR, the Contractor will not be liable and will be reimbursed by the State or SPONSOR for expenses incurred in providing temporary water service and repairing the damage.
- 16.11. **RESTORATION OF SERVICE BY AGENCY.** If the Contractor fails to restore a service or to make good on a damage or injury to service(s), the Engineer may proceed to repair, rebuild, or otherwise restore the service as deemed necessary and the cost thereof will be deducted from any monies due, or which may become due, the Contractor under the Contract.

17. RESPONSIBILITY FOR DAMAGE CLAIMS

DIVISION 2 – SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

These requirements are in addition to those contained in Division 1, FAA General Provisions, Section 70-11.

- 17.1. **GENERAL.** The SPONSOR shall notify the Contractor in the event of any claim or suit pursuant to the items listed in Division 1, FAA General Provisions, Section 50-16, and the Contractor shall immediately retain counsel and otherwise provide a complete defense against the entire claim or suit.

After a final judgment or settlement the Contractor may request recoupment of specific defense costs and may file suit in the Court having jurisdiction, requesting recoupment. The Contractor shall be entitled to recoup costs only upon a showing that such costs were entirely unrelated to the defense of any claim arising from an act or omission of the Contractor.

The Contractor shall indemnify the State and its officers and employees in the event that the State, its officers or employees become legally obligated to pay any damages or losses arising from any act or omission of the Contractor.

- 17.2. **SUBMISSION OF DAMAGE CLAIMS.** With regard to each and every damage claim, the Contractor shall:

- (1) Provide the claimant with a damage claim form for the submission of damage claims to the Contractor and Agency;
- (2) Pay, settle, or otherwise resolve the claim;
- (3) Submit the claim to the insurance carrier, with a copy to the Agency;
- (4) Treat all claimants with respect.

18. SCHEDULES.

These requirements are in addition to those contained in Division 1, FAA General Provisions, Section 80.

PM PROGRESS SCHEDULE: Within ten (10) calendar days after the Award of the Contract, the Contractor shall submit to the Engineer for approval a CPM progress schedule. The CPM progress schedule shall show the proposed sequence of work and when the Contractor proposes to complete the various items of work within the time(s) established in the Contract. During the progress of the work, the Contractor shall confer with the Engineer concerning performance of the work in accordance with the approved schedule. The approved schedule shall be used as a basis for establishing major construction operations and for checking the progress of the work.

19. CHARACTER OF WORKERS, METHODS, AND EQUIPMENT

ADD the following two (2) paragraphs to the end of Section 80-05 “CHARACTER OF WORKERS, METHODS, AND EQUIPMENT” of the Division 1, FAA General Provisions:

“Electrical Work. All electrical work shall be performed by or under the supervision of a licensed electrician (master or journeyman). Electrical work shall be defined as any work which involves making connections to electrical components or splices in wiring that are, or will be, carrying 100 V or more. “Under the supervision of” means that the licensed electrician employed on the project shall be physically present on the project and must be

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actively supervising the work.

Removal of Machinery and Equipment. The Contractor shall not remove from the project any item of machinery or equipment after it has been placed on the project without the prior consent of the Engineer, which consent shall not be unreasonably withheld. Reasonableness shall be tested by the needs of the project and not by the needs of any other project in which the Contractor may be engaged.”

20. DEFINITIONS.

The following definitions SHALL REPLACE the definitions of the same name in Division 1, FAA General Provisions, Section 10:

10-16 CONTRACT. A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment.

The Contract includes those documents listed as Contract Documents in the Supplemental General Provisions, and any supplemental agreements that are required to complete the work in an acceptable manner.

10-19 CONTRACTOR. The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work. The term “Contractor” means the prime Contractor as differentiated from a subcontractor. All Contractors must be registered with the Secretary of State. The Contractor will act in an independent capacity and not as officers or employees of the Owner.

10-60 SURETY. The individual, partnership, firm, or corporation, or any acceptable combination thereof, other than the Contractor, executing the bond or bonds furnished by the Contractor. The Surety Company issuing the bond(s) shall be listed on the current United States Department of the Treasury “Department of the Treasury’s listing of approved Sureties (Department Circular 570)” as authorized to do business in the State in which the project is located.

The following definitions shall be ADDED to the definitions in Division 1, FAA General Provisions, Section 10 in the:

10-67 ACCEPTANCE. All Contracts require proper acceptance of the described goods or services by the Owner. Proper acceptance shall be understood to include inspection of goods and certification of acceptable performance of services by Authorized Representative(s) of the Owner to insure that the goods or services are complete and are as specified in the Contract.

10-68 AIRPORT OPERATOR. The person or entity representing the Owner and having operational responsibility for the Airport.

10-69 CONTRACT DOCUMENTS. All the documents that comprise the awarded Contract as defined in Item 10-13 of this Section.

10-70 GOODS. Hard goods, supplies, or materials.

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10-71 HE, SHE, HE/SHE, HER, HERS, HIS/HER, HIM, AND HIS. These terms shall be gender-neutral and shall be applied without regard to gender.

10-72 SUBCONTRACTOR. An individual or legal entity to whom or which the Contractor sublets part of the work. A Supplier can also be considered a Subcontractor.

10-73 SUPPLIER. An individual or legal entity with which the Contractor enters an agreement to provide Goods for use in the Project.

21. CLAIMS FOR ADJUSTMENT

21.1. NOTICE REQUIREMENTS: In order to bring a claim for additional compensation not clearly covered by the Contract for conditions substantially different than represented by the Contract and not ordered by the Engineer as Extra Work as defined herein, the Contractor must provide written notice (“the Notice of Intent to File a Claim” or the “Notice”) to the Engineer before conducting any work or purchasing any materials subject to the claim (the “Claim”). The words “Notice of Intent to File a Claim” must appear in large print at the top of the document. The Notice must specify the basis for the Claim, including the nature of the Claim, the reason why the Contractor believes that the Owner is responsible for payment of the Claim, and a description of the additional compensation, including reference to each activity associated with the work and/or materials, including reference to any impacts to the Contractor’s Progress Schedule (Critical Path). If the Contractor fails to provide the Notice as specified herein, the Contractor waives its right to bring the Claim under the Contract.

21.2. NOTICE DOCUMENTATION REQUIREMENTS: Upon providing the Notice of Intent to File a Claim, the Project Superintendent must commence daily records for all labor hours, equipment hours (idle and operating), and materials involved with the work or materials at issue in the Notice. The Contractor must submit such records to the Engineer on a daily basis. Such records must include a written analysis of how the work and/or materials at issue in the Notice impact/s the Critical Path. If the Contractor fails to provide such records to the Engineer as required herein, the Contractor waives its right to bring the Claim.

21.3. CLAIMS PROCEDURE: The Engineer’s written acknowledgement of the Notice and receipt of the Contractor’s daily reporting under this Subsection shall not be construed as an approval by the Owner of the merits of the Claim. Claims are evaluated by the Resident Project Representative, the Owner, the FAA, and any other agency contributing funding to the project. If the Owner decides in favor of the Contractor, the Claim will be allowed, in whole or in part, and paid as provided in the Contract. If the Owner denies the Claim, in whole or in part, the Contractor may appeal to the Owner one time for review of the decision. Notwithstanding any other provision of law, case law, regulation, or the Contract, an appeal from the decision of the Engineer shall be made within 30 calendar days of denial, and not thereafter.

21.4. CLAIMS DOCUMENTATION REQUIREMENTS: The Contractor must provide the Engineer with the following documentation in support of the Claim:

- (1) A detailed statement of the Claim, including all necessary dates, location, and work and material items at issue in the Claim;

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- (2) The date on which the Contractor first became aware of the actions or conditions giving rise to the Claim;
- (3) A copy of the Notice of Intent to File a Claim;
- (4) A list of the names of all Owner employees and agents, including consultants, the Contractor believes have knowledge or information concerning the facts giving rise to the Claim;
- (5) A list of the names of all Contractor employees and agents, including subcontractors, whom the Contractor believes have knowledge or information concerning the facts giving rise to the Claim;
- (6) A list of the specific provisions of the Contract that the Contractor believes support the Claim, and a description of why the Contractor believes those provisions support the Claim;
- (7) A list of all documents and all oral statements that the Contractor believes support the Claim;
- (8) A statement as to whether additional compensation and/or a time extension are being requested in the Claim;
- (9) If a time extension is being requested in the Claim, a statement as to the specific number of days being requested, supported with reference to how the facts underlying the Claim affected the Contractor's performance schedule, including how such facts affected the Critical Path;
- (10) A description of the amount of additional compensation being sought, itemized by category of work, including delays associated with performing the work, work items, materials costs, and any and all other costs at issue in the Claim. Such documentation includes, but is not limited to, invoices for rented equipment, a Blue Book analysis for owned equipment; and subcontractor agreements.
- (11) If additional compensation for delays associated with performing the work is included in the Claim, the Contractor must provide a description of the operations that were delayed, the reasons for the delay, the impact of the delay on the operations, and how the delay impacted the Contractor's progress schedule, including the Critical Path. The Contractor must review the Contract for the project as claims for delays must be in accordance with the Contract terms.
- (12) For every claim seeking additional compensation in excess of \$50,000, the Contractor must provide a separate document certifying that the documentation provided in support of the Claim and that the amount of additional compensation sought in the Claim is accurate and that the Contractor has a good faith basis for believing that the Owner is responsible for payment of the Claim (the "Claims Certification"). The Claims Certification shall be notarized and executed by a senior officer of the Contractor with legal authority to bind the Contractor, or if the Contractor is a sole proprietor, by the proprietor. The Claims Certification may be used in any proceeding under the False Claims Act, 18 U.S.C. 1020, and/or 23 CFR 635.119.

21.5. APPEAL TO THE OWNER (SPONSOR): Appeals will be judged by the SPONSOR (Owner), in accordance with their policies. Should an appeal be judged in favor of the Contractor, it will be allowed and paid as provided for in the Contract. Should an appeal be denied by the SPONSOR (Owner), the Contractor may not appeal this claim again.

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21.6. TIME FOR CLAIMS; APPEALS. Notwithstanding any other provision of law, case law, regulation, or the Contract, all claims by the Contractor shall be submitted in writing within thirty (30) calendar days after the Acceptance Date of the project or within thirty (30) calendar days of the Notice of Intent to File a Claim, whichever occurs first, and not thereafter (the “Claim Filing Period”). Such claims must meet the requirements set forth above, including but not limited to complete documentation supporting the Claim. If the Contractor fails to meet these requirements, the Owner may grant the Contractor additional time to meet the requirements. Any additional time granted for such purpose shall not be the subject of any demand for interest payments or for attorneys’ fees and/or other costs. If the Contractor fails to file the Claim within the Claim Filing Period, the Contractor waives its right to bring the Claim. If the disputed work continues to be performed beyond the Claim Filing Period, the Contractor must submit a written request to extend the Claim Filing Period prior to the expiration of the Claim Filing Period. The Contractor shall submit such requests for extension of the Claims Filing Period every thirty (30) calendar days until the disputed work is completed.

22. INSPECTION BY OWNER AND PUBLIC AGENCIES

The authorized representatives and agents of the Owner (SPONSOR) shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. Representatives of the Owner (SPONSOR) shall have access to the work wherever it is in preparation or progress and the Contractor shall provide facilities for such access and inspection.

23. REPORTS, RECORDS AND DATA

The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data, as the Owner may request concerning work performed or to be performed under this Contract.

24. GENERAL GUARANTEE

Neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting there from, which shall appear within a period of one year of the date of final acceptance of the work unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness.

25. NOTICE AND SERVICE THEREOF

Any notice to any Contractor from the Owner relative to any part of this Contract shall be in writing and considered delivered and the service thereof completed when said notice is posted, by certified or registered mail, or by documented express packaging (UPS, Fed-Ex or other express shipping) to the said Contractor at their last given address, or delivered in person to said Contractor or their authorized representative.

26. PRE-CONSTRUCTION CONFERENCE

A Pre-construction Conference shall be held. The purpose of this conference is to go over the Contractor's proposed job organization, equipment and preliminary work schedule and to review Specification requirements. The order of construction shall be discussed with the Engineer and shall

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meet with their approval. The Contractor, prior to starting work, shall submit to the Engineer a written description of the methods they plan to use in doing the work.

A pre-construction conference for permitting may also be required by the Owner or the project permits. This may be concurrent with the regular pre-construction conference or separate at the discretion of the Owner.

27. REQUIRED PROVISIONS DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion or correction.

28. RECORD "AS BUILT" PLANS

In addition to any other requirements in the Plans and Specifications pertaining to "As-Built" Plans and surveys:

- 1) The Contractor shall, during the progress of the work, keep a master set of prints on the job site, on which they shall keep a careful and neat record of all deviations from the Contract Plans prepared by the Engineer which are made during the course of the work.
- 2) Upon completion of the project, these "as built" prints shall be certified as to their correctness by the signature of the Contractor and turned over to the Engineer for use in the preparation of a permanent set of "As Built" Plans.

29. AIRPORT OPERATIONS AND SAFETY REQUIREMENTS DURING CONSTRUCTION

The Contractor's attention is directed to the FAA Advisory Circular (AC) 150/5370-2G, OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION, as amended or superseded. Refer to Division 2, Special Provision 1A for a copy.

As applicable, the Contractor has been provided with a copy of the Construction Safety and Phasing Plan (CSPP) as part of the Division 2 documents. If no CSPP is provided, at a minimum, there will be construction safety and phasing notes and details in the plan set. For all contracts, the Contractor must review the CSPP (AND plan notes and details) and file a Safety Plan Compliance Document Certification (Form MJ-200) indicating that they understand the safety plan provisions and will comply with it throughout construction.

30. PERMITS AND APPROVALS

Refer to Division 2, Permits for any project specific permits that have been obtained. If there other permits to be obtained, it is the Contractor's responsibility to secure, obtain and pay for any Permits, Licenses, Approvals and all other legal or administrative prerequisites to their performance of the Contract.

31. LIABILITY OF PUBLIC OFFICIALS

To the full extent permitted by law, no official, employee, agent or representative of the Owner

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shall be individually or personally liable on any obligation of the Owner under this Contract.

32. OSHA TRAINING

All employees to be employed at the job site shall have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration (OSHA) that is ten (10) hours in duration at the time the employee begins work.

The Contractor shall furnish documentation of successful completion of said course by either a copy of the OSHA card or a letter or certificate of completion from the person or company that administered the course. OSHA documentation shall be provided prior to any person beginning work on the site. It is recommended that Contractors and Subcontractors provide a copy of OSHA documentation for all employees prior to the start of work.

Periodic Cost Estimates will not be accepted for payment unless all OSHA documentation has been received. Final payment for the Project will not be made until all Project OSHA cards have been submitted to and approved by the Engineer.

PART D – STATE / AGENCY / AIRPORT SPECIFIC CLAUSES

1. RESPONSIBILITY FOR DAMAGE TO WORK

Except as caused by uncontrollable events, the Contractor shall bear all risk of loss relating to the Work until Final Acceptance, regardless of cause, including completed Work, temporary Structures, and all other items or Materials not yet incorporated into the Work.

The Contractor shall, at its sole expense, rebuild, repair, restore, or replace such damaged Work or otherwise make good any losses that arise from such damage ("rebuilding, etc."). If the Contractor fails to promptly commence and continue such rebuilding, etc., the SPONSOR or the SPONSOR's Airport may, upon forty-eight (48) hours advance written notice, commence rebuilding, etc. of the damaged property without liability to the SPONSOR or the SPONSOR's Airport with its own forces or with contracted forces and all costs will be deducted from amounts otherwise due the Contractor.

2. NO DAMAGES FOR DELAY CLAUSE

Pursuant to the following Subsections of Division 1, FAA General Provisions of the Contract Documents:

50-15 "Claims for Adjustment and Disputes";

70-11 "Responsibility for Damage Claims/Indemnity/Limitation of Damages";

80-06 "Temporary Suspension of the Work"

The **SPONSOR** further amends the language of those Subsections to include the following clause and shall be in effect for this project:

Notwithstanding anything to the contrary in the Contract Documents, an extension of the Contract Time shall be the Contractor's sole remedy for:

- (1) any delay in the commencement, prosecution or completion of the Work,
- (2) any hindrance or obstruction in the performance of the Work,
- (3) any loss of productivity, or
- (4) any other similar conduct (collectively "Delays") whether or not these Delays are foreseeable, contemplated or un contemplated, unless a Delay is caused by acts or omissions of the Owner or any of its representatives or agents that constitute bad faith or constitute willful, malicious or grossly negligent conduct and then only to the extent that such acts or omissions continue after the Contractor notifies the Owner in writing that it is engaged in conduct of this nature.

In no event shall the Contractor be entitled to any compensation or recovery of any monetary damages in connection with any Delay, including, without limitation, consequential damages, lost opportunity cost, impact damages or other similar remuneration. The Owner's exercise of any of its rights or remedies under the Contract Documents (including, without limitation, ordering changes in the Work, or directing suspension, rescheduling or correction of the Work), regardless of the extent or frequency of the Owner's exercise of these rights or remedies, shall not be construed as bad faith or willful, malicious or grossly negligent conduct on the part of the Owner or any of its representatives or agents.

END OF SPECIAL PROVISION/SUPPLEMENTAL GENERAL PROVISIONS

DIVISION 2 – SPECIAL PROVISIONS

SP-1

Construction Safety and Phasing Plan (CSPP)

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CONSTRUCTION SAFETY AND PHASING PLAN

For

**Construct New T-Hangar and Taxilane
AIP No. 3-23-0002-XXX-2024
McFarland Johnson Project No. 19186.01**

**AUBURN-LEWISTON MUNICIPAL AIRPORT
AUBURN, MAINE**

Prepared for the

**AUBURN-LEWISTON MUNICIPAL AIRPORT
AND
CITY OF AUBURN**

November 21, 2024

Prepared by



McFarland Johnson

53 Regional Drive
Concord, New Hampshire 03301
Phone: 603-225-2978

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Airport Description / Airport Operations

Auburn-Lewiston Municipal Airport is a public General Aviation (GA) airport located in Androscoggin County, Maine. It is owned by the City of Auburn.

Project Description

This project consists of two work areas. The first work area consists of the construction area outside of the Taxiway A Object Free Area. The work in this area involves erosion control best management practices, clearing, grading, paving, t-hangar construction, airfield marking, drainage installation, topsoil, seeding, mulching, installation of automatic gate, and utilities.

The second work area consists of the construction inside of the Taxiway A Object Free Area. The work in this area involves grading, paving, airfield marking, topsoil, seeding, mulching, and airfield electrical.

Referenced Publication

The following Sections are intended to address the requirements set forth in the latest revision of Advisory Circular 150/5370-2G "Operational Safety on Airports During Construction". The outline provided below corresponds with the subject outline as specified in Chapter 2, Section 1, Paragraph 2.4 of the referenced Advisory Circular.

1. Coordination

Prebid Meeting TBD at Auburn-Lewiston Municipal Airport

- CSPP to be reviewed and discussed.
- Key Attendees: City of Auburn Representative / Airport Manager
Design Engineer
Bidding Contractors

Preconstruction Meeting - Just Prior to Construction – Time to be Determined

- CSPP & SPCD to be reviewed and discussed.
- Key Attendees: City of Auburn Representative / Airport Manager
FAA Airports Project Manager
MaineDOT Project Manager

Design Engineer Representative
Resident Engineer
Engineer's QA
Contractor Project Manager
Contractor Superintendent
Contractor's QC
Subcontractor representative(s)
FAA Tech Ops Representative(s)

During Construction:

Daily Coordination Meeting will be held prior to starting work each day

- Standing Discussion Item will be the day's activities and safety of the project site
- Key Attendees: Resident Engineer
Contractor Superintendent
Subcontractor representative(s), as applicable

Weekly Project Progress Meetings

- Standing Item on the Agenda will be Construction Safety and Project Phasing
- Key Attendees: City of Auburn Representative / Airport Manager
Design Engineer Construction Administrator
Resident Engineer
Contractor Project Manager
Contractor Superintendent
Subcontractor representative(s)

Prior to the start of construction activities, the Contractor shall be required to provide a complete schedule for the project. At each of the weekly project meetings, the Contractor will be required to provide at least a 2-week "look ahead" schedule. Should the overall schedule change during the course of construction, the overall schedule will be updated and distributed to stakeholders as required.

Schedule

The following schedule is anticipated:

Bid Documents Posted:	November 21, 2024
Pre-bid Meeting:	December 4, 2024
Bid Opening:	December 20, 2024
Grant Application:	December 2024
Grant Award:	Estimated June 2025
Notice of Award:	Estimated July 2025
Notice to Proceed:	TBD
Construction Start:	TBD
Substantial Completion:	TBD

FAA/Airport Coordination

The airport currently operates under radio frequency communication only. Any closure of work areas require a 72-hour notice to give sufficient time for posting NOTAM's. The Resident Project Engineer (RPR) shall be coordinated with for transitioning work areas, and an inspection of a work area must be done by both the RPR and the airport prior to the opening of any work area.

2. Phasing

Work Area 1 – Construct T-Hangar and Taxilane

Work Area 1 is 150 Calendar Days and includes erosion control best management practices, clearing, grading, paving, t-hangar construction, airfield marking, drainage installation, topsoil, seeding, mulching, installation of automatic gate, utilities, incidental grading along the proposed permanent perimeter fence, installation of the new fence, and removal of the existing fence. During this time frame, there is a 30' height restriction. Work Area 1 is outside of all runway safety areas and does not require any closures.

Work Area 2 – Connect Taxilane to Taxiway A

Work Area 2 is located between the Taxiway A Runway Object Free Area limits and to the Runway Safety Area adjacent to the work area. Work Area 2 is a total of fourteen (14) days concurrent with Work Area 1 and includes grading, paving, airfield marking, topsoil, seeding, mulching, and airfield electrical. There is a partial closure of Taxiway A from the taxiway hold area to the Based Aircraft Apron during Work Area 2. At this time, pilots will be able to back taxi to the run-up area adjacent to Runway 4 end and the closed portion of Work Area 2.

3. Areas and Operations Affected by the Construction Activity

The affected areas and operations for this project includes Taxiway A. All the work will be performed "Airside" within the Airport Operations Area (AOA). All work locations within the AOA Movement Area will require coordination and advanced notification in accordance with Section 1 – *Coordination*. The phasing of the work allows for vehicles to navigate through the overall project area for both normal and emergency operations to take place through the extent of the project.

WORK AREA 1

- Location: New T-hangar location

Construction Safety and Phasing Plan
Auburn-Lewiston Municipal Airport

Construct New T-Hangar and Taxilane

- Duration: Project Dates TBD
150 Calendar Days

WORK AREA 2

- Location: New T-hangar location
- Duration: Project Dates TBD
14 Calendar Days Concurrent with Work Area 1

TOTAL DURATION: One-Hundred fifty (150) Calendar Days

PROJECT	Construct New T-Hangar and Taxilane	
PHASE	Work Area 1	
SCOPE OF WORK	Construct New T-Hangar and Taxilane outside of Taxiway A TOFA 150 Calendar Days	
OPERATIONAL REQUIREMENTS	Normal (Existing)	Work Area 2 (Anticipated)
RW 4-22 RDC	B-II Small	NO CHANGE
RW 4 Declared Distances	TORA: 5,001 & TODA: 5,001 ASDA 5,001 & LDA: 5,001	NO CHANGE NO CHANGE
RW 4 Approach Procedures	Wind indicator, Segmented circle, MALSR	NO CHANGE
RW 4 NAVAIDS	ILS, PAPI	NO CHANGE
RW 22 Declared Distances	TORA: 5,001 & TODA: 5,001 ASDA 5,001 & LDA: 5,001	NO CHANGE NO CHANGE
RW 22 Approach Procedures	Wind indicator, Segmented circle	NO CHANGE
RW 22 NAVAIDS	PAPI, REILS	NO CHANGE
Taxiway A ADG Aircraft	III	NO CHANGE
Taxiway B ADG Aircraft	III	NO CHANGE
Taxiway C ADG Aircraft	III	NO CHANGE
ACTC (hours open)	NO ATCT	NO CHANGE
ARFF Index	NO On-site ARFF	NO CHANGE
Special Conditions	NONE	NONE

PROJECT	Construct New T-Hangar and Taxilane	
PHASE	Work Area 2	
SCOPE OF WORK	Construct New T-Hangar and Taxilane outside of Taxiway A TOFA 7 Consecutive Calendar Days	
OPERATIONAL REQUIREMENTS	Normal (Existing)	Work Area 2 (Anticipated)
RW 4-22 RDC	B-II Small	NO CHANGE
RW 4 Declared Distances	TORA: 5,001 & TODA: 5,001 ASDA 5,001 & LDA: 5,001	NO CHANGE NO CHANGE
RW 4 Approach Procedures	Wind indicator, Segmented circle, MALSR	NO CHANGE
RW 4 NAVAIDs	ILS, PAPI	NO CHANGE
RW 22 Declared Distances	TORA: 5,001 & TODA: 5,001 ASDA 5,001 & LDA: 5,001	NO CHANGE NO CHANGE
RW 22 Approach Procedures	Wind indicator, Segmented circle	NO CHANGE
RW 22 NAVAIDs	PAPI, REILS	NO CHANGE
Taxiway A ADG Aircraft	III	NO CHANGE
Taxiway B ADG Aircraft	III	NO CHANGE
Taxiway C ADG Aircraft	III	NO CHANGE
ACTC (hours open)	NO ATCT	NO CHANGE
ARFF Index	NO On-site ARFF	NO CHANGE
Special Conditions	NONE	TW A PARTIAL CLOSURE

4. Protection of NAVAIDS

Before commencing construction activities or operating construction equipment near a NAVAID, the Contractor shall coordinate, through the Engineer and the Owner to evaluate the effect of construction activity and the required distance to keep away from the NAVAID to protect it. There shall be no construction activities, equipment operation, materials storage, or vehicle parking near any NAVAIDs. When Runway 4 is operational, its associated NAVAIDs shall be operational. The Contractor will not be permitted within the critical areas of any active NAVAID. Interference from construction equipment or activities which may affect any NAVAID for low visibility operations shall require a shutdown notification through a NOTAM. If these conditions are absolutely necessary for the construction to progress, a NOTAM will need to be issued per Section 10. All construction activities near a NAVAID must not obstruct access to the equipment for maintenance by Airport personnel.

The Contractor shall contact FAA Tech Ops to locate all existing NAVAID utilities within the project limits. Contract shall be responsible for protecting any NAVIs as required during construction. Prior to initiation of any construction in the field, the Contractor shall provide a written notice (return receipt requested) to each of the impacted utility companies, as applicable. The Contractor shall provide the Engineer with a copy of the receipt of said written notification to each of the utility companies. This requirement is in addition to any other state laws regarding public notification prior to excavation.

5. CONTRACTOR ACCESS

Location of Stockpile Construction Materials and Stored Equipment

Stockpiled materials and equipment storage are not permitted within the Runway Object Free Area/ Taxiway Object Free Area (ROFA/TOFA) or Obstacle Free Zone (OFZ) of an operational runway or taxiway. All equipment when not in use shall be removed from the ROFA for storage. Stockpiled material will be constrained in a manner to prevent movement resulting from either aircraft jet blast or wind conditions in excess of ten miles per hour. In addition, stockpiled material will have silt fence located around the material to prevent FOD from moving onto the airfield pavements or polluting watercourses.

Stockpiles within Airport Operations Area shall be located as shown on the Construction Safety and Phasing Plans in Appendix B.

Temporary stockpiles may be located at the Contractors staging area or other locations within the work zone which do not encroach on any protected operational areas approved by the engineer.

Ingress and Egress Procedures:

- a. The Contractor shall control all construction access through the construction entrances as shown in the plans in Appendix B at all times. Haul routes and staging areas, including employee parking, for this project are to be as shown on Airside phasing plan.
- b. Contractor's vehicles will not be allowed access to portions of the Airport, other than the work zones, haul routes, and staging areas. All construction employee vehicles will be parked in the designated staging area. Contractor will be permitted to store equipment needed for the immediate work on hand within the work zone as approved by the Engineer. All equipment will be parked in the designated work zone, outside of all controlled aircraft operations areas (i.e. Runway Object Free Areas (ROFA) or Taxiway Object Free Areas (TOFA)) at the close of work each day and whenever it is not in use. All equipment booms shall be lowered at the close of each day's work or when stored.
- c. Each Contractor's motorized vehicle operating on airport property shall be equipped with an operating amber flashing beacon displayed in full view above the vehicle. The Contractor's construction equipment shall have a checkered flag. The 3' x 3' flag shall be made of 1'x 1' international orange and white squares. The flag should be placed at the highest point on the vehicle to allow for an unobstructed view of the flag. Any vehicles not meeting these criteria will be denied access to the work zones until the problem is rectified. Any vehicle operating on the movement areas during hours of darkness, or reduced visibility, must be equipped with a flashing beacon, the color of which is in accordance with local or state codes.
- d. In addition, all Contractors vehicles shall have the company identification plainly visible on both sides of the vehicle in order to identify the vehicle. The signage may be applied either by using tape or a water-soluble paint to facilitate removal. Magnetic signs are also acceptable. Any vehicles transporting fuel or other potentially harmful substances shall be equipped with a spill control plan and required decontamination equipment as required by Federal, State and local regulations.

Radio Communications:

- a. Auburn-Lewiston Municipal Airport is an untowered Airport. Therefore, the Contractor shall continuously monitor all local air traffic using the local Airfield FAA Unicom radio frequency and communicate with any pilots using this frequency, as required. ALL AIRCRAFT HAVE THE RIGHT-OF-WAY AT ALL TIMES. If the Contractor is within an active movement area and are not under a closure NOTAM, the Contractor shall leave the active area immediately.
- b. The Contractor's escort personnel and Contractor superintendent, as well as the Resident Engineer, will monitor the Unicom air traffic control frequency of 122.800 MHz at all times to maintain situational awareness. See Section 13, *Special Conditions*.

6. WILDLIFE MANAGEMENT

The Contractor will be diligent in the management of Foreign Object Debris (FOD) and trash in order to prevent attractions for wildlife. In addition, the Contractor will ensure that the Airport's permanent or temporary perimeter fences within and near the work areas are secured at all times, and especially at the end of each work day. The Contractor will be conscientious about the potential of wildlife potentially breaching the Airport perimeter fence during the work day. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

- Trash. Food scraps from construction personnel must be properly disposed.
- Standing water
 - There shall be no standing water permitted during construction. Grading requirements must meet FAA standards.
- Seed mixture

The Contractor will not be responsible for wildlife management for this project.

7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

Special care and measures will be taken to prevent Foreign Object Debris / Damage (FOD) when working in an airport environment. The Contractor will be held responsible for implementing an approved FOD Management Plan as a part of the SPCD. The FOD Management Plan will have

procedures for prevention, regular cleanup, and containment of construction material and debris. The Contractor will ensure all vehicles related to the construction project using paved surfaces in the AOA will be free of any debris that could create a FOD hazard. Special attention will be given to the cleaning of cracks and pavement joints. All taxiways, aprons, and runways must remain clean. Waste containers with attached lids will be required on construction sites.

Special attention should be given to securing lightweight construction material (concrete insulating blankets, tarps, insulation, etc.). Specific securing procedures and/or chain link enclosures may be required.

The Contractor will utilize sweepers (as required by the General Conditions of the Contract Documents) and water trucks on an as needed basis and as directed by the Engineer to control dust and foreign object debris control. The Contractor will sweep all affected movement and non-movement ramp areas at the end of each work day and as required throughout the work day, or as directed by the RPR or Airport Personnel.

8. HAZARDOUS MATERIAL (HAZMAT) MANAGEMENT

Contractors operating construction vehicles and equipment on the Airport must be prepared to expeditiously contain and clean-up spills resulting from fuel, hydraulic fluid, or other chemical fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. To that end, the Contractor is required to develop and implement spill prevention and response procedures for vehicle operations. The Contractor will incorporate these procedures into the SPCD. This includes maintenance of appropriate MSDS data and appropriate prevention and response equipment on-site.

Although hazardous materials are not anticipated on this project, the Contractor will be required to submit procedures as part of the SPCD, which details how their company manages and handles hazardous materials, for circumstances which may occur on this project.

The Contractor will not be bringing hazardous materials onto the Airport property, unless it is a regulated material necessary for the completion of the project. All precautions will be undertaken by the Contractor for the safe handling and management of hazardous materials.

9. NOTIFICATION OF CONSTRUCTION ACTIVITIES

The following is information and procedures for immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport.

- A. Refer to the attached contact/list of responsible representatives in Appendix A.
- B. **Notices to Airmen (NOTAM).** Only the Airport operator may initiate or cancel NOTAMs on Airport conditions, and is the only entity that can close or open a runway or taxiway. The Airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about Airport conditions resulting from construction with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The Airport operator must file and maintain a list of authorized representatives with the FSS. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA-owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator.
- C. Any NOTAMs for planned airfield closures for this project must be coordinated through the Airport Operations Manager and the Airport's duly appointed construction management representative. Reference to **Section 2** Phasing for planned closure and cautions for this project, which require issuance of a NOTAM.
- D. **Emergency notification procedures.** In the event of an emergency, the Contractor will be required to contact emergency services by **calling 911**.
- E. In the event of an aircraft emergency, severe weather conditions, or any issue as determined by the Airport Operations which may affect aircraft operations, the Contractor's personnel and/or equipment may be required to immediately vacate the area(s) affected. Points of contact for the various parties involved with the project will be identified and shared at the pre-construction meeting among the various parties. Specific emergency notification procedures will be incorporated into the Contractor's SPCD.
- F. Procedures and methods for addressing any planned or emergency response actions on the airfield concerning this project will be established by the contractor and implemented prior to the start of construction.
- G. **Notification to the FAA.**
 - 1. **Part 77.** Any person proposing construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e. cranes, graders, other

equipment) on Airports. FAA Form 7460-1, Notice of Proposed Construction or Alteration, shall be used for this purpose and submitted to FAA via the Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) website.

2. **Part 157.** It is not anticipated that Part 157 notifications will be required for this project. With some exceptions on other projects, Title 14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, requires that the Airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA Airports Regional or District Office.
3. **NAVAIDS.** For emergency (short-notice) notification about impacts to FAA-owned NAVAIDS, contact Airport Operations.
 - a. FAA-owned. Construction operations which require a shutdown of FAA-owned NAVAIDS, the Airport operator must notify the appropriated FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDS. (Impacts to FAA equipment covered by a Reimbursable Agreement (RA) do not have to be reported by the Airport operator). Coordinate work for an FAA-owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDS. In addition, provide seven (7) days notice to schedule the actual shutdown.
4. **7460-1 Notice of Proposed Construction or Alteration.** It is not anticipated that any equipment used during construction will exceed the defined Part 77 departure/approach surfaces. However, the work is located within the Airport AOA and meets other filing requirements of 14 CFR Part 77 for a 7460-1 Notice of Proposed Construction or Alteration to identify the work zone.

10. INSPECTION REQUIRMEENTS

At the conclusion of each work day, the Contractor will ensure that all debris is properly cleared and excavations are properly backfilled or protected prior to contacting Airport Operations, through the Resident Engineer, to inspect the work area and all haul routes prior to the Contractor

leaving the site for the day. The Contractor will also complete the Daily Safety Inspection Checklist shown in FAA Advisory Circular 150/5370-2G "Operational Safety on Airports during Construction" and keep a copy on-site during Construction.

At the conclusion of the project, a final inspection will be conducted with the Contractor, Resident Engineer, ESAA, Airport Operations, MaineDOT and the FAA. The Contractor will rectify any deficiencies for site security and safety prior to acceptance of the project.

11. UNDERGROUND UTILITIES

The Contractor is responsible for locating all underground utilities before any excavation begins for the project. The Contract Documents identify the location of known electrical/communication conduits and duct banks and drainage lines located within the work zones.

See Section 4, Protection of NAVAIDS, for FAA-owned NAVAID facilities.

The Contractor will locate and/or arrange for the location of all the underground utilities within the work zone. Full coordination between FAA, Airport Operations, Resident Engineer, and construction personnel will be exercised to ensure that all Airport power and control cables are fully protected prior to any excavation. Locations of cabling and other underground utilities will be marked prior to beginning excavation.

12. PENALTIES

Airport maintains a ZERO TOLERANCE POLICY against security and safety violations. All violators will be subject to: (1) stop all work on the project upon the plan being violated until the violation has been corrected, and (2) removal of the individual from the AOA.

13. SPECIAL CONDITIONS

The Contractor will receive notification from Airport Operations when special conditions require the construction site to be vacated as outlined in Section 9 – Notification of Construction Activities. In any event, extreme care should be exercised should construction personnel identify any ARFF or other public safety vehicle moving toward the Runway with emergency lights displayed. This will generally mean that an emergency situation is imminent.

Airport Operations, at their discretion, may suspend work at any point during construction if there are any occasions that may impact the integrity of safety at the Airport.

14. RUNWAY AND TAXIWAY VISUAL AIDS

General: The Contractor will ensure that, in areas where aircraft will be operating, it is clearly and visibly separated from construction areas. Airport Operations and the Engineer, throughout the duration of the construction project, will verify that these areas remain clearly marked and visible at all times and that markings, lighting, and signs remain in place and operational. Airport markings, lighting, and signs must be clearly visible to pilots, and must not be misleading, confusing or deceptive. All devices must be secured in place to prevent movement by propwash, wing vortices, or other wind currents and will be constructed of materials that would minimize damage to an aircraft in the event of inadvertent contact. All temporary lighting, signage or barriers located within the RSA or TSA must be frangible.

Markings: Markings shall be in accordance with latest revision of FAA Advisory Circular 150/5340-1, "Standards for Airport Markings" as required by the construction.

Lighting: Markings shall be in accordance with latest revision of FAA Advisory Circulars 150/5340-330, "Design and Installation Details for Airport Visual Aids", 15/5345-50, "Specification for Portable Runway and Taxiway Lights", and 150/5345-53, "Airport lighting Certification Program".

Closed Runways and Taxiways:

- A. Permanently Closed Runways: Not applicable to this project.
- B. Temporarily Closed Runways: Not applicable to this project
- C. Partially Closed Runways: Not applicable to this project
- D. Temporarily Closed Taxiways:
 - a. work area 1 and 3: TW A south of main apron to taxiway wait area
- E. Temporarily Closed Airport: Not applicable to this project.

Lighting and Visual NAVAIDS: Not applicable to this project

Airfield Signs:

- Signs to be disconnected with each corresponding work area and shall conform to AC 15/5345-44, "Specification for Runway and Taxiway Signs", 150/5345-50, "Specification

for Portable Runway and Taxiway Lights”, and 150/5345-53, “Airport Lighting Certification Program”

15. MARKING SIGNS FOR ACCESS ROUTES

Haul routes in the field will be marked, as required, with the use of eighteen-inch (18”) traffic cones and signs meeting the requirements of the Manual of Uniform Traffic Control Devices (MUTCD).

16. HAZARD MARKING AND LIGHTING

General: Hazard marking and lighting is required throughout the construction period to prevent pilots from entering areas closed to aircraft, and also to prevent construction personnel from entering any areas open to aircraft. Areas affected by construction that are normally open to aircraft, vehicles, or airport personnel will be clearly delineated by prominent, comprehensible warning indicators. Hazard marking and lighting will also be used to identify localized construction operations, such as open manholes, areas under repair, stockpiled material, waste areas and areas subject to jet blast.

Prior to the commencement of construction activities, the Contractor will clearly identify the allowable limits of work. This area will account for less obvious construction-related hazards and include markings to identify the following, at a minimum:

- FAA, airport and National Weather Service facilities cables and power lines
- Airport surfaces, such as RSA, OFA, and OFZ
- Other sensitive areas

Equipment:

Channelizer Cones/Barricades. Contractor to provide channelizer cones or low-profile barricades to delineate closed airfield movement areas. The channelizer cones will be high visibility orange with reflective white bands, or white with orange reflective bands. The low-profile barricades will be high visibility orange with reflective white bands, or white with orange reflective bands. For night time closures, channelizer cones and low-profile barricades will have red flashing lights. The maximum height of the channelizer cones will be forty-two inches (42”), including the red flashing light, while the maximum height for low-profile barricades will be eighteen inches (18”), exclusive of lights. Channelizer cones and low-profile barricades will be weighted to protect against inadvertent movement from wind currents and prop or jet wash. Material used to weight

the barricades will be securely attached to prevent FOD. The interval between channelizer cones will be no greater than four feet (4'), while the low-profile barricades will be interconnected together.

Lights: Lights must be red. Channelizer cones will be equipped with one (1) light (red in color), either steady burning or flashing. Lights must meet the luminescence requirements of the State Highway Department. Lights will be operated between sunset and sunrise, as well as during periods of low visibility when the Airport is open for operations. Lights shall have a spacing at not greater than ten feet (10') apart. Lights may be operated by photocell; however, the Contractor may need to manually turn lights on during the day when visibility is low.

Supplement Barricades: Supplement barricades with signs (e.g. "No Entry", "No Vehicles") will be provided as needed by the contractor and as shown on the Construction Safety and Phasing Plans in Appendix B.

Maintenance: The Contractor will maintain lighted channelizer cones/barricades. The Contractor will provide a person on call, twenty-four (24) hours each day for emergency maintenance of lighted channelizer cones and low-profile barricades. Lights and placement of all types of barricades will be checked at least once each day by the Contractor during working days and Airport Operations during non-working days.

17. PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS

Work will not be performed within the Runway 4-22 safety area (RSA).

Open trenches exceeding 3 inches in depth and 5 inches in width are not permitted within the limits of safety areas of operational runways or taxiways.

No work will be performed within any runway or taxiway safety area without a closure. No equipment, stored materials, and stock piled material will be allowed to penetrate active approach surfaces at any time.

18. OTHER LIMITATIONS

As noted in Section 13 – Special Conditions, construction operations may be suspended at the discretion of Airport Operations. Situations that may cause suspensions of operations include, but are not limited to, safety or security concerns.

In addition, the Contractor will be subject to the following additional limitations during construction:

- No tall equipment (cranes, concrete pumps, and so on) unless a 7460-determination letter is issued for such equipment.
- No open flames, flare pots or torches will be permitted.
- No blasting will be permitted.

KEY PERSONNEL CONTACT LIST

Non Emergency: (207)-333-6633
Emergencies: CALL 911

KEY PERSONNEL CONTACT LIST – CONT.		
TBD Office: Cell: E-Mail:	Resident Engineer TBD TBD xxx@mjinc.com	McFarland Johnson 53 Regional Drive Concord, NH 03301
John Gorham Office: Cell: E-Mail:	Project Manager (603) 225-2978 (603) 545-2959 jgorham@mjinc.com	McFarland Johnson 53 Regional Drive Concord, NH 03301
CONTRACTOR Office: Cell: E-Mail:	Site Superintendent TBD TBD TBD	TBD
CONTRACTOR Office: Cell: E-Mail:	Project Manager TBD TBD TBD	TBD
SUBCONTRACTOR Office: Cell: E-Mail:	Site Superintendent/Foreman TBD TBD TBD	TBD

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Appendix B

Construction Safety and Phasing Plans

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WORK AREA 2 SUMMARY

WORK AREA 2 INCLUDES THE AREA INSIDE THE TAXIWAY A OBJECT FREE AREA.

DURATION: 14 CALENDAR DAYS CONCURRENT WITH WORK AREA CLOSURES: TAXIWAY A FROM TAXIWAY A RUN-UP AREA TO BASED AIRCRAFT APRON.
LIQUIDATED DAMAGES: \$1,500 BEYOND 14 CALENDAR DAYS

RESTRICTIONS:

1. TAXIWAY A LIGHTING MUST BE INSTALLED AND OPERATIONAL PRIOR TO RE-OPENING TAXIWAY.
2. NEW TAXILANE SHALL BE PAVED OR TEMPORARILY STABILIZED PRIOR TO OPENING TAXIWAY A.

PRIMARY WORK TO BE COMPLETED:

- EROSION CONTROL BMP
- EARTHWORK
- GRADING
- AIRFIELD ELECTRICAL
- PAPI INSTALL
- PAVING
- MARKING
- DRAINAGE INSTALLATION

OVERALL NOTES

1. PRIOR TO THE START OF ANY WORK, CONTRACTOR SHALL INSTALL CONSTRUCTION FENCE AROUND THE ARCHEOLOGICAL SENSITIVE AREA.
2. CONTRACTOR SHALL MAINTAIN THE AIRPORT SECURITY AND WILDLIFE PERIMETER BARRIER THROUGH TEMPORARY AND PERMANENT MEASURES AT NO ADDITIONAL COST.
3. CONTRACTOR WILL PLACE LIGHTED BARRICADES TO THE APPROVAL OF THE RESIDENT PROJECT REPRESENTATIVE (RPR) AND THE AIRPORT PRIOR TO THE CLOSURE OF ANY PHASES.
4. ALL CONSTRUCTION PERSONNEL AND EQUIPMENT WILL REMAIN WITHIN ACTIVE WORK AREA LIMITS.
5. ALL WORK WILL BE PERFORMED IN THE DESIGNATED WORK AREA. ANY CLOSURE TO BE COORDINATED WITH THE RPR AND THE AIRPORT WITH A MINIMUM OF 72 HOURS NOTICE IN ADVANCE.
6. WORK AREAS WILL BE CLEAR FROM FOREIGN OBJECT DEBRIS (FOD) PRIOR TO LEAVING THE AIRPORT WHEN CROSSING ACTIVE PAVEMENT. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING A VACUUM SWEEPER WITH DEDICATED OPERATOR AT ALL TIMES AND WILL PROVIDE ADEQUATE SWEEPING AND MAINTENANCE OF THE HAUL ROUTES.
7. ALL PAVEMENT AFFECTED BY CONSTRUCTION SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
8. IF WORK BEGINS AFTER APRIL 30TH THE ENGINEER SHALL CONDUCT AN UPLAND SANDPIPER BIRD SURVEY WILL BE CONDUCTED. ANY SANDPIPER ACTIVITY MAY DELAY CONSTRUCTION UNTIL BREEDING SEASON IS OVER (SEPTEMBER 1)
9. TREE REMOVAL IS RESTRICTED FROM JUNE 1 TO AUGUST 15.
10. CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY AND PERFORM ALL TRAFFIC CONTROL MEASURES REQUIRED TO CONDUCT WORK WITHIN RIGHT OF WAY (R.O.W.) WHILE MAINTAINING ACCESS TO EXISTING ACCESS DRIVES ON ADJACENT PROPERTIES (INCIDENTAL TO ITEM M-200-1).
11. CONTRACTOR SHALL PHASE INSTALLATION OF UTILITIES WITH CONFLICTING INFRASTRUCTURE AT NO ADDITIONAL COST.
12. CONTRACTOR SHALL PROVIDE TEMPORARY MEASURES TO MAINTAIN PAPI OPERATIONAL DURING CONSTRUCTION IF REQUIRED. OR INSTALL NEW PAPI CIRCUIT WHILE KEEPING THE PAPI OPERATIONAL
13. EXISTING SERVICE ROAD WILL BE CLOSED DURING CONSTRUCTION. CONTRACTOR SHALL INSTALL BARRICADES AS SHOWN.
14. ALL CONSTRUCTION SAFETY AND PHASING PLAN WORK IS INCIDENTAL TO ITEM M-200-1.
15. SINGLE LANE ROAD CLOSURE IS REQUIRED FOR WORK ON FLIGH TLINE DRIVE
16. WORK IN FLIGHT LINE DRIVE RESTRICTED FROM NOV.15 TO APRIL 15

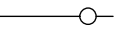
PAPI NOTES


1. NEW PAPI CABLE MUST BE INSTALLED PRIOR TO TAXILANE CONSTRUCTION DUE TO CONFLICT OF NEW TAXILANE WITH EXISTING PAPI CABLE.
2. NEW PAPI CABLE CAN BE INSTALLED INDEPENDENT OF TAXILANE WORK IN WORK AREA 2. TIME USED TO INSTALL PAPI CABLE WILL BE DEDUCTED FROM THE 14 DAY DURATION.


LEGEND:

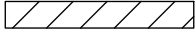
- TSA


TOFA










- TAXIWAY SAFETY AREA

TAXIWAY OBJECT FREE AREA

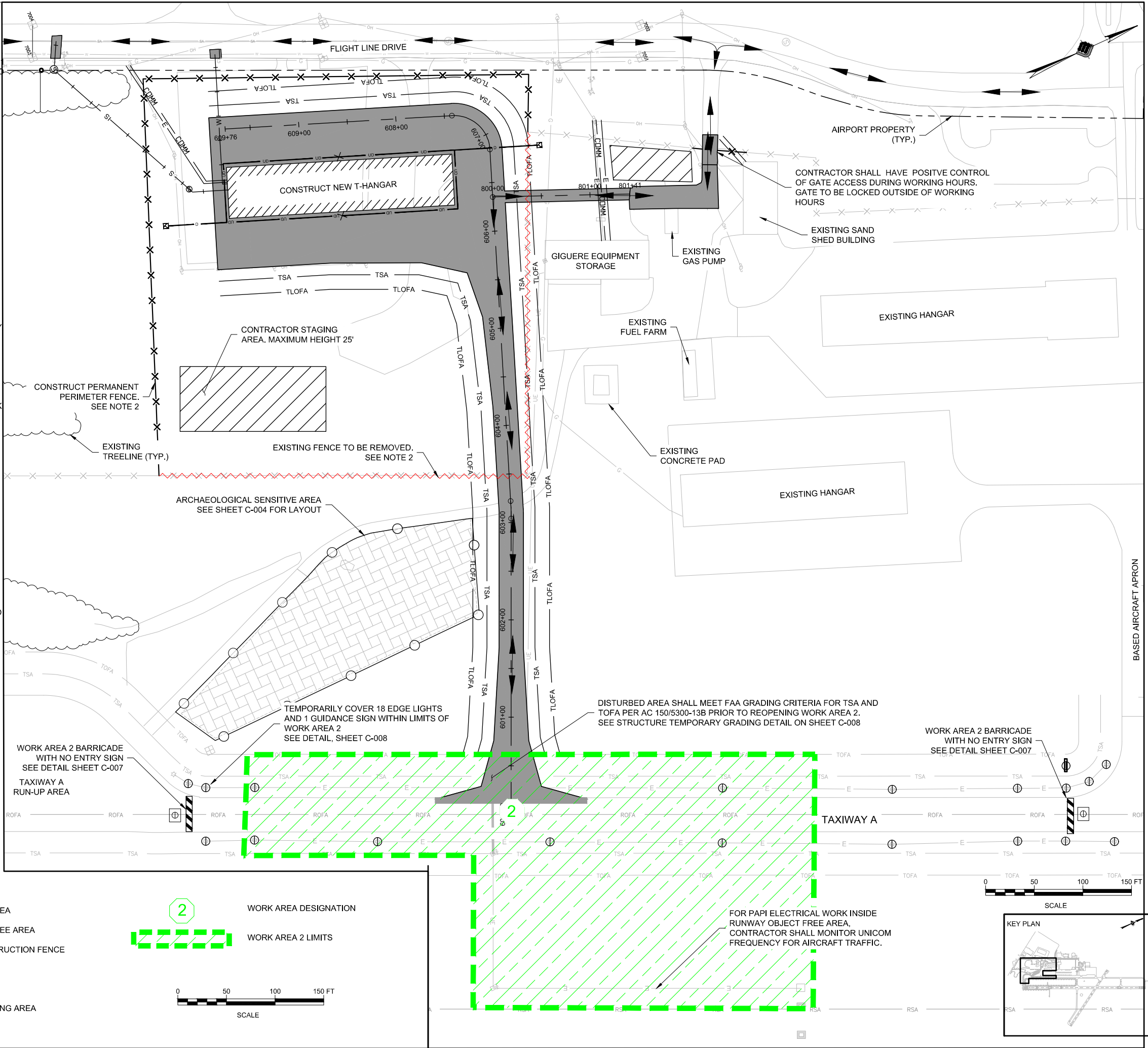
TEMPORARY CONSTRUCTION FENCE

BARRICADE

HAUL ROUTE

CONTRACTOR STAGING AREA

EDGE LIGHT COVER



Project:

CONSTRUCT
NEW T-HANGAR
AND TAXILANE

45 FLIGHT LINE DRIVE,
AUBURN, ME 04210

Client:



Auburn-Lewiston
Municipal Airport
80 Airport Drive
Auburn, ME
t. 207.786.0631



53 Regional Drive
Concord, NH 03301



Team:

Architect:

Fennick McCredie Architecture
70 Franklin Street
Boston, Ma 02110
t. 617.350.7900

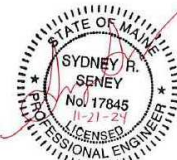
Structural/MEP Engineer:

McFarland Johnson
49 Court St, Suite 240
Binghamton, NY 13901
t. 607.723.9421

Civil Engineer:

McFarland Johnson
49 Court St, Suite 240
Binghamton, NY 13901
t. 607.723.9421

Stamp:



ISSUED FOR BID

No.	Date	Revision

Job No.: 19186.01

Drawn By: MRB

Checked By: JTG

Issue: ISSUED FOR BID

Date: 11/21/2024

Scale: 1" = 50'

Drawing Title:

CONSTRUCTION
SAFETY &
PHASING PLAN -
WORK AREA 2

Drawing No.:

C-006

CONSTRUCTION SAFETY AND PHASING NOTES:

1.

THE CONTRACTOR WILL SUBMIT A WRITTEN SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) TO THE RESIDENT PROJECT REPRESENTATIVE (RPR), LEWISTON AIRPORT OPERATIONS/MANAGEMENT (LEW) AND FAA FOR REVIEW AND APPROVAL PRIOR TO MOBILIZATION AND BEFORE ANY CONSTRUCTION IS ALLOWED TO BE PERFORMED. ANY DELAY IN THE ISSUANCE OF THE NOTICE TO PROCEED DUE TO THE FAILURE BY THE CONTRACTOR TO OBTAIN AN APPROVED SPCD WILL NOT BE GROUNDS FOR ANY CONTRACT TIME EXTENSION. THE CONTRACTOR WILL BECOME KNOWLEDGEABLE OF THE REQUIREMENTS AND PROCEDURES OF THE FAA ADVISORY CIRCULAR NO. 150/5370-2G (OR CURRENT EDITION) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION" AND THE APPROVED "CONSTRUCTION SAFETY AND PHASING PLAN" (CSPP), AND INCORPORATE RELEVANT ITEMS INTO THE SPCD WHICH IS REQUIRED TO MEET OR EXCEED THE PROJECT'S CSPP REQUIREMENTS. THE SPCD WILL BE MODIFIED AND UPDATED AS REQUIRED THROUGHOUT THE PROJECT TO ADDRESS EACH PHASE AND/OR SUB PHASE AS WORK PROGRESSES. SOME, BUT NOT ALL OF THE ITEMS, TO BE ADDRESSED IN THE SPCD ARE AS FOLLOWS:

• IDENTIFICATION AND QUALIFICATIONS OF DEDICATED SAFETY & SECURITY POINT OF CONTACT

• WORK SCHEDULING, COORDINATION, AND NOTIFICATION PROCEDURES OF CONSTRUCTION ACTIVITIES.

• AIRFIELD COMMUNICATIONS AND 24-HOUR EMERGENCY NOTIFICATION PROCEDURES.

• CONSTRUCTION OPERATIONS ADJACENT TO OR WITHIN SAFETY AREAS, OBJECT FREE AREAS, NAVAID CRITICAL AREAS, AND APPROACH SURFACES. (I.E. GRADING, HAULING MATERIALS, ETC.)

• METHODS AND REQUIREMENTS FOR SEPARATING CONSTRUCTION AREAS FROM AIRPORT OPERATIONS AREAS (AOA).

• AIRPORT OPERATIONS AREAS.

• PREVENTING INTERFERENCE WITH AIRPORT OWNED OR FAA OWNED NAVAID (PAPI, ILS, LOC, OR OTHER) EQUIPMENT AND CRITICAL AREAS.

• CONTROL OF FOREIGN OBJECT DEBRIS (FOD) AND DUST.

• CONSTRUCTION VEHICLE REQUIREMENTS, PROCEDURES AND DRIVER TRAINING FOR ESCORT DRIVERS.

• OPERATIONS WITHIN MOVEMENT AND NON-MOVEMENT AREAS TO PREVENT RUNWAY INCURSIONS.

• CONTRACTOR ACCESS POINTS, VEHICLE CROSSING LOCATIONS, SECURITY FENCING AND GATES, AND EMPLOYEE SECURITY TRAINING.

• PROCEDURES, REQUIREMENTS, AND COORDINATION OF RUNWAY AND/OR TAXIWAY CLOSURES, INCLUDING NOTICE TO AIRMEN (NOTAM) COORDINATION

• LIGHTED CHANNELIZER CONE PLACEMENT LOCATIONS, AND TEMPORARY CONSTRUCTION SIGN LOCATIONS.

• PROCEDURES FOR MANAGING HAZARDOUS MATERIALS

• PROCEDURES FOR LOCATING & PROTECTING EXISTING UNDERGROUND UTILITIES

2.

THESE SAFETY AND PHASING PLANS HAVE BEEN APPROVED BY THE FAA AND LEW AIRPORT OPERATIONS. COMBINING, MODIFYING, OR ALTERNATING WORK AREAS WITHOUT APPROVAL OF THE FAA AND LEW AIRPORT OPERATIONS THROUGH THE RPR WILL NOT BE ALLOWED. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR PREPARE THEIR BID BASED ON THE CONSTRUCTION PHASING SHOWN IN THESE DOCUMENTS. APPROVED MODIFICATIONS WILL RESULT IN NO ADDITIONAL PROJECT DURATION OF ADDITIONAL COST TO THE OWNER. ANY PROPOSED CHANGES FROM THE CONTRACTOR WILL BE SUBMITTED THROUGH THE RPR/ENGINEER WHO WILL SUBMIT IT TO THE AIRPORT AND FAA. PROPOSED CHANGES MAY NOT BE ACCEPTED.

3.

ALL OF THE CONTRACTOR'S AND SUBCONTRACTOR'S EMPLOYEES WILL HAVE A "TAILGATE" SAFETY MEETING EVERY SHIFT CHANGE OR START OF EACH DAY PRIOR TO ANY WORK WITH THE RPR AND LEW OPERATIONS PRESENT TO REVIEW THE DAY'S WORK AND SAFETY PROCEDURES. THIS DAILY COORDINATION OF THE CONSTRUCTION ACTIVITIES WILL BE HELD TO CLEARLY IDENTIFY THE LIMITS OF WORK FOR THE DAY. THE CONTRACTOR WILL NOT EXCEED THE LIMITS OF WORK WITHOUT APPROVAL FROM THE RPR. IN ADDITION, A SIGN-IN SHEET WILL BE KEPT FOR THE ATTENDANCE AT THIS MEETING.

4.

THE CONTRACTOR WILL PROVIDE A COMPETENT SAFETY PERSON (WHO ALSO COULD BE THE SUPERINTENDENT OR OTHER SUPERVISORY PERSON) FAMILIAR WITH AIRPORT SAFETY TO MONITOR CONSTRUCTION ACTIVITIES. THIS INDIVIDUAL WILL BE RESPONSIBLE FOR MONITORING CONSTRUCTION ACTIVITIES AND PERSONNEL TO ENSURE THAT THEY ADHERE TO THE SAFETY REQUIREMENTS ESTABLISHED BY THE CONTRACT DOCUMENTS (INCLUDING THE CSPP), THE SPCD, THE REGULATIONS AND REQUIREMENTS OF THE AIRPORT, FAA, AND OTHER APPLICABLE AGENCIES. THIS COMPETENT SAFETY PERSON AND SUPERVISORY PERSON (IF DIFFERENT) WILL BE EQUIPPED WITH CONTRACTOR PROVIDED RADIOS FOR MONITORING FAA FREQUENCY, AND COMMUNICATING WITH LEW OPERATIONS AND THE RPR.

5.

THE CONTRACTOR WILL PROVIDE A POINT OF CONTACT TO THE OWNER AND RPR WHO CAN BE CONTACTED AT ANY TIME THROUGHOUT THE COURSE OF THE CONTRACT. THIS INDIVIDUAL WILL BE CAPABLE OF COORDINATING AN IMMEDIATE RESPONSE TO CORRECT ANY CONSTRUCTION RELATED ACTIVITY THAT MAY ADVERSELY AFFECT THE OPERATIONAL SAFETY OF THE AIRPORT.

6.

UPON RECEIPT OF APPROVAL FOR A CLOSURE AND BEFORE EQUIPMENT ENTERS THE AIRFIELD FOR CONSTRUCTION WORK TO COMMENCE, THE WORK AREA WILL BE SECURED WITH ALL LIGHTING EQUIPMENT, CHANNELIZER CONES, AND SAFETY BARRICADES. THE WORK AREA WILL BE CLEARLY DELINEATED AND ALL SAFETY REQUIREMENTS WILL BE APPROVED BY THE RPR PRIOR TO BEGINNING ANY WORK.

7.

CONSTRUCTION SIGNS (I.E. "CONSTRUCTION TRAFFIC" WITH ARROWS, "NO UNAUTHORIZED VEHICLES BEYOND THIS POINT" OR OTHER STANDARD MANUAL OF UNIFORM TRAFFIC CONTROL DEVICE (MUTCD) SIGNS) WILL BE LOCATED AT THE WORK AREA EGRESS/INGRESS POINTS AND/OR OTHER DESIGNATED LOCATIONS. THERE WILL BE NO SEPARATE PAYMENT FOR PROVIDING THESE SIGNS (INCIDENTAL TO ITEM M-200 MAINTENANCE AND PROTECTION OF TRAFFIC).

8.

THE CONTRACTOR WILL VERIFY THAT NO PAVEMENT LIPS OR PAVEMENT EDGES EXCEED 3 INCHES WITHIN ALL ACTIVE AIRCRAFT OPERATIONAL AREAS, AS DEFINED BY THE CSPP.

9.

TEMPORARY TAXIWAY CLOSURES AND/OR RUNWAY CLOSURES IN ACCORDANCE WITH THE CSPP ARE SUBJECT TO WIND/WEATHER AVAILABILITY AND ARE SUBJECT TO A RECALL TIME TO BE DETERMINED BY LEW OPERATIONS AND AS OUTLINED IN THE CSPP.

10.

IF WORKING UNDER A TAXIWAY CAUTION ALLOWED BY AN APPROVED CSPP, ALL ADJACENT PAVEMENTS WILL BE AVAILABLE FOR AN UNLIMITED NUMBER OF AIRCRAFT OPERATIONS. THE CONTRACTOR WILL CONDUCT WORK IN SUCH A MANNER THAT NO INTERFERENCE WITH AIRCRAFT OPERATIONS WILL OCCUR. THE CONTRACTOR WILL HAVE A FULL-TIME RADIO ESCORT AT EACH WORK AREA WHICH IS BEING WORKED ON UNDER A CAUTION. THE CONTRACTOR WILL RELOCATE PERSONNEL AND EQUIPMENT AT LEAST 62 FEET (ADG II TOFA) FROM THE TAXIWAY CENTERLINE TO ALLOW SAFE PASSAGE OF AIRCRAFT, AS REQUIRED.

11.

THE CONTRACTOR WILL PROVIDE A MINIMUM OF ONE (1) RADIO VEHICLE ESCORTS AT ALL TIMES AND AT LEAST TWO (2) RADIO VEHICLE ESCORTS DURING HEAVY HAULING OPERATIONS, WITH A LICENSED DRIVER WITH EXPERIENCE AND KNOWLEDGE OF WORKING ON AIRPORTS, TO DIRECT CONSTRUCTION TRAFFIC TO AND FROM THE WORK AREAS WHEN INSIDE THE AIRPORT OPERATIONS AREA (AOA) AT ALL TIMES UNLESS OTHERWISE OUTLINED IN THE CSPP. ADDITIONAL ESCORTS MAY BE REQUIRED DURING MILLING, EXCAVATION AND PAVING OPERATIONS AND AS DETERMINED BY THE RPR AND LEW
- OPERATIONS DEPENDING ON CONTRACTOR OPERATIONS. THE CONTRACTOR WILL STAGE VEHICLES COMING ONTO THE AOA AT THE GATE, AND BE ESCORTED, WITH A MAXIMUM OF 3 VEHICLES IN CONVOY BEHIND THE ESCORT VEHICLE, TO THE WORK AREAS, RADIO VEHICLE ESCORT WILL HAVE RADIOS CAPABLE OF COMMUNICATING WITH RPR AND LEW AIRPORT OPERATIONS AND NOT USING THE FAA FREQUENCY
- SECTION

PLAN VIEW
- STABILIZED CONSTRUCTION ENTRANCE NOTES:

1.

LENGTH - NOT LESS THAN 50 FEET.

2.

THICKNESS - NOT LESS THAN 8".

3.

WIDTH - 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, 24' IF SINGLE ENTRANCE TO SITE.

4.

GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.

5.

SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

6.

MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.

7.

WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

8.

PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.
- STABILIZED CONSTRUCTION ENTRANCE DETAIL
N.T.S.
(INCIDENTAL TO ITEM M-200-1)
-
- SINGLE LANE CLOSURE DETAIL
N.T.S.
(INCIDENTAL TO ITEM M-200-1)
-
- AVIATION BARRICADE NOTES:

1.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED BARRICADES.

2.

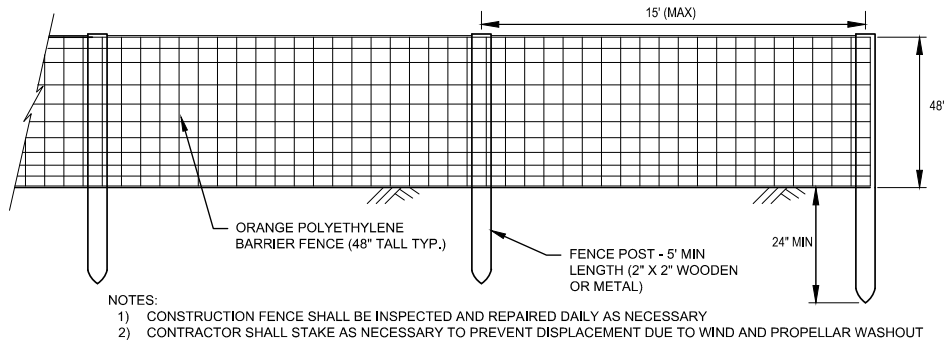
BARRICADES WILL BE PLACED END TO END TO CREATE A CONTINUOUS BARRIER.

3.

BARRICADES WILL BE ADEQUATELY WEIGHTED TO WITHSTAND HIGH WINDS AND / OR JET BLAST.

4.

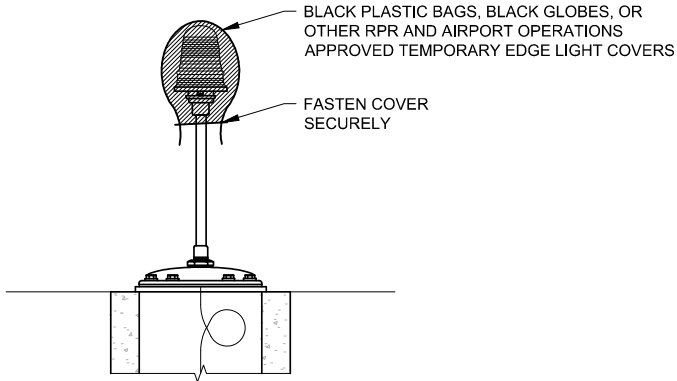
CONTRACTOR WILL MOVE BARRICADES AT THE DIRECTION OF THE RPR OR AIRPORT OPERATIONS.
- WATER BALLASTED LOW PROFILE LIGHTED SAFETY BARRICADE
N.T.S.
(INCIDENTAL TO ITEM M-200-1)
- Project:
- CONSTRUCT
NEW T-HANGAR
AND TAXILANE
- 45 FLIGHT LINE DRIVE,
AUBURN, ME 04210
- Client:
-
- Auburn-Lewiston
Municipal Airport
80 Airport Drive
Auburn, ME
t. 207.786.0631
-
- McFarland Johnson
53 Regional Drive
Concord, NH 03301
-
- Fennick
McCredie
Architecture
- Team:
- Architect:
Fennick McCredie Architecture
70 Franklin Street
Boston, Ma 02110
t. 617.350.7900
- Structural/MEP Engineer:
McFarland Johnson
49 Court St, Suite 240
Binghamton, NY 13901
t. 607.723.9421
- Civil Engineer:
McFarland Johnson
49 Court St, Suite 240
Binghamton, NY 13901
t. 607.723.9421
- Stamp:
-
- ISSUED FOR BID
- | No. | Date | Revision |
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- Job No.: 19186.01
- Drawn By: MRB
- Checked By: JTG
- Issue: ISSUED FOR BID
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- Scale: NTS
- Drawing Title:
- CONSTRUCTION
SAFETY &
PHASING
DETAILS (1 OF 2)
- Drawing No.:
- C-007



- NOTES:
- 1) CONSTRUCTION FENCE SHALL BE INSPECTED AND REPAIRED DAILY AS NECESSARY
 - 2) CONTRACTOR SHALL STAKE AS NECESSARY TO PREVENT DISPLACEMENT DUE TO WIND AND PROPELLAR WASHOUT

CONSTRUCTION FENCE DETAIL

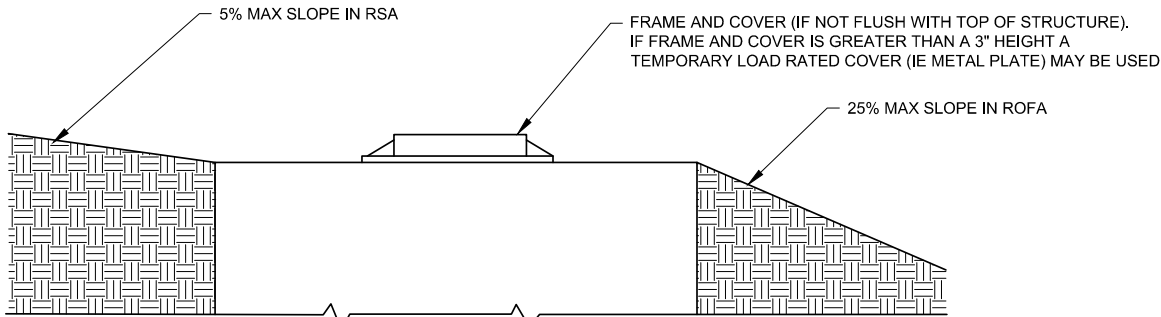
N.T.S.
(INCIDENTAL TO ITEM M-200-1)



1. TAXIWAY LIGHTING CIRCUIT SHALL BE DISABLED IN ADDITION TO COVERING BLUE GLOBES.
2. ALTERNATE MEANS MAY BE APPROVED BY THE RPR AND AIRPORT OPERATIONS.

TEMPORARY EDGE LIGHT COVER DETAIL

N.T.S.
(INCIDENTAL TO ITEM M-200-1)



1. IF FRAME AND COVER IS FLUSH WITH TOP OF THE STRUCTURE, THE EDGE OF THE STRUCTURE MAY BE ABOVE TEMPORARY GRADE BY LESS THAN A 3" MAXIMUM HEIGHT, BUT MAINTAIN THE GRADING TOLERANCES SHOWN.

STRUCTURE TEMPORARY GRADING DETAIL

N.T.S.
(INCIDENTAL TO ITEM M-200-1)

Project:

**CONSTRUCT
NEW T-HANGAR
AND TAXILANE**

45 FLIGHT LINE DRIVE,
AUBURN, ME 04210

Client:



Auburn-Lewiston
Municipal Airport
80 Airport Drive
Auburn, ME
t. 207.786.0631



McFarland Johnson
53 Regional Drive
Concord, NH 03301



Fennick
McCredie
Architecture

Team:

Architect:

Fennick McCredie Architecture
70 Franklin Street
Boston, Ma 02110
t. 617.350.7900

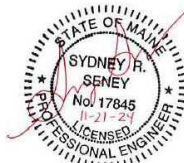
Structural/MEP Engineer:

McFarland Johnson
49 Court St, Suite 240
Binghamton, NY 13901
t. 607.723.9421

Civil Engineer:

McFarland Johnson
49 Court St, Suite 240
Binghamton, NY 13901
t. 607.723.9421

Stamp:



ISSUED FOR BID

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Drawing Title:

**CONSTRUCTION
SAFETY &
PHASING
DETAILS (2 OF 2)**

Drawing No.:

C-008

Appendix C

Safety and Phasing Plan Checklist

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APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST

This appendix is keyed to Chapter 2. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

Table C-1. CSPP Checklist

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
General Considerations					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	<u>2.5</u>	X			
Operational safety is a standing agenda item for construction progress meetings.	<u>2.5</u>	X			
Scheduling of the construction phases is properly addressed.	<u>2.6</u>	X			
Any formal agreements are established.	<u>2.5.3</u>			X	
Areas and Operations Affected by Construction Activity					
Drawings showing affected areas are included.	<u>2.7.1</u>	X			
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	<u>2.7.1.1</u>	X			
Access routes used by ARFF vehicles affected by the project are addressed.	<u>2.7.1.2</u>			X	
Access routes used by airport and airline support vehicles affected by the project are addressed.	<u>2.7.1.3</u>			X	
Underground utilities, including water supplies for firefighting and drainage.	<u>2.7.1.4</u>	X			

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	<u>2.7.1.5</u>	X			
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	<u>2.7.1</u>	X			
Temporary changes to taxi operations are addressed.	<u>2.7.2.1</u>			X	
Detours for ARFF and other airport vehicles are identified.	<u>2.7.2.2</u>			X	
Maintenance of essential utilities and underground infrastructure is addressed.	<u>2.7.2.3</u>	X			
Temporary changes to air traffic control procedures are addressed.	<u>2.7.2.4</u>			X	
NAVAIDs					
Critical areas for NAVAIDs are depicted on drawings.	<u>2.8</u>			X	
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	<u>2.8</u>	X			
Protection of NAVAID facilities is addressed.	<u>2.8</u>	X			
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	<u>2.8</u>	X			
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	<u>2.8, 2.13.1, 2.13.5.3.1, 2.18.1</u>	X			
Contractor Access					
The CSPP addresses areas to which contractor will have access and how	<u>2.9</u>	X			

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
the areas will be accessed.					
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	<u>2.9</u>	X			
The location of stockpiled construction materials is depicted on drawings.	<u>2.9.1</u>	X			
The requirement for stockpiles in the ROFA to be approved by FAA is included.	<u>2.9.1</u>			X	
Requirements for proper stockpiling of materials are included.	<u>2.9.1</u>	X			
Construction site parking is addressed.	<u>2.9.2.1</u>	X			
Construction equipment parking is addressed.	<u>2.9.2.2</u>	X			
Access and haul roads are addressed.	<u>2.9.2.3</u>	X			
A requirement for marking and lighting of vehicles to comply with <u>AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport</u> , is included.	<u>2.9.2.4</u>	X			
Proper vehicle operations, including requirements for escorts, are described.	<u>2.9.2.5, 2.9.2.6</u>			X	
Training requirements for vehicle drivers are addressed.	<u>2.9.2.7</u>			X	
Two-way radio communications procedures are described.	<u>2.9.2.9</u>	X			
Maintenance of the secured area of the airport is addressed.	<u>2.9.2.10</u>	X			
Wildlife Management					
The airport operator's wildlife management procedures are addressed.	<u>2.10</u>	X			

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign Object Debris Management					
The airport operator’s FOD management procedures are addressed.	<u>2.11</u>	X			
Hazardous Materials Management					
The airport operator’s hazardous materials management procedures are addressed.	<u>2.12</u>	X			
Notification of Construction Activities					
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	<u>2.13</u>	X			
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	<u>2.13.1</u>	X			
A list of local ATO/Technical Operations personnel is included.	<u>2.13.1</u>	X			
A list of ATCT managers on duty is included.	<u>2.13.1</u>			X	
A list of authorized representatives to the OCC is included.	<u>2.13.2</u>			X	
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	<u>2.8, 2.13.2, 2.18.3.3.9</u>	X			
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	<u>2.13.2</u>	X			
Emergency notification procedures for medical, fire fighting, and police	<u>2.13.3</u>	X			

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	<u>2.13.4</u>			X	
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	<u>2.13.5</u>	X			
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	<u>2.13.5.3.2</u>			X	
Inspection Requirements					
Daily and interim inspections by both the airport operator and contractor are specified.	<u>2.14.1, 2.14.2</u>	X			
Final inspections at certificated airports are specified when required.	<u>2.14.3</u>	X			
Underground Utilities					
Procedures for protecting existing underground facilities in excavation areas are described.	<u>2.15</u>	X			
Penalties					
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	<u>2.16</u>	X			
Special Conditions					
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	<u>2.17</u>	X			
Runway and Taxiway Visual Aids - Marking, Lighting, Signs, and Visual NAVAIDs					
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	<u>2.18.1</u>	X			
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	<u>2.18.1, 2.18.3, 2.18.4.2, 2.20.2.4</u>	X			

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
The requirement for markings to be in compliance with <u>AC 150/5340-1</u> , <i>Standards for Airport Markings</i> , is specified.	<u>2.18.2</u>	X			
Detailed specifications for materials and methods for temporary markings are provided.	<u>2.18.2</u>			X	
The requirement for lighting to conform to <u>AC 150/5340-30</u> , <i>Design and Installation Details for Airport Visual Aids</i> ; <u>AC 150/5345-50</u> , <i>Specification for Portable Runway and Taxiway Lights</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.3</u>	X			
The use of a lighted X is specified where appropriate.	<u>2.18.2.1.2</u> , <u>2.18.3.2</u>	X			
The requirement for signs to conform to <u>AC 150/5345-44</u> , <i>Specification for Runway and Taxiway Signs</i> ; <u>AC 150/5340-18</u> , <i>Standards for Airport Sign Systems</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.4</u>	X			
Marking and Signs For Access Routes					
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.	<u>2.18.4.2</u>	X			
Hazard Marking and Lighting					
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	<u>2.20.1</u>	X			

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	<u>2.20.1</u>	X			
The CSPP considers less obvious construction-related hazards.	<u>2.20.1</u>	X			
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	<u>2.20.2.1</u>			X	
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	<u>2.20.2.1</u>	X			
Red lights meeting the luminance requirements of the State Highway Department are specified.	<u>2.20.2.2</u>	X			
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	<u>2.20.2.3</u>	X			
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	<u>2.20.2.3</u>	X			
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	<u>2.20.2.5</u>	X			
Markings for temporary closures are specified.	<u>2.20.2.5</u>			X	
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	<u>2.20.2.7</u>	X			

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Work Zone Lighting for Nighttime Construction					
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	<u>2.21</u>	X			
Protection of Runway and Taxiway Safety Areas					
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	<u>2.22.1.1,</u> <u>2.22.3.1</u>	X			
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	<u>2.22.1.2,</u> <u>2.22.3.2</u>			X	
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	<u>2.22.3.3</u>	X			
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	<u>2.22.1.4</u>	X			
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	<u>2.22.1.4</u>	X			
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	<u>2.22.1.4</u>	X			
Grading and soil erosion control to maintain RSA/TSA standards are	<u>2.22.3.5</u>	X			

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
addressed.					
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	<u>2.22.2</u>	X			
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	<u>2.22.3</u>	X			
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	<u>2.22.4</u>	X			
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	<u>2.22.4.3.6</u>	X			
Provisions for protection of runway approach/departure areas and clearways are included.	<u>2.22.6</u>	X			
Other Limitations on Construction					
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	<u>2.23.1.2</u>	X			
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	<u>2.23.1.3</u>	X			

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Appendix D

Daily Safety Inspection Checklist

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APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

Table D-1. Potentially Hazardous Conditions

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

Appendix E

Safety Plan and Compliance Document (SPCD)

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APPENDIX E

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

This document **MUST** be submitted and approved prior to the Notice to Proceed being issued.

Name of Contractor: _____

Project Name: **Construct New T-Hangar and Taxilane
Auburn-Lewiston Municipal Airport, Auburn, ME**

Please check appropriate box for each of sections. If the Construction Phasing and Safety Plan will be followed without exception for any given topic, the "No Supplemental Information" box may be checked. If not, provide supplemental information components and comment as applicable (add attachments as needed). Any comments below will be discussed and require approval of the Airport prior to issuance of a Notice to Proceed.

- (1) **Coordination.** Discuss details of proposed safety meetings with the airport operator and with contractor and subcontractor employees.

☐ **No Supplemental Information** ☐ **Supplemental Information as follows:**

- (2) **Phasing.** Discuss proposed construction schedule elements:

☐ **No Supplemental Information** ☐ **Supplemental Information as follows:**

- (a) Planned duration of each phase:

Provide anticipated duration for each work phase via attachment.

- (b) Daily start and finish of construction, including "night only" construction:

Provide anticipated daily start/finish for each phase via attachment.

- (c) Duration of construction activities during:

(i) Normal runway operations _____

(ii) Closed runway operations _____

(iii) Modified runway "Aircraft Reference Code" usage _____

- (3) **Areas and operations affected by the construction activity.** Areas and operations are identified in the CSPP.

☐ **No Supplemental Information** ☐ **Supplemental Information as follows:**

- (4) **Protection of NAVAIDs.** Discuss specific methods proposed to protect operating NAVAIDs.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (5) **Contractor access.** Provide the following:

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (a) Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other):

- (b) Listing of individuals requiring driver training (for certificated airports and as requested). _____

- (c) Radio communications.

(i) Types of radios and backup capabilities. _____

(ii) Who will be monitoring radios. _____

(iii) Whom to contact if the ATCT cannot reach the contractor's designated person by radio. _____

- (d) Details on how the contractor will escort material delivery vehicles. _____

- (6) **Wildlife management.** Discuss the following:

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (a) Methods and procedures to prevent wildlife attraction _____

- (b) Wildlife reporting procedures _____

- (7) **Foreign Object Debris (FOD) management.** Discuss equipment and methods for control of FOD, including construction debris and dust.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

Provide anticipated equipment and methods via attachment.

- (8) **Hazardous material (HAZMAT) management.** Discuss equipment and methods for responding to hazardous spills.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (9) **Notification of construction activities.** Provide the following:

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (a) Contractor points of contact _____
- (b) Contractor emergency contact _____
- (c) Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator _____

- (10) **Inspection requirements.** Discuss daily (or more frequent) inspections and special inspection procedures.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (11) **Underground utilities.** Discuss proposed methods of identifying and protecting underground utilities.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (12) **Penalties.** Penalties are identified in the CSPP.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

- (13) **Special conditions.** Discuss proposed actions for each special condition identified in the CSPP as required.

☐ **No Supplemental Information**

☐ **Supplemental Information as follows:**

(14) Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:

(a) Equipment and methods for covering signage and airfield lights _____

(b) Equipment and methods for temporary closure markings (paint, fabric, other) _____

(c) Types of temporary Visual Guidance Slope Indicators (VGSI) _____

(15) Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.

☐ No Supplemental Information

☐ Supplemental Information as follows:

(16) Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.

☐ No Supplemental Information

☐ Supplemental Information as follows:

(17) Protection of runway and taxiway safety areas. Including object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:

☐ No Supplemental Information

☐ Supplemental Information as follows:

(a) Equipment and methods for maintaining Taxiway Safety Area standards _____

(b) Equipment and methods for separation of construction operations from aircraft operations, including details of barricades _____

(18) Other limitations on construction These are identified in the CSPP.

☐ No Supplemental Information

Supplemental Information as follows:

LIST OF ATTACHMENTS PROVIDED AS PART OF THE SAFETY PLAN COMPLIANCE DOCUMENT:

[illegible]

Contractor's Certification and Acknowledgement

I have read the Project Construction Safety and Phasing Plan (CSPP) for the above referenced project, which has been approved by FAA on _____, 20____, and certify the Contractor and its subcontractors will abide by it as written, unless any additions and changes are approved by the Auburn-Lewiston Municipal Airport in writing. This Safety Plan Compliance Document (SPCD) will conform to the CSPP and will provide additional safety information for the Project.

CONTRACTOR

Signature

Printed Name and Title

Date

DIVISION 2 – SPECIAL PROVISIONS

SP-1A

FAA Advisory Circular 150/5370-2G “*Operational Safety on Airport During Construction*”

**A COPY OF THIS REFERENCE DOCUMENT NOT INCLUDED IN THE MANUAL
BUT IS REFERENCED THROUGHOUT THE CONTRACT DOCUMENTS**

REFERENCE DOCUMENT AVAILABLE AT:

https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5370-2G.pdf

**THE CONTRACTOR SHALL BE FAMILIAR WITH THE PROVISIONS OF THIS
DOCUMENT.**

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DIVISION 2 – SPECIAL PROVISIONS

SP-2

GEOTECHNICAL REPORT

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R.W. Gillespie & Associates, Inc.

Geotechnical Engineering • Environmental Consulting • Materials Testing Services

14 November 2024

John Gorham, P.E.
McFarland Johnson, Inc.
53 Regional Drive
Concord, NH 03301

Via Email: JGorham@mjinc.com

Subject: Geotechnical Evaluation
Proposed T Hangar
Auburn-Lewiston Municipal Airport
Auburn, Maine
RWG&A Project No. 1569-019

Dear Mr. Gorham:

R.W. Gillespie & Associates, Inc. (RWG&A) is pleased to present the results of the geotechnical evaluation for the proposed T Hangar to be built at the Auburn-Lewiston Municipal Airport in Auburn, Maine. This work was performed in general accordance with RWG&A's Proposal No. P-11520GI, revised 08 February 2024. The purpose of the services was to obtain information regarding subsurface conditions for McFarland Johnson, Inc.'s (MJ's) use in building foundation and ground floor slab design and for use in design of airfield pavement.

The attached report presents the results of RWG&A's subsurface explorations, engineering evaluations, and provides geotechnical design recommendations. RWG&A has enjoyed working with MJ on this project. If you have any questions, or if we may be of further service, please contact us.

Sincerely,
R. W. GILLESPIE & ASSOCIATES, INC.

Marc R. Grenier, P.E.
Senior Geotechnical Engineer

MRG:fg

G:\PROJECTS\1500\1569\1569-019-23 Auburn T Hangar\Report\2024-11-14 GI Report 1569-019.docx

R.W. Gillespie & Associates, Inc.

**Report
of
GEOTECHNICAL EVALUATION
for
PROPOSED T HANGAR
AUBURN-LEWISTON MUNICIPAL AIRPORT
AUBURN, MAINE**

**Prepared
for
MCFARLAND JOHNSON, INC.
CONCORD, NEW HAMPSHIRE**

**Prepared
by
R. W. GILLESPIE & ASSOCIATES, INC.
BIDDEFORD, MAINE**



**Marc R. Grenier, P.E.
State of Maine License No. 9881**

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- Appendix C. Mark Hampton Associates, Inc. Report
- Appendix D. Hager-Richter Geoscience, Inc. Report
- Appendix E. Laboratory Test Results

1.0 INTRODUCTION

1.01 Background

The site of the planned T hangar is located off Flightline Drive in the southwest portion of the airport property in Auburn, Maine, as shown in Figure 1, *Locus Map*. The project consists of construction of a new, pre-engineered steel building with a footprint of about 51 feet by 231 feet. Currently, the project area is open and grassed and is relatively level with ground surface ranging from about elevation 249 feet to 251 feet.

R.W. Gillespie & Associates, Inc.'s (RWG&A's) understanding of the proposed project and existing site conditions is based on review of the Request for Proposal (RFP) dated October 5, 2023, sketches provided by email on 29 October 2024 showing proposed grading, and review of the drawing titled *Seismic Survey*, dated November 2024 and prepared by McFarland Johnson, Inc. (MJ).

1.02 Scope of Services

This evaluation was performed to develop site-specific soil data, and to make geotechnical evaluations for the proposed construction. The services were performed in general accordance with RWG&A Proposal No. P-11520GI, revision dated 08 February 2024. Refer to Appendix A for limitations and use of this report. As performed, RWG&A's scope of services included the following items:

1. Contacted DigSafe to locate public utilities after others marked exploration locations. Arranged to have private utilities located by a third party.
2. Arranged to have the soil borings performed by a drilling contractor as a subcontractor to RWG&A.
3. Provided technical monitoring of exploration activities so that depths, locations, and sampling methods could be modified in response to the subsurface conditions encountered. Observed, logged, and sampled the explorations.
4. Arranged for Mark Hampton Associates, Inc. (MHA) to observe and log five test pits excavated in planned stormwater infiltration areas, as a subconsultant to RWG&A.
5. Arranged for Hager-Richter Geoscience, Inc. (Hager-Richter) of Salem, New Hampshire to perform shear wave velocity testing, as a subconsultant to RWG&A.
6. Completed sieve/hydrometer analyses of fifteen (15) soil samples and sieve analyses, moisture-density relationship tests, and laboratory CBR tests on three (3) bulk soil samples. Arranged for topsoil testing at an outside analytical laboratory on three (3) samples.
7. Conducted engineering evaluations of the geotechnical aspects of the proposed project. Emphasis was placed on foundation design recommendations, soil coefficients for design, allowable foundation bearing pressure, dewatering recommendations, subgrade modulus for slab design, and construction considerations.

8. Prepared this report presenting the findings, conclusions, and recommendations of the geotechnical evaluation.

2.0 SUBSURFACE EXPLORATIONS

Test Borings: The subsurface exploration program consisted of four borings in proposed airfield pavement areas designated B-6 through B-9, three test borings in the building area designated B-10 through B-12, and one boring in existing pavement designated B-13. Figure 2, *Exploration Location Plan*, shows the approximate exploration locations. The borings were drilled on 15 and 16 October 2024 by Northern Test Boring, Inc., of Gorham, Maine using a track-mounted drill rig. Split-barrel sampling with standard penetration testing (*ASTM D1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils*) was generally performed at about 5-foot intervals in the soil borings. The explorations were generally advanced with hollow stem augers; driven steel casing and washed boring techniques were used in boring B-12. Field vane tests (*ASTM D2573, Standard Test Method for Field Vane Shear Test in Cohesive Soil*) of cohesive soils were conducted in boring B-12 to measure undrained shear strength. At B-13, asphalt was cored using a diamond tipped core bit.

Exploration activities were coordinated and monitored by RWG&A personnel who prepared the exploration logs. The soils were described in general accordance with *ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. Logs of the explorations are included in Appendix B. Stratification lines shown on the exploration logs represent the estimated boundaries between the different soil types encountered and approximate refusal depths; the actual transitions will be more gradual and will vary over short distances. Subsurface information should only be considered representative of subsurface conditions encountered within the vertical reach of the explorations on the date the explorations were made.

The boring locations were selected and marked by MJ using GPS and other survey methods. Elevations shown on the exploration logs were interpolated from contours shown on the plans provided. Exploration locations and elevations should be considered accurate only to the degree implied by the methods used to locate them.

Stormwater Management Area Test Pits: Test pits TP-1 through TP-5 were monitored and logged for MHA by Mark Hampton, a Maine-licensed Certified Soil Scientist. The test pits were dug on 30 August 2024. MHA's report and corresponding test pit logs are provided in Appendix C. The report is provided for use by the project civil engineer for the design of stormwater management areas only.

Geophysical Survey: Hager-Richter of Atkinson, New Hampshire conducted a geophysical survey consisting of shear wave velocity testing on 31 October 2024. The purpose of the surveys was to determine seismic site class. Refer to Hager-Richter's report titled *Shear Wave Velocity Testing, Auburn-Lewiston Airport, 80 Airport Drive, Auburn, Maine*, dated November 2024, in Appendix D for additional information.

3.0 LABORATORY TESTING

Laboratory testing was performed to assist in soil description and characterization of encountered soils. The laboratory testing program consisted of fifteen sieve/hydrometer analyses with moisture content determinations, three modified proctor tests, and three laboratory California Bearing Ratio (CBR) tests. The tests were performed in general accordance with the following methods and procedures:

- *ASTM D2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.*
- *ASTM D422, Standard Test Method for Particle-Size Analysis of Soils.*
- *ASTM D7928-17, Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis.*
- *ASTM D1140, Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75- μ m) Sieve by Washing.*
- *ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).*
- *ASTM D1883, Standard Test Method for CBR (California Bearing Ratio) of Laboratory-Compacted Soils.*

The moisture content test results are presented on the soil boring logs. Results of the other laboratory tests are presented in Appendix E, *Laboratory Test Results*. All tests were conducted at the RWG&A soil and materials testing laboratory in Biddeford, Maine, which is accredited by the American Association of State Highway and Transportation Officials (AASHTO) for the tests performed.

4.0 SUBSURFACE CONDITIONS

4.01 Subsurface Soils

Ground surface conditions generally consisted of about 6 to 8 inches of topsoil. At B-13, the taxiway asphalt pavement was 4 inches thick. Beneath the surficial topsoil and pavement, about 1 to 2 feet of fill was encountered in several explorations, which consisted of medium to fine sand with varying amounts of silt and gravel. The fill was underlain by naturally deposited soils consisting of loose to medium dense sand with silt to silty sand over clayey silt underlain by soft silty clay, which extended to dense materials interpreted to represent glacial till.

Explorations were generally advanced to depths of about 2.3 to 22 feet below ground surface without encountering refusal surfaces. Boring B-12 was advanced to a depth of about 115 feet below ground surface where refusal to probe rod penetration was encountered. The refusal surface might have been due to boulders or bedrock; rock coring would be needed to verify the

nature of the refusal surface. Please refer to the exploration logs in Appendix B for detailed descriptions at specific locations.

4.02 Groundwater

Free water was observed in the explorations at about 5 to 10 feet below current ground surface. Water levels observed during the subsurface exploration program were influenced by the exploration methods (e.g., slow groundwater response due to low soil permeability) and are not considered representative of stabilized groundwater levels. Groundwater levels at the site will fluctuate due to season, temperature, rainfall, underground utilities, and construction activity in the area; therefore, water levels during and following construction will vary from those observed in the explorations.

4.03 Seasonal High Water, Depth to Groundwater, and Soil Hydraulic Conductivity

The Kozeny-Carman method was used to estimate hydraulic conductivity using the results of particle-size distribution tests. The samples were obtained using a rubber tracked mini-excavator and reported easy digging. The test boring results from nearby explorations indicate the sand with silt to silty sand deposits were loose to medium dense, which corresponds to an estimated void ratio of 0.65 for sands having a USCS classification of SP-SM to SM. The estimated hydraulic conductivity for each sample in the worn condition is indicated in the table below:

Test Pit Location	Depth to Groundwater (in)	Depth to Seasonal High Water (in)	Estimated Hydraulic Conductivity (in/hr)
TP-1	Below 122	96	15.6
TP-2	Below 120	40	17.9
TP-3	Below 122	96	7.0
TP-4	Below 120	52	3.2
TP-5	114	50	16.6

4.04 Topsoil

The measured topsoil thicknesses in test borings drilled in turf areas ranged from 6 to 8 inches. The results of the topsoil nutrient testing from test borings B-6 through B-8 indicated that lime is needed at B-6 and B-8, and that magnesium fertilizer would be needed for new turf seeding. The University of Maine Soil Testing Services recommends the following fertilizer mixtures be applied per 1,000 square feet based on the analyzed sample:

Boring Designation	Lime per 1,000 sq. ft	Fertilizer per 1,000 sq. ft
B-6	60 pounds	20 pounds of 10-10-10
B-7	Not Recommended	20 pounds of 10-20-10 or 40 pounds of 5-10-5
B-8	40 pounds	20 pounds of 10-20-10 or 40 pounds of 5-10-5

A landscape architect and/or horticulturist should be consulted on organic matter, composition, seeding, and amendments needed for turf growth.

5.0 EVALUATION OF GEOTECHNICAL DATA

5.01 General

Engineering evaluations for this project are based on the subsurface explorations and the design information currently available to RWG&A. The engineering evaluations that follow should be reviewed by RWG&A to confirm their continued applicability after proposed finished floor elevations, site layout, and site grading have been finalized.

5.02 Proposed Construction

The project consists of the construction of a new hangar building with a footprint of about 51 feet by 231 feet with a concrete ground floor. The planned finished floor elevation for the hangar is at elevation 253.84 feet; current ground surface ranges from about elevation 250 feet to 251 feet. The project structural engineer has indicated that column loads would be on the order of about 30 to 35 kips, and the tolerable settlement is 1 inch total and ½ inch differential settlement over 50 feet.

The planned location of the stormwater infiltration system is west and southeast of the planned hangar, and the system would be constructed about 2 to 5 feet below current ground surface. A new taxiway is proposed to connect the hangar to Taxiway A.

5.03 Foundation and Ground Floor Slab

With proper site preparation, the proposed building may be supported by shallow foundations consisting of spread and/or continuous footings with slab-on-grade floors all bearing on naturally deposited inorganic soil or on compacted structural fill. Existing fill and organic soil encountered in the explorations are unsuitable to support shallow foundations but might be able to remain below ground floor slabs if the Owner is willing to accept additional risk in ground floor slab service life performance. If left in place, existing fill and organic soil might settle excessively, which could cause unevenness in the ground floor slabs or damage to the foundation and/or ground floor slabs ranging from minor cracking to structural distress.

5.04 Pavement Design Considerations

Laboratory CBR tests were performed on bulk samples recovered from borings B-6, B-7, and B-9. The laboratory CBR results ranged from 4.6 to 19.4 at about 98% to 100% of the maximum dry density as determined by ASTM D-1557. It is understood that the pavement section subgrade would be proof-rolled under the observation of a qualified inspector prior to pavement section construction, and that identified soft areas would be excavated and replaced. RWG&A recommends a CBR value of 6 be used for pavement section thickness design if subgrades will be compacted to 100% of the soils maximum density as determined by ASTM D1557. RWG&A determined the recommended subgrade CBR value for pavement section design in general accordance with FAA document *AC 150 5320-6G, Airport Pavement Design and Evaluation*.

5.05 Construction Considerations

Site Preparation: Up to about 2 feet of fill was encountered below ground surface in the proposed building area. Preparation of the site prior to fill placement, fill composition, and methods used to place and compact the fill, are uncertain. The composition of recovered fill samples consisted of medium to fine sand with few to little silt and few to little gravel. For planning and budgeting purposes, it should be anticipated that fill will need to be removed down to naturally deposited inorganic soil and replaced with compacted structural fill beneath footings and the floor slab. Fill proposed for reuse as fill to remain in-place, or as fill to be removed and placed in the excavation in controlled compacted lifts, should be evaluated by a combination of laboratory tests, test pits, proof-rolling, and compaction testing.

Construction Dewatering: The on-site naturally deposited soils are sensitive to disturbance when wet. To reduce disturbance of exposed subgrade soils, it will be important to divert runoff, provide positive grading to shed seepage and runoff from flat areas, and compact exposed soils to reduce rutting, ponding, and surface water infiltration. RWG&A anticipates that if groundwater is encountered during construction, then groundwater control can be accomplished using ditches, sumps, and open pumping.

Use of On-site Soils: From a geotechnical perspective, RWG&A anticipates that on-site topsoil will be stripped and either incorporated into landscaped areas or hauled off-site. Topsoil and organic materials are considered unsuitable for use as common fill. Materials from foundation excavations are expected to consist of fill, silty sand, and sand with silt. The particle size test result indicates the on-site fill is unsuitable for reuse as structural fill. If on-site fill or naturally deposited soils are proposed for use other than common fill, then the soil should be stockpiled separately and tested to determine if it meets specification requirements for the proposed use.

6.0 RECOMMENDATIONS

The recommendations presented below are provided for use in the design of the proposed building foundations. Foundation design and site work construction will be greatly influenced by subsurface conditions at the project site. RWG&A recommends foundation design and construction follow the requirements of all applicable ordinances, regulations, and rules.

6.01 Site Preparation

1. All topsoil, organic material, debris, rubbish, frozen soils, muck, loose, or disturbed soils and other unsuitable materials should be removed from areas of proposed construction. Unsuitable material includes existing fill placed without documented systematic composition and compaction. As a minimum, removal limits below the proposed building should extend to the lateral limits defined by a 1 unit horizontal to 1 unit vertical (1H:1V) line pitched down and outward from the outside edge of footings and ground floor slabs supported by fill, or a minimum of 10 feet outside the building plan limits, whichever is greater.
2. Due to the previously developed nature of the site, the Project Contractor and their subcontractors should be sensitive to the potential of encountering obstructions such as remnants from prior structures and buildings, associated foundations, and underground

utilities (note: both active and abandoned) during site and earthwork activities. It is anticipated that obstructions may include, but may not be limited to, pipes, concrete footings, masonry block, rubble, dry wells, and buried utilities. Where such items are encountered beneath the proposed building limits, they should be excavated to their full extent, removed, and replaced with compacted structural fill. The ends of underground pipes and utility conduits outside the proposed building footprints that will be abandoned in-place should be filled with concrete and capped to prevent erosion of material into the conduit or pipe.

3. Surface grading should provide positive drainage away from constructed facilities both during and after construction. Dewatering requirements will vary across the site based on groundwater levels encountered during construction and soil types. In general, it should be practical to accomplish construction dewatering from within excavations using open pumping methods to a depth of one to two feet below groundwater surface. Surface runoff and infiltration of groundwater should be controlled so that excavation, filling, and foundation construction can be completed in the dry.
4. The existing fill is unsuitable to support new footings but might be suitable to remain in-place below ground floor slabs. The existing fill should be evaluated by laboratory tests, test pits, proof-rolling, and compaction testing as described in Recommendations 5 through 7 below.
5. After topsoil has been removed from the building area and prior to the placement of structural fill, the exposed subgrade should be compacted with a minimum of two passes of a minimum 10-ton smooth drum vibratory compactor in each of two mutually perpendicular directions to improve density of naturally deposited soils. If high groundwater is present during subgrade preparation, the drum compactor should be operated in static mode to avoid pumping up groundwater and disturbing the subgrade soils.
6. Test pits should be used to verify the composition of the fill and to verify that organic matter and/or other unsuitable material are not present in the fill beneath the planned building. Unsuitable fill or organic matter should be removed and replaced with structural fill. Verification should be performed prior to foundation construction. Existing on-site fill proposed to remain in-place or revised as fill below ground floor slabs should meet material requirements of Maine Department of Transportation Section 703.19 – Granular Borrow for Underwater Backfill.
7. The exposed subgrade should then be proof-rolled with a fully-loaded dump truck to observe for areas of soil rutting or weaving indicative of unsuitable underlying materials. Proof-rolling should be performed with a minimum of one pass of a pneumatic-tired, loaded 10-wheel, tandem-axle dump truck weighing not less than 25 tons. Proof-rolling should not be performed over culverts, pipes, conduits, or other underground construction that might be damaged by the proof-roller. Soft areas or areas that yield more than 1 inch during proof-rolling should be over-excavated and replaced with structural fill.
8. In-place compaction tests should be conducted to verify fill proposed to remain in-place meets recommended compaction criteria of at least 95 percent of the maximum dry density, as determined by *ASTM Standard D1557 Test Method for Laboratory*

Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).

6.02 Site Filling

9. Only imported, compacted structural fill should be used as fill below foundations, ground floor slabs, and as backfill within 2 feet of footings, piers, and foundation walls. Structural fill should be a well-graded sand and gravel mixture free of roots, topsoil, loam, organic material, and any other deleterious materials, as well as clods of silt or clay. Structural fill should meet the following gradation requirements:

Screen or Sieve Size	Percent Passing
6 inch	100
3 inch	70 to 100
Number 4	35 to 70
Number 40	5 to 35
Number 200	0 to 5

(Note: Maximum particle size should be limited to 3 inches within 2 feet of foundation walls, footings, and floor slabs.)

10. In open areas, structural fill should be placed in level, uniform lifts not exceeding 12 inches in uncompacted thickness and be compacted with self-propelled compaction equipment. In confined areas and within 4 feet of foundation walls, structural fill should be placed in lifts not exceeding 6 inches in uncompacted thickness and be compacted with hand-operated compaction equipment. All fill placed for footing and slab support should be structural fill compacted to at least 95 percent of the maximum dry density as determined by *ASTM Standard D1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))*.

6.03 Foundations

11. The proposed building should be designed to withstand lateral, uplift, and overturning forces due to earthquakes. The in-place soils are not considered susceptible to liquefaction. In accordance with the shear wave velocity testing performed and the 2015 *International Building Code*[®], the soil profile at the site is classified as Site Class D.
12. The proposed building may be supported on spread and/or continuous footings bearing on the inorganic naturally deposited soils or on compacted structural fill. Fill and/or organic soil encountered at footing subgrade should be removed and replaced with structural fill. The footings should be proportioned for an allowable contact pressure of 1,500 pounds per square foot. Total and differential settlements of less than 1 inch and 1/2 inch are expected, respectively.

The minimum footing width should be in accordance with concrete design and building code requirements, and no less than 2 feet. For footings having a least lateral dimension less than 3 feet, the above allowable pressure should be taken as 1/3 of the above value times the least dimension in feet.

13. Excavation of footing and ground floor slab bearing surfaces in soil or fill should be performed by earthwork equipment fitted with smooth-edged buckets. Final subgrade preparation should include compaction of fill or naturally deposited soil subgrades with hand-guided, vibratory compaction equipment. Following compaction and prior to placement of concrete, care should be taken to limit disturbance of the bearing surfaces. Any loose, softened, or disturbed material due to construction traffic should be removed prior to placement of concrete and backfilled with compacted granular fill.
14. It is recommended that design bottom of footing level for exterior footings bearing on structural fill or naturally deposited soil be a minimum of 4 feet below lowest adjacent ground surface exposed to freezing temperatures. At heated interior locations, footings may be designed to bear a minimum of 2 feet below top of ground floor slab or adjacent ground surface whichever is lower. If exposure to freezing temperatures is anticipated, either during or following construction, then interior footings bearing on structural fill or naturally deposited soils should be lowered in accordance with the recommendations for exterior footings.
15. The integrity of natural soils and structural fill must be maintained during cold weather conditions. Footing and slab subgrades should not be allowed to freeze. Naturally deposited soils near anticipated footing depth are considered frost susceptible. Freezing of subgrade soils beneath footings and floor slabs might result in heaving and post-construction settlement. The Contractor should make every effort to prevent freezing of subgrade soils. In the event frost penetration occurs, all frozen and previously frozen soils should be removed and replaced with compacted structural fill. At no time should frozen material be placed as fill.
16. Lateral loads from wind and earthquake may be resisted by friction between the foundation bottoms and supporting foundation bearing material, and earth pressure against the sides of foundations. A friction coefficient of 0.25 and an equivalent fluid pressure of 150 pcf against sides of footings should be used in design of footings.

6.04 Ground Floor Slabs

17. Interior floors may be slab-on-grade construction based on a subgrade modulus of 150 pounds per cubic inch. The slab should be underlain by a minimum of 12 inches of compacted structural fill. A vapor retarder should be provided below the ground floor slab to reduce moisture infiltration. Concrete slab-on-grade floors, regardless of their design or construction, are prone to some cracking and the use of control joints and concrete reinforcing are methods to reduce random patterned cracking. It is anticipated design and construction details of the floor slab, including concrete thickness, reinforcing, bedding, control joint depth and spacing, and the vapor retarder type and thickness, will be provided by the project Structural Engineer.
18. Interior floors exposed to freezing temperatures and exterior slabs at entrances and other locations sensitive to frost action should be underlain by a minimum of 4 feet of crushed stone or structural fill. Crushed stone should consist of Maine Department of Transportation (DOT) Section 703 – Aggregates, 703.22 Underdrain Backfill Material Type C. The crushed stone should be wrapped in filter fabric. Slabs at locations where

frost heaving is tolerable should be directly underlain by a minimum of 18 inches of structural fill. The surrounding area should be pitched to drain away to reduce available moisture for ice and frost lens generation.

19. Perimeter footing drains are recommended to prevent water from collecting beneath and near the proposed building. Perimeter footing drains should be installed around the new building at the exterior bottom of footing level. The drains should consist of 6-inch diameter perforated pipes bedded in 2 cubic feet of MaineDOT Section 703 – Aggregates, 703.22 Underdrain Backfill Material Type C per linear foot. The drainage stone should be completely wrapped in a filter fabric such as Mirafi 180N.
20. Flow from the perimeter drains should be conveyed by gravity to surface drainage features or storm drains that will always be free flowing and under all conditions. Several outlets should be provided so as not to be dependent on a single flow path; more than two outlets are recommended for isolated individual drains. Outlet pipes should be solid and sized to convey the maximum combined flow of all drains connected to it. Flow from the new foundation drains should not be conveyed by existing foundation drains, if present, without first verifying their capacity and ability to provide free-draining conditions.

Roof drains should not be connected to footing drains. The use of footing drains to collect and convey roof runoff as part of a stormwater management roof dripline filtration system increases the risk of fugitive moisture entering the building. Foundation drains incorporated into roof dripline filtration systems should be sized to provide free-draining conditions for the maximum rate of roof runoff that could occur during the life of the structure.

6.05 Temporary Excavations

21. Contractors should make themselves aware of, and become familiar with, applicable local, state, and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards. Construction site safety is considered the sole responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations.
22. The Contractor should be aware that slope height, slope inclination, or excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1920). Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.
23. As a precautionary measure, it is recommended all vehicles and spoil piles be kept a minimum lateral distance from the top of excavations equal to no less than 100 percent of the excavation height.
24. Subsurface soils at this site encountered within the anticipated depths of excavations consist of fill and naturally deposited sand with silt to silty sand. The naturally deposited soils are sensitive to disturbance when wet. To reduce disturbance of exposed subgrade soils, it will be important to divert runoff and provide positive grading to shed seepage

and runoff. Exposed soils should be compacted to reduce rutting, ponding, and surface water infiltration.

6.06 Geotechnical Observation

The geotechnical recommendations provided as the basis for design of this project were developed using limited numbers of observations and tests. The Owner should be sensitive to the potential need for adjustment in the field. We recommend that the Owner retain RWG&A to observe geotechnical construction aspects of the project. These services should include observing general compliance with the design concepts, specifications and recommendations, and assisting in development of design changes should subsurface conditions differ from those anticipated prior to the start of construction. Observation improves the likelihood that the design intent will be carried out during construction. In addition, it allows RWG&A to confirm its design recommendations. RWG&A will not have had an opportunity to provide a complete service if not retained to provide geotechnical observations.

For this project, geotechnical observation of the following aspects is recommended:

- Observe site stripping and assess suitability of the exposed subgrades.
- Perform laboratory and field testing of fill material. Testing would include grain-size distribution, moisture-density testing, and in-place density testing to determine percent compaction total unit weight.
- Observe preparation of footing and slab building pad subgrades.

In addition to geotechnical observation, RWG&A can also provide full service construction inspection and materials testing. This would include soils, portland cement and asphaltic concrete, structural steel and welding inspections, destructive and non-destructive testing, and special inspection services in fulfillment of building code requirements.

7.0 CLOSURE

This report has been prepared for specific application to the T Hangar project at the Auburn-Lewiston Municipal Airport in Auburn, Maine, for the exclusive use of McFarland Johnson, Inc. This work has been completed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. In the event any changes are made in the nature, design, or location of the proposed construction, the conclusions and recommendations of this report should be reviewed by RWG&A.

The recommendations presented are based on the results of widely spaced explorations. The nature of variations between the explorations may not become evident until construction has begun. If variations are encountered, it will be necessary for RWG&A to re-evaluate the recommendations presented in this report. RWG&A requests an opportunity for a general review of the final design and specifications to determine that earthwork and foundation recommendations have been interpreted in the way they were intended.



R.W. Gillespie & Associates, Inc.

Geotechnical Engineering • Environmental Consulting • Materials Testing Services

TABLE I

Summary of Sieve Analyses

Construct T-Hangar - Auburn-Lewiston Municipal Airport

Auburn, Maine

Sieve Analysis															
Boring Number, Sample Number	Depth of Sample, ft	Percent Passing Screen or Sieve Size												% Finer than 0.02 mm	USCS
		2"	1"	3/4"	1/2"	3/8"	4	10	20	40	80	140	200		
TP-1, Bulk	1-4	100	100	100	100	100	100	99.9	99.5	97.0	56.4	15.1	6.4	0.5	SP-SM
TP-2, Bulk	1-4	100	100	100	100	100	100	99.9	99.5	96.9	55.3	13.4	5.0	1.1	SP-SM
TP-3, Bulk	7-10	100	100	100	100	100	100	100	99.9	99.7	91.3	38.4	12.2	0.6	SM
TP-4, Bulk	4.5-9.5	100	100	100	100	100	100	100	99.9	99.6	99.0	37.8	12.6	8.6	SM
TP-5, Bulk	1-4.5	100	100	100	100	100	100	99.9	99.8	99.4	77.6	32.5	12.7	1.0	SM
B-6, S-2	5-7	100	100	100	100	100	100	99.5	99.0	98.7	88.2	47.9	29.9	5.7	SM
B-7, S-1	0-2	100	100	100	100	100	100	99.7	99.2	98.4	94.6	83.8	71.7	12.5	ML
B-8, S-1	0-2	100	100	95.3	95.1	95.1	92.1	89.9	88.7	87.5	68.8	37.5	24.1	6.1	SM
B-9, S-2	5-7	100	100	100	100	100	100	100	99.8	99.3	93.5	60.3	29.2	1.1	SM
B-10, S-4	15-17	100	100	100	100	100	100	96.4	96.4	95.5	91.7	86.3	77.5	43.2	CL
B-11, S-3	10-12	100	100	100	100	100	100	100	99.8	99.5	94.0	63.0	27.5	1.1	SM
B-12, S-5	20-22	100	100	100	100	100	100	97.3	97.2	97.2	96.8	94.3	89.2	42.9	ML
B-12, S-11	50-52	100	100	100	100	100	100	97.3	97.3	97.3	97.2	97.1	96.7	70.8	CL
B-13, S-1A	0.3-0.6	100	78.4	72.0	57.4	51.3	42.3	31.8	22.8	15.5	9.3	6.6	5.9	3.0	GW-GM
B-13, S-1B	0.6-2.3	100	100	100	100	100	95.7	86.4	55.6	24.9	8.9	5.5	5.4	1.2	SP-SM

Corporate Office: 20 Pomerleau Street, Suite 100 • Biddeford, ME 04005 • 207-286-8008 • Fax 207-710-0000

Branch Offices: 177 Shattuck Way, Suite 1 West • Newington, NH 03801 • 603-427-0244 • Fax 603-430-2041

44 Wood Avenue, Suite I • Mansfield, MA 02048 • 508-623-0101

www.rwgillespie.com



TABLE I (Continued)

Summary of Sieve Analyses

Construct T-Hangar - Auburn-Lewiston Municipal Airport

Auburn, Maine

Sieve Analysis



R.W. Gillespie & Associates, Inc.

Geotechnical Engineering • Environmental Consulting • Materials Testing Services

TABLE II

Summary of Laboratory CBR Values

Project: Proposed T Hangar - Auburn-Lewiston Municipal Airport

RWG&A Project No: 1569-019

Client: McFarland Johnson, Inc.

Location: Auburn, Maine

Date: Nov. 2024

Boring Location	Sample Depth (feet)	Percent Max. Dry Density/ CBR Value
B-6	1-5	97.8/4.6
B-7	1-5	100/15.7
B-9	1-5	100/19.4



SCALE, FEET

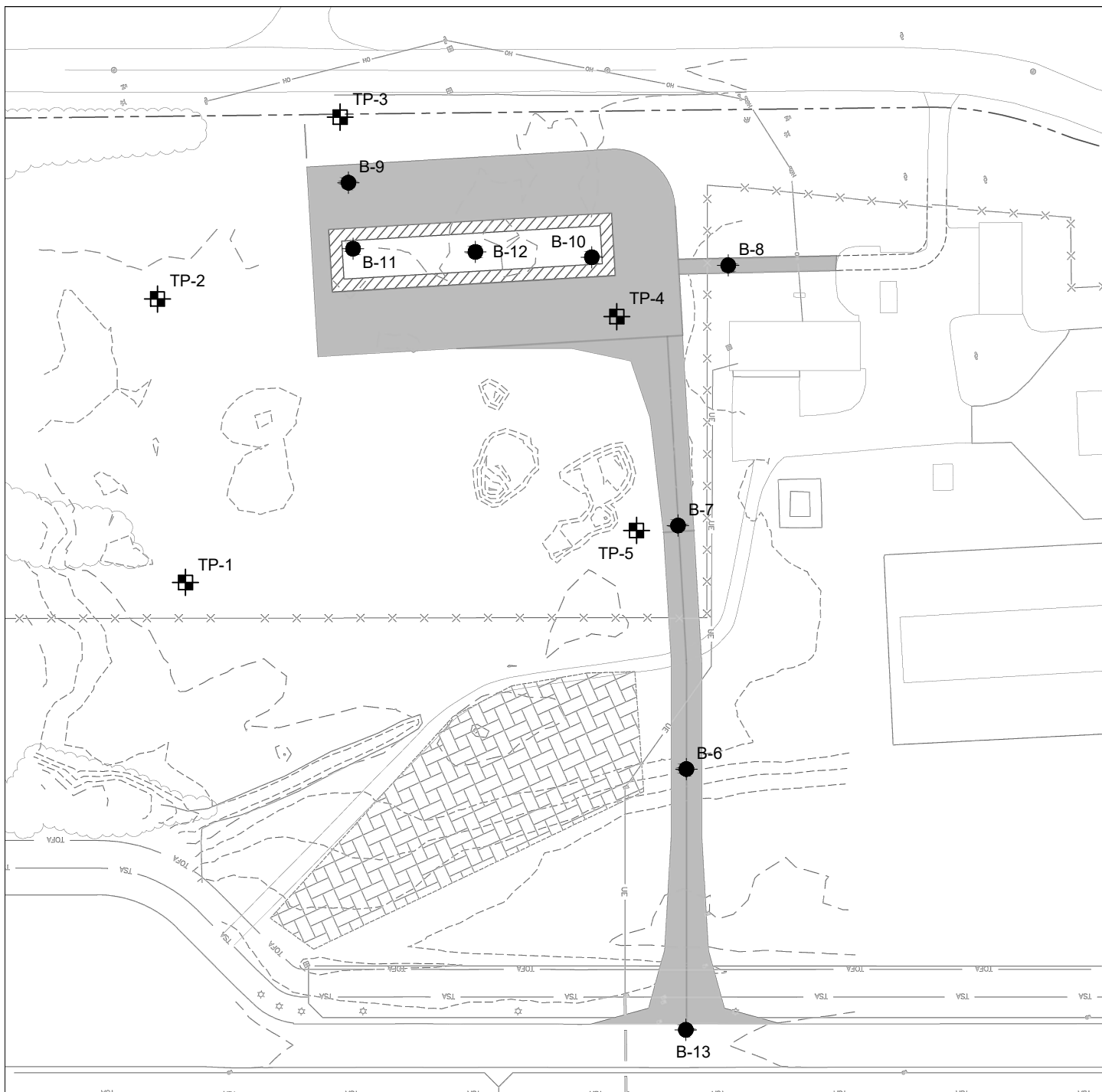
SOURCE:
USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLE OF
MINOT, ME, DATED 2024.

FIGURE 1
LOCUS MAP
GEOTECHNICAL EVALUATION
PROPOSED T HANGAR BUILDING
AUBURN-LEWISTON AIRPORT
AUBURN, MAINE

NOVEMBER 2024

PROJECT NO. 1569-019-24

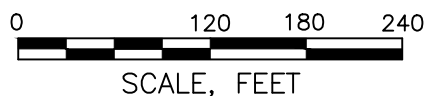




LEGEND:

 **B-6** APPROXIMATE LOCATION OF SOIL BORING DRILLED 16 OCTOBER 2024.

 **TP-1** APPROXIMATE LOCATION OF TEST PIT EXCAVATED 30 AUGUST 2024.



SOURCE:
DRAWING NO. 1, TITLED "BORING LOCATIONS FIGURE",
PREPARED BY MCFARLAND JOHNSON, DATED OCTOBER 2024.

FIGURE 2
EXPLORATION LOCATION PLAN
GEOTECHNICAL EVALUATION
PROPOSED T HANGAR BUILDING
AUBURN-LEWISTON AIRPORT
AUBURN, MAINE

NOVEMBER 2024

PROJECT NO. 1569-019-24



APPENDIX A
LIMITATIONS

Geotechnical Evaluation
Proposed T Hangar
Auburn-Lewiston Municipal Airport
Auburn, Maine

LIMITATIONS

This evaluation has been limited considering the geotechnical engineering aspects of the proposed T Hangar project at Auburn-Lewiston Municipal Airport in Auburn, Maine. The primary purpose of the evaluation was to obtain information regarding subsurface conditions on which to base recommendations about the geotechnical engineering aspects of design and construction of foundations, ground floor slabs, airfield pavements, and seismic considerations. This report identifies construction considerations intended to solely assist engineers that will design the project and monitor its construction and not to benefit others, including but not limited to the Contractor. This report is not a technical specification nor intended to be used as a specification for bidding or building the project.

This geotechnical engineering evaluation might also aid Contractors responsible for constructing the planned building. However, the recommendations and comments provided are not intended to be instructions or directives to the project Contractors. The project Contractors must evaluate construction issues encountered in the work based on their experience with similar projects considering their methods and procedures.

RWG&A has not considered the construction from a worker safety perspective. Construction safety is the project Contractor's responsibility, who is solely responsible for the means, methods, and sequencing of construction operations. RWG&A is providing this information as a service to McFarland Johnson, Inc. Under no circumstances should this information be interpreted to mean that RWG&A and/or McFarland Johnson, Inc. assume responsibility for construction site safety or the Contractor's activities; such responsibility is not implied and should not be inferred.

RWG&A's services excluded:

- Any environmental site assessment relative to oil and hazardous materials or evidence of a potential release or threat of oil or hazardous materials on, below, or around the site. (Note: any statement in this report, or on the exploration logs, regarding odors or unusual or suspicious conditions is for informational purposes only and is not intended to constitute an environmental assessment.)
- Any service to investigate or detect the presence of mold or other biological contaminants or any service designed or intended to prevent or lower the risk of an infestation of mold or other biological contaminants (MOBC infestation).
- Any service to investigate or detect the presence of potentially hazardous subsurface vapor sources or any service designed or intended to prevent or lower the risk of vapor intrusion.

APPENDIX B
EXPLORATION LOGS

Geotechnical Evaluation
Proposed T Hangar
Auburn-Lewiston Municipal Airport
Auburn, Maine

RWG&A, Inc. soil descriptions are based on the following criteria. Descriptive terminology is used to denote the grain size and percentage of each component. The soil descriptions are based on visual-manual classification procedures, Standard Penetration Test results, and the results of laboratory testing on selected soil samples, where available. The Unified Soil Classification Group Symbol will be indicated in capital letters.

COMPONENT DEFINITIONS BY GRADATION SIEVE LIMITS

Materials	Definitions	Fractions	Upper	Lower
Boulders	Material too large to pass through an opening 12 in. square.			
Cobbles	Material passing through a 12 in. opening and retained on the 3 in. sieve.			
Gravel	Material passing the 3 in. sieve and retained on 1/4" (No. 4 sieve).	Coarse Fine	3 in. 3/4 in.	3/4 in. 1/4 in.
Sand	Material passing the No. 4 sieve and retained on the No. 200 sieve.	Coarse Medium Fine	No. 4 (1/4") No. 10 (1/8") No. 40 (1/32")	No. 10 (1/8") No. 40 (1/32") No. 200
Silt	Material passing the No. 200 sieve which is usually non-plastic in character and exhibits little or no strength when air dried.		No. 200	
Clay	Material passing the No. 200 sieve which can also be made to exhibit plasticity within a certain range of moisture contents and which exhibits considerable strength when air dried.		No. 200	

SOIL DESCRIPTION

General

Soils are described as to the Unified Soil Classification Systems Group Symbol, density or consistency, color, grain size distribution and other pertinent properties such as plasticity and dry strength. The RWG&A order of descriptors is as follows:

1. USCS Group Name and Symbol, or Fill
2. Density or Consistency
3. Moisture
4. Grain Size & Constituent percentages
5. Other pertinent descriptors
6. Color

DESCRIPTIVE TERMINOLOGY DENOTING COMPONENT PROPORTIONS

<u>Descriptive Terms</u>	<u>Range of Proportions</u>
Noun (major component)	≥50%
Adjective (secondary component)	20 - 50%
Some (third component)	25 - 45%
Little (second or third component)	15 - 25%
Few (second or third component)	5 - 15%
Trace	0 - 5%
With	Amount of component not determined. Used as a conjunction only. Does not indicate component percentile

OTHER DESCRIPTIVE TERMS

Where appropriate, geological classifications are also used (Glacial Till, etc.)

TYPICAL DESCRIPTIONS

SAND WITH SILT (SP-SM): Medium dense, moist, coarse to medium sand, few silt, brown.

FILL; Loose, dry, fine sand, some gravel and silt, with brick and concrete fragments, dark brown.




SILTY CLAY (CL); Very stiff, moist, silty clay, olive-brown.

<u>DENSITY OR CONSISTENCY OF SOILS</u>		
<u>COHESIVE SOILS</u>		
<u>Consistency of Cohesive Soils</u>	<u>Standard Penetration Test (Blows Per Foot) (N)</u>	<u>Undrained Shear Strength (TSF)</u>
Very Soft	0 - 2	Below 0.13 (250 psf)
Soft	2 - 4	0.13 to 0.25 (to 500 psf)
Medium	4 - 8	0.25 to 0.5 (to 1,000 psf)
Stiff	8 - 15	0.5 to 1.0 (to 2,000 psf)
Very Stiff	15 - 30	1.0 to 2.0 (to 4,000 psf)
Hard	Over 30	over 2.0 (over 4,000 psf)
Consistency of cohesive soils is based upon field vane shear, torvane, or pocket penetrometer, or laboratory vane shear or Unconsolidated-Undrained Triaxial Compression tests. Consistency of cohesive soils is based upon the Standard Penetration test when no other data is available.		
<u>COHESIONLESS SOILS</u>		
<u>Density of Cohesionless Soils</u>	<u>Standard Penetration Test (Blows per Foot) (in)</u>	
Very Loose	0 - 4	
Loose	4 - 10	
Medium Dense	10 - 30	
Dense	30 - 50	
Very Dense	over 50	
<u>PENETRATION RESISTANCE</u>		
<u>STANDARD PENETRATION TEST (ASTM D1586)</u> - a 2.0-inch diameter, 1-3/8 inch inside diameter split barrel sample is driven into soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The total number of blows required for penetration from 6 to 18 inches is the Standard Penetration Resistance (N).		
<u>COBBLES AND BOULDERS</u>		
The percentage of cobbles and boulders is estimated visually where possible.		
<u>Descriptive Term</u>	<u>Estimated Percentage</u>	
Very Few	0 - 10%	
Few	10 - 25%	
Common	25 - 40%	
Numerous	40 - 50%	
If the percentage cannot be determined, as in a typical test boring, then use “with” to indicate the presence of cobbles and/or boulders. (i.e., gravelly sand with cobbles and boulders).		
<u>FILLS</u>		
The following terminology is used to denote size range of man-made materials within fill deposits:		
<u>Size Range</u>	<u>Comparative Soil Terms</u>	
<No. 200 Sieve	Silt - size	
No. 200 to 1/4 in.	Sand - size	
1/4 in. to 3 in.	Gravel - size	
3 in. to 12 in.	Cobble - size	
>12 in.	Boulder - size	
<u>SUPPLEMENTAL SOIL DESCRIPTION TERMINOLOGY</u>		
<u>Term</u>	<u>Example</u>	
Seam	Typically 1/16 to 1/2 inch thick	1/4 inch sand seams
Layer	Greater than 1/2 inch thick	2-inch sand layers
Occasional	One or less per foot of thickness	
Frequent	More than one per foot of thickness	
Interbedded	Alternating soil layers of different composition	
Varved	Alternating thin seams of silt and clay	
Mottled	Variations in color	

TEST PIT LOG

Test Pit No. TP-1

PROJECT	Proposed T Hangar Building - Auburn-Lewiston Airport	PROJECT NO.	1569-019-24
CLIENT	McFarland Johnson, Inc.	DATE	08/30/24
LOCATION	Auburn	ELEV.	
EXCAVATION METHOD	Yanmar Vio 35 with Toothed Bucket	LOGGER	Tom Snow
EXCAVATION LOCATION	See Excavation Location Plan		
DEPTH TO - Water:	Not Obs.	When checked:	Caving: Not Obs.

DEPTH	SYMBOL	SAMPLES	DESCRIPTION	MOISTURE %	LAB TESTS
0		S-1	FILL; Sand with silt, dry, coarse to fine sand, little silt, few gravel, gray.	5	GS HYD NM
			SAND WITH SILT (SP-SM); Dry, medium to fine sand, few silt, orange to gray-brown.		
5			SILTY SAND (SM); Moist, medium to fine sand, little silt, micaceous, gray.		
10			Bottom of exploration 10.0'; Not refusal.		
15					
20					
25					

Notes:

TEST PIT LOG

Test Pit No. TP-2

PROJECT	Proposed T Hangar Building - Auburn-Lewiston Airport	PROJECT NO.	1569-019-24
CLIENT	McFarland Johnson, Inc.	DATE	08/30/24
LOCATION	Auburn	ELEV.	
EXCAVATION METHOD	Yanmar Vio 35 with Toothed Bucket	LOGGER	Tom Snow
EXCAVATION LOCATION	See Excavation Location Plan		
DEPTH TO - Water:	Not Obs.	When checked:	Caving: Not Obs.

DEPTH	SYMBOL	SAMPLES	DESCRIPTION	MOISTURE %	LAB TESTS
		SAMPLE NUMBER			
0			TOPSOIL AND ORGANIC MATERIAL (8 inches).		
			SILTY SAND (SM); Dry, fine sand, little silt, orange.	2	GS
		S-1	SAND WITH SILT (SP-SM); Dry, fine sand, few silt, tan.		HYD
					NM
5			SILTY SAND (SM); Moist, medium to fine sand, little silt, mica flakes, gray.		
10			Bottom of exploration 10.0'; Not refusal.		
15					
20					
25					

Notes:







**R.W. Gillespie
& Associates**

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TEST PIT LOG

Test Pit No. TP-3

PROJECT	Proposed T Hangar Building - Auburn-Lewiston Airport	PROJECT NO.	1569-019-24
CLIENT	McFarland Johnson, Inc.	DATE	08/30/24
LOCATION	Auburn	ELEV.	
EXCAVATION METHOD	Yanmar Vio 35 with Toothed Bucket	LOGGER	Tom Snow
EXCAVATION LOCATION	See Excavation Location Plan		
DEPTH TO - Water:	Not Obs.	When checked:	Caving: Not Obs.

DEPTH	SYMBOL SAMPLES	SAMPLE NUMBER	DESCRIPTION	MOISTURE %	LAB TESTS
0			FILL; Silty sand with gravel, dry, coarse to fine sand, little silt, little gravel, gray.		
			SILTY SAND (SM); Dry, fine sand, little silt, orange.		
			SAND WITH SILT (SP-SM); Dry, fine sand, few silt, tan.		
5					
		S-1	SILTY SAND (SP-SM); Moist, medium to fine sand, little silt, mica flakes, gray.	24	GS HYD NM
10			Bottom of exploration 10.0'; Not refusal.		
15					
20					
25					

Notes:

TEST PIT LOG

Test Pit No. TP-4

PROJECT	Proposed T Hangar Building - Auburn-Lewiston Airport	PROJECT NO.	1569-019-24
CLIENT	McFarland Johnson, Inc.	DATE	08/30/24
LOCATION	Auburn	ELEV.	
EXCAVATION METHOD	Yanmar Vio 35 with Toothed Bucket	LOGGER	Tom Snow
EXCAVATION LOCATION	See Excavation Location Plan		
DEPTH TO - Water:	Not Obs.	When checked:	Caving: Not Obs.

DEPTH	SYMBOL	SAMPLES	DESCRIPTION	MOISTURE %	LAB TESTS
0			TOPSOIL AND ORGANIC MATERIAL (8 inches).		
			SAND WITH SILT (SP-SM); Dry, fine sand, few silt, tan to yellow to orange.		
5			SAND WITH SILT (SP-SM); Dry, medium to fine sand, few to little silt, gray.	22	GS HYD NM
10			Bottom of exploration 9.5'; Not refusal.		
15					
20					
25					

Notes:



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TEST PIT LOG

Test Pit No. TP-5

PROJECT	Proposed T Hangar Building - Auburn-Lewiston Airport	PROJECT NO.	1569-019-24
CLIENT	McFarland Johnson, Inc.	DATE	08/30/24
LOCATION	Auburn	ELEV.	
EXCAVATION METHOD	Yanmar Vio 35 with Toothed Bucket	LOGGER	Tom Snow
EXCAVATION LOCATION	See Excavation Location Plan		
DEPTH TO - Water: 9.5'	When checked:	Caving: Not Obs.	

DEPTH	SYMBOL	SAMPLES	DESCRIPTION	MOISTURE %	LAB TESTS
0			TOPSOIL AND ORGANIC MATERIAL (8 inches).		
			SAND WITH SILT (SP-SM); Dry, fine sand, few silt, tan to orange.	13	GS HYD NM
5			SILTY SAND (SM); Moist, medium to fine sand, little silt, silty/sandy layers, gray.		
10			Bottom of exploration 10.0'; Not refusal.		
15					
20					
25					

Notes: TP-5, sample silty stiff.



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Boring Log: B-6

Total Depth (ft): 12

Sheet 1 of 1

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
RWG&A Project No. 1569-019-24
Location: Auburn, Maine
Client: McFarland Johnson, Inc.
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 5'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber Track
Driller Rep.: Mike Nadeau
Date Started: 10/16/24
Date Completed: 10/16/24
Surface Elevation: 252 Feet
Drilling Method: 2 1/4" HSA
Casing Type: NA

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	FILL; Topsoil and Organic Material (6 inches).	16	2 3 10 8	13		
			FILL; Sand with silt and gravel, dry, coarse to fine sand, few silt, few gravel, tan.					
			SILTY SAND (SM); Loose to medium dense, dry to wet, fine sand, little silt, brown to tan.					
5		S-2		13	4 3 2 4	5	32	GS HYD NM
10		S-3		17	2 2 2 1	4		
			CLAYEY SILT (ML); Soft, wet, silt, little clay, gray.					
			Bottom of exploration at 12.0'; Not refusal.					
15								
20								
25								
30								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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Boring Log: B-7

Total Depth (ft): 12

Sheet 1 of 1

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
RWG&A Project No. 1569-019-24
Location: Auburn, Maine
Client: McFarland Johnson, Inc.
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 9'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber Track
Driller Rep.: Mike Nadeau
Date Started: 10/16/24
Date Completed: 10/16/24
Surface Elevation: 251 Feet
Drilling Method: 2 1/4" HSA
Casing Type: NA

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	FILL; Topsoil and Organic Material (4 inches). UNCONTROLLED FILL; Sandy silt with gravel, dry, coarse to fine sand, little silt, little gravel, dark brown to black. SILTY SAND (SM); Loose, dry, fine sand, few to little silt, tan to gray.	19	3 4 5 7	9	18	GS HYD NM
5		S-2	Becomes moist.	18	4 5 5 6	10		
10		S-3	Becomes gray-brown, little to some silt.	16	2 2 2 6	4		
			Bottom of exploration at 12.0'; Not refusal.					
15								
20								
25								
30								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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- Materials Testing Services

Boring Log: B-8

Total Depth (ft): 12

Sheet 1 of 1

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
RWG&A Project No. 1569-019-24
Location: Auburn, Maine
Client: McFarland Johnson, Inc.
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 10'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber Track
Driller Rep.: Mike Nadeau
Date Started: 10/16/24
Date Completed: 10/16/24
Surface Elevation: 252 Feet
Drilling Method: 2 1/4" HSA
Casing Type: NA

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (4 inches). SILTY SAND (SM); Loose to very loose, dry to wet, fine sand, few to little silt, brown to tan.	15	2 3 3 2	6	14	GS HYD NM
5		S-2		18	1 1 1 1	2		
10		S-3	Becomes little to some silt.	11	3 2 3 3	5		
			Bottom of exploration at 12.0'; Not refusal.					
15								
20								
25								
30								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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- Materials Testing Services

Boring Log: B-9

Total Depth (ft): 12

Sheet 1 of 1

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
RWG&A Project No. 1569-019-24
Location: Auburn, Maine
Client: McFarland Johnson, Inc.
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 10'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber Track
Driller Rep.: Mike Nadeau
Date Started: 10/16/24
Date Completed: 10/16/24
Surface Elevation: 250 Feet
Drilling Method: 2 1/4" HSA
Casing Type: NA

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	UNCONTROLLED FILL; Sand with silt and gravel, dry, coarse to fine sand, few silt, little gravel, gray. SILTY SAND (SM); Loose, dry, fine sand, few to little silt, brown to tan.	16	3 3 3 3	6		
5		S-2		13	5 5 4 3	9	12	GS HYD NM
10		S-3	Becomes wet.	15	5 4 4 4	8		
			Bottom of exploration at 12.0'; Not refusal.					
15								
20								
25								
30								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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Boring Log: B-10

Total Depth (ft): 22

Sheet 1 of 1

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
RWG&A Project No. 1569-019-24
Location: Auburn, Maine
Client: McFarland Johnson, Inc.
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 10'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber Track
Driller Rep.: Mike Nadeau
Date Started: 10/16/24
Date Completed: 10/16/24
Surface Elevation: 250 Feet
Drilling Method: 2 1/4" HSA
Casing Type: NA

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	UNCONTROLLED FILL; Sand with silt and gravel, dry, coarse to fine sand, few silt, little gravel, gray. SILTY SAND (SM); Loose, dry, fine sand, few to little silt, brown to tan.	20	6 4 5 4	9		
5		S-2	Orange oxidation.	15	4 5 4 4	9		
10		S-3	Becomes tan to gray, wet.	17	5 4 4 5	8		
15		S-4	SILTY CLAY (CL); Soft to stiff, wet, clay, with silt, with fine sand, gray-brown.	20	2 2 2 4	4	31	GS HYD NM AL
20		S-5		14	3 4 5 6	9		
			Bottom of exploration at 22.0'; Not refusal.					
25								
30								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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Boring Log: B-11

Total Depth (ft): 22

Sheet 1 of 1

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
RWG&A Project No. 1569-019-24
Location: Auburn, Maine
Client: McFarland Johnson, Inc.
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 10'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber Track
Driller Rep.: Mike Nadeau
Date Started: 10/16/24
Date Completed: 10/16/24
Surface Elevation: 250 Feet
Drilling Method: 2 1/4" HSA
Casing Type: NA

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	UNCONTROLLED FILL; Sand with silt and gravel, dry, coarse to fine sand, few silt, some gravel, gray. SILTY SAND (SM); Loose, dry, fine sand, little silt, brown to orange.	13	7 4 5 50/2"	9		
5		S-2	Becomes medium dense, few to little silt, tan.	16	8 6 6 6	12		
10		S-3		14	3 4 4 4	8	33	GS HYD NM
15			CLAYEY SILT (ML); Loose, silt, with clay, little fine sand, tan to gray.	17	4 4 5 3	9		
20				20	5 5 5 6	10		
25			Bottom of exploration at 22.0'; Not refusal.					
30								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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Boring Log: B-12

Total Depth (ft): 115.3

Sheet 1 of 4

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
RWG&A Project No. 1569-019-24
Location: Auburn, Maine
Client: McFarland Johnson, Inc.
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 10'

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber Track
Driller Rep.: Mike Nadeau
Date Started: 10/15/24
Date Completed: 10/15/24
Surface Elevation: 250 Feet
Drilling Method: 2 1/4" HSA, then Rotary Wash
Casing Type: 4" Driven Steel

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	UNCONTROLLED FILL; Sand with silt and gravel, dry, coarse to fine sand, few silt, little gravel, tan. SILTY SAND (SM); Medium dense, dry, fine sand, little silt, brown to orange to tan.	17	8 6 6 7	12		
5		S-2	Significant orange oxidation.	14	5 5 5 5	10		
10		S-3	Becomes wet, tan to gray.	17	3 3 3 3	6		
15		S-4	Becomes little to some silt.	16	3 3 3 4	6		
20		S-5	CLAYEY SILT (ML); Loose, silt, with clay, little fine sand, tan to gray.	9	2 2 3 5	5	32	GS HYD NM AL
25		S-6		12	4 5 6 7	11		
30								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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Boring Log: B-12

Total Depth: 115.3

Sheet 2 of 4

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport RWG&A Project No. 1569-019-24

Location: Auburn Maine

Client: McFarland Johnson, Inc.

Observed Water Depth: 10'

Surface Elevation: 250 Feet

Casing Type: 4" Driven Steel

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
30		S-7		13	4 4 4 5	8		
35		S-8		14	3 4 4 5	8		
40		S-9		12	3 6 6 9	12		
45		S-10		15	6 6 7 9	13		
			SILTY CLAY (CL); Very soft, wet, clay, little silt, gray.					
50		S-11		20	WOH	0	30	GS HYD NM AL
55								
60								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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Boring Log: B-12

Total Depth: 115.3

Sheet 3 of 4

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
Location: Auburn Maine
Client: McFarland Johnson, Inc.
Observed Water Depth: 10'

RWG&A Project No. 1569-019-24
Surface Elevation: 250 Feet
Casing Type: 4" Driven Steel

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
60		S-12	Advanced rod probe with hydraulic push.	20	WOH 2 3 2	5		
65								
70								
75								
80								
85								
90								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



- | |
|--------------------|
| Boring Log: B-12 |
| Total Depth: 115.3 |
| Sheet 4 of 4 |

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport	RWG&A Project No. 1569-019-24
Location: Auburn Maine	Surface Elevation: 250 Feet
Client: McFarland Johnson, Inc.	Casing Type: 4" Driven Steel
Observed Water Depth: 10'	

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.



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
Boring Log: B-13

Total Depth (ft): 2.3

Sheet 1 of 1

Project Name: Proposed T Hangar Building - Auburn-Lewiston Airport
RWG&A Project No. 1569-019-24
Location: Auburn, Maine
Client: McFarland Johnson, Inc.
RWG&A Representative: Tom Snow
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: Not Obs.

Drilling Co.: Northern Test Boring
Drill Rig: Diedrich D-50 Rubber Track
Driller Rep.: Mike Nadeau
Date Started: 10/16/24
Date Completed: 10/16/24
Surface Elevation: 259 Feet
Drilling Method: 2 1/4" HSA
Casing Type: NA

DEPTH, FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N VALUE	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALT PAVEMENT (4 inches).	18	14	35	6	GS
			FILL; Gravel with sand and silt, dry, coarse gravel, some coarse to fine sand, few silt, tan.		16		15	HYD
			FILL; Sand with silt and gravel, dry, coarse to fine sand, few silt, few gravel, tan.		19			NM
					17			
5			Bottom of exploration at 2.3'; Not refusal.					
10								
15								
20								
25								
30								

Notes: SPT N-values are uncorrected for hammer energy transfer ratio.
Sampled with 3 inch SPT.

APPENDIX C

MARK HAMPTON ASSOCIATES, INC. REPORT

Geotechnical Evaluation
Proposed T Hangar
Auburn-Lewiston Municipal Airport
Auburn, Maine



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8051

September 3, 2024

Mr. Marc Grenier
R. W. Gillespie & Associates, Inc.
177 Shattuck Way
Suite 1 West
Newington, NH 03801

Re: Soil Test Pit Evaluation, Stormwater Management, Auburn-Lewiston Airport, Auburn, ME

Dear Marc,

I completed evaluation of 5 backhoe dug soil test pits for the proposed stormwater treatment program at the Auburn-Lewiston Airport Auburn, ME. The soil evaluation was conducted in accordance with Section 7.D.4 of the Stormwater Management Rules. The soils in the test pits were all made up of glacial outwash sand soils.

The hydrological soil groups, soil descriptions and water table location are noted in the soil log descriptions. The permeability ranges for the soils greater than 5 inches per hour. Water was observed in test pit 4 at a depth of 110 inches. Seasonally high water table elevation is noted in the soil log descriptions.

If you have any questions or require additional information, please contact me.

Sincerely,

Mark J. Hampton L.S.E., C.S.S.
Licensed Site Evaluator #263
Certified Soil Scientist #216



SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION
OF SOIL CONDITIONS AT PROJECT SITESProject Name:
Auburn-Lewiston AirportApplicant Name:
R. W. Gillespie & AssociatesProject Location (municipality):
AuburnExploration Symbol # STW-1 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

122 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	Dark Brown	Loamy Sand	Fine Grand	Friable	
10		To Sand			
20	Fill To	But Mixed			
30	Brown				
40					
50	Brown	Sand	Medium Grand	Friable	
60					
70					
80	BC				
90					
100	C	Gray Fine Sand	Grand	Friable	Common and Distinct
110					
120					
130	Limit of Excavation 122 inches				
140					
150					

Exploration Symbol # STW-2 ☒ Test Pit ☐ Boring ☐ Probe

" Organic horizon thickness Ground surface elev. _____

120 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E Dark Brown	Loamy Sandy	Fine Grand	Friable	
10					
20		Sand	Fine Grand	Friable	
30	Bs				
40	Brown				
50	BC	Gray Sand	Medium Grand	Friable	Common and Distinct
60					
70					
80	C1	Gray Fine Sand	Grand	Friable	
90					
100					
110					
120					
130	Limit of Excavation 120 inches				
140					
150					

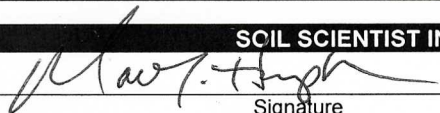
Soil Details

Soil Series/Phase Name: Disturbed Site		Limiting Factor <input checked="" type="checkbox"/> Groundwater 96 " <input type="checkbox"/> Restrictive Layer Depth <input type="checkbox"/> Bedrock	
Drainage Class <input type="checkbox"/> ED <input type="checkbox"/> SED <input checked="" type="checkbox"/> WD <input type="checkbox"/> MWD <input type="checkbox"/> SPD <input type="checkbox"/> PD <input type="checkbox"/> VPD	Slope 3 Percent	Hydric Soil <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	Hydrologic A Soil Group

Soil Details

Soil Series/Phase Name: Adams Loamy Sand		Limiting Factor <input checked="" type="checkbox"/> Groundwater 40 " <input type="checkbox"/> Restrictive Layer Depth <input type="checkbox"/> Bedrock	
Drainage Class <input type="checkbox"/> ED <input type="checkbox"/> SED <input checked="" type="checkbox"/> WD <input type="checkbox"/> MWD <input type="checkbox"/> SPD <input type="checkbox"/> PD <input type="checkbox"/> VPD	Slope 2 Percent	Hydric Soil <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	Hydrologic A Soil Group

SOIL SCIENTIST INFORMATION AND SIGNATURE


Signature
Mark J. Hampton

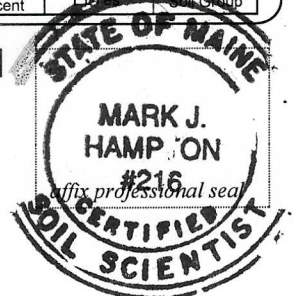
Name Printed

08/30/2024

Date

216

SS License No.



SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Location (municipality): Auburn

Exploration Symbol # STW-4 ☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

120 " Depth: ☒ of exploration, or ☐ to refusal

Depth below mineral soil horizon (inches)	Horizon	Color	Texture	Structure	Consistence	Redox
0	Fill	Gray	Gravel Fill	Grand	Friable	
10						
20	Bhs	Red Brown	Sand	Grand	Friable	
30						
40	Bs	Brown	Sand	Medium Grand	Friable	
50						
60	BC	Gray	Fine Sand	Platy	Firm	Common and Distinct
70						
80	C	Gray	Fine Sand	Platy	Firm	
90						
100						
110						
120						
130						
140						
150						

Water at 110 inches

Limit of Excavation 120 inches

Soil Series/Phase Name: **Adams Loamy Sand**

Limiting Factor ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

52 " Depth

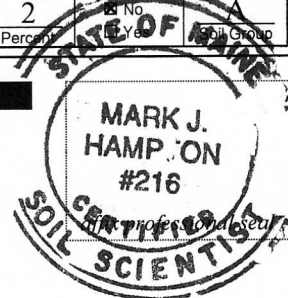
Drainage Class Slope Hydric Soil Hydrologic

☐ ED ☐ SED ☒ WD ☐ MWD 2 Percent ☒ No ☐ A

☐ SPD ☐ PD ☐ VPD ☐ Yes ☐ B

SOIL SCIENTIST INFORMATION AND SIGNATURE

08/30/2024
Date
216
SS License No.



SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION
OF SOIL CONDITIONS AT PROJECT SITESProject Name:
Auburn-Lewiston AirportApplicant Name:
R. W. Gillespie & AssociatesProject Location (municipality):
AuburnExploration Symbol # STW-5 ☒ Test Pit ☐ Boring ☐ Probe
" Organic horizon thickness Ground surface elev. _____
120 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	Fill	Gray	Gravel	Grand	Friable
10	Bhs	Red Brown	Loamy Sand	Grand	Friable
20					
30					
40	Bs	Brown	Fine Sand	Medium Grand	Friable
50					
60					
70					
80					
90					
100	C	Gray	Fine Sand	Grand	Friable
110					Common and Distinct
120					
130					
140					
150					

Depth below mineral soil horizon (inches)

Soil Series/Phase Name:

Adams Loamy Sand

Limiting Factor

50

Depth

☒ Groundwater
☐ Restrictive Layer
☐ BedrockSoil
Details

Drainage Class

☐ ED ☐ SED ☒ WD ☐ MWD
☐ SPD ☐ PD ☐ VPD

Slope

3

Percent

Hydric Soil

☒ No
☐ Yes

Hydrologic

A
Soil GroupExploration Symbol # _____ ☐ Test Pit ☐ Boring ☐ Probe
" Organic horizon thickness Ground surface elev. _____
" Depth: ☐ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0					
10					
20					
30					
40					
50					
60					
70					
80					
90					
100					
110					
120					
130					
140					
150					

Depth below mineral soil horizon (inches)

Soil Series/Phase Name:

Limiting Factor

☐ Groundwater
☐ Restrictive Layer
☐ BedrockSoil
Details

Drainage Class

☐ ED ☐ SED ☐ WD ☐ MWD
☐ SPD ☐ PD ☐ VPD

Slope

Percent

Hydric Soil

☐ Yes
☐ No

Hydrologic

Soil Group

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

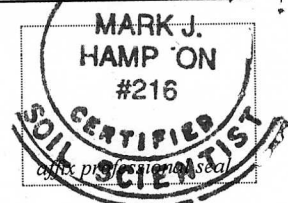
Name Printed

08/30/2024

Date

216

SS License No.



APPENDIX D

HAGER-RICHTER GEOSCIENCE, INC. REPORT

Geotechnical Evaluation
Proposed T Hangar
Auburn-Lewiston Municipal Airport
Auburn, Maine

**SHEAR WAVE VELOCITY TESTING
AUBURN-LEWISTON AIRPORT
80 AIRPORT DRIVE
AUBURN, MAINE**

Prepared for:

R.W. Gillespie & Associates, Inc.
177 Shattuck Way, Suite 1 West
Newington, New Hampshire 03801

Prepared by:

Hager-Richter Geoscience, Inc.
2 Industrial Way – S/2
Atkinson, New Hampshire 03811

File 24J90
November 2024

November 13, 2024

File 24J90

Marc R. Grenier, PE
Senior Geotechnical Engineer
R.W. Gillespie & Associates, Inc.
177 Shattuck Way, Suite 1 West
Newington, New Hampshire 03801

Dir: 603.427.0244
Mob: 207.317.6109
Email: mgrenier@rwg-a.com

RE: Shear Wave Velocity Testing
Auburn-Lewiston Airport
80 Airport Drive
Auburn, Maine

Dear Mr. Grenier:

In this letter, we report the results of shear wave velocity testing conducted on October 31, 2024, by Hager-Richter Geoscience, Inc. (HRGS) at the above referenced site in Auburn, Maine for R.W. Gillespie & Associates, Inc. (R.W. Gillespie). The scope of the project and area of interest were specified by R.W. Gillespie.

INTRODUCTION

The site is an open field/parking lot, located in the south-western corner of the Auburn-Lewiston Airport, along Flightline Drive, in Auburn, Maine. The general location of the site is shown in Figure 1. According to information provided by R.W. Gillespie, the site is to be developed for a new building construction. In support of a geotechnical investigation for the project, R.W. Gillespie requires site specific shear wave velocity information as a function of depth for the soil and bedrock to a depth of 100+ feet for seismic site class determination. Figure 2 shows the geophysical test line locations.

R.W. Gillespie provided boring logs for 18 borings installed at the site. According to the boring logs, overburden at the site generally consisted of a few feet of topsoil and/or fill over clays, silts and sands. The borings terminated in sands or silts at depths of between 2 and 115 feet without encountering refusal.

OBJECTIVE

The objective of the geophysical survey was to determine site specific shear wave velocity information as a function of depth for the soil and bedrock to a depth of 100+ feet for seismic site class determination.

THE SURVEY

Vanja Dezelic, PhD and Bryan Carnahan, of HRGS conducted the field operations on October 31, 2024. The project was coordinated with Marc R. Grenier, PE, of R.W. Gillespie. No representative was present on site from R.W. Gillespie during the survey. The geophysical survey was conducted using the Passive Shear Wave Velocity Testing (pVs) method. Data analysis and interpretation were completed at the HRGS offices. Original data and field notes will be retained in the HRGS files for a minimum of three years. Shear wave velocity data were acquired along two lines, as specified by R.W. Gillespie within the location of the future building, identified as Lines 1 and 2, and their locations are shown in Figure 2.

METHOD AND EQUIPMENT

As indicated above, the passive shear wave seismic (pVs) method, also called the Refraction Microtremor method, or ReMi™ was used to determine the shear wave velocity as a function of depth. The passive shear wave seismic (pVs) method is a geophysical method used to determine a vertical shear-wave velocity profile at a single location by analyzing a particular type of seismic wave recorded on a multichannel record. The name pVs is derived from p for passive and Vs for velocity of shear waves. The pVs method, also called the Refraction Microtremor method, or ReMi™, uses Rayleigh waves, a particular kind of wave first described by Lord Rayleigh in 1885. Such waves are dispersive (meaning that the velocity is a function of the wavelength), and the amplitude of such waves decreases with depth. The velocity depends primarily on the shear wave velocities and layering of the subsurface material. Rayleigh waves are a significant part of the ambient subsurface noise at most, if not all, sites. There are many sources of such noise, including, but not limited to, wind, pedestrian and vehicular traffic, surface and subway trains, and construction activities. Although such noise can be troublesome for most seismic methods, it is the source of signals for the pVs method, and the higher the noise level, the better the results for this method.

Low frequency (4.5 Hz) geophones are installed from 5 to 8 feet apart along a straight line and connected to a seismograph. The ambient noise is recorded for 30 seconds two or three times and examined to be sure that noise of sufficiently low frequency is present. If the noise is sufficient, then 10 such records are acquired. If the noise spectra do not reach sufficiently low frequencies, then one walks or runs along the test line during data acquisition to add low frequency noise to the ambient noise. The surface waves used in the pVs method, considered noise in seismic refraction and reflection surveys, are enhanced during data acquisition and processing for the pVs method. The seismic data are analyzed using SeisOpt® ReMi™, a commercially licensed software package developed by Optim, Inc. located at the University of Nevada at Reno. Results are normally presented as 1-D plots or in tabular form showing shear wave velocity as a function of depth at the center of the seismic line.

It should be noted that the method produces a single velocity profile (Vs as a function of depth Z) at one location (namely, the center of the line) for each line. The software also calculates the average shear wave velocity using the following equation (taken from the International Building Code):

$$V_{avg} = \left(\sum_{i=1}^N d_i \right) / \sum_{i=1}^N d_i / V_i \quad \text{Eq. 1}$$

where V_{avg} is average shear wave velocity
 d_i is thickness of the i^{th} layer
 V_i is the shear wave velocity of the i^{th} layer
 N is the number of layers

The Seismic Site Class, based solely on average shear wave velocity, is defined by the IBC as follows:

Site Class	Soil Profile Name	Soil Shear Wave Velocity (ft/s)
A	Hard rock	$V_s > 5000$
B	Rock	$2500 < V_s \leq 5000$
C	Very dense soil and soft rock	$1200 < V_s \leq 2500$
D	Stiff soil profile	$600 \leq V_s \leq 1200$
E	Soft soil profile	$V_s < 600$

Although the IBC provides other methods to determine the Site Class, such as standard penetration resistance (N-values) and soil undrained shear strength, this report provides site specific data for shear wave velocity only. Furthermore, there is no consideration of other factors that may affect a site such as liquefaction. **The final determination of seismic site class should be made by the project engineer.**

Site Specific. We used two 24-channel digital seismograph (Geometrics Geode) to acquire the pVs data. Each transect consisted of 48, 4.5-Hz frequency vertical geophones spaced 5 feet apart for the subject shear wave velocity testing. In order to improve the lateral resolution of changes in geology along the Lines, the transects were split in two segments of 24 geophones each, which were processed individually to generate 1D profiles of V_s versus depth as described in Section 2.1. The segments were identified as Seismic Line 1A, and 1B and Seismic Line 2A, and 2B. We also produced 1D profiles of V_s versus depth using the 48 available geophones, identified as Seismic Line 1 and 2.

The pVs method yields a single vertical velocity profile at the midpoint of each test line, shown in Figure 2. The seismic source for the pVs test was ambient noise and people walking along the seismic line.

LIMITATIONS OF THE METHOD

As with all physical measurements, there is experimental error in the velocities that are determined using the passive shear wave velocity seismic method. For the pVs method, the accuracy of V_{avg} is stated by Optim, Inc. to be 5-15%.

The depth of investigation is a function of the noise spectrum, and long wavelengths (low frequencies) are required to determine velocity at large depths. Noise levels can be improved by a person running along the seismic spread during data acquisition.

RESULTS

The geophysical survey consisted of passive shear wave seismic (pVs) testing conducted along two (2) test lines, designated as pVs Lines 1 and 2. The pVs test line locations and center points for the velocity

profiles are shown in Figure 2, and the results of the pVs survey are listed in tabular form in Table 1. The data quality for the two lines was good. As described above, in order to improve the lateral resolution of changes in geology along the Lines, the transects were split in two segments of 24 geophones each, which were processed individually to generate 1D profiles of Vs versus depth as described in Section 2.1. The segments were identified as Seismic Line 1A and 1B and Seismic Line 2A and 2B. The pVs test line locations and center points for the velocity profiles are shown in Figure 2, and the results of the pVs survey are listed in tabular form in Table 1.

The velocity units in the provided models do not necessarily correlate with specific lithologic units identified in boreholes. We note that the boring logs do not provide a complete stratigraphic constraint, therefore, the number of layers and the thickness that provides the best statistical fit to the respective dispersion curve was used for each line independently. These should be considered conservative models because bedrock velocities are typically underestimated by the pVs method, especially in the presence of near surface layers with low shear wave velocity. For Lines 1 and 2 the root mean square error for the fit of the dispersion curve versus the measured data using the model velocities was 0.8 %, and 2.6% respectively.

No attempt was made to “force” a specific model to the data. The velocities for the units to the maximum depth investigated, and the average values of the velocity of shear waves, Vs100, determined by Equation 1 for the depth interval of 0-100 ft are also reported in Table 1.

LIMITATIONS ON USE OF THIS REPORT

This report was prepared for the exclusive use of R.W. Gillespie & Associates, Inc. (Client). No other party shall be entitled to rely on this Report, or any information, documents, records, data, interpretations, advice, or opinions given to Client by Hager-Richter Geoscience, Inc. (HRGS) in the performance of its work. The Report relates solely to the specific project for which HRGS has been retained and shall not be used or relied upon by Client or any third party for any variation or extension of this project, any other project, or any other purpose without the express written permission of HRGS. Any unpermitted use by Client or any third party shall be at Client's or such third party's own risk and without any liability to HRGS.

HRGS has used reasonable care, skill, competence, and judgment in the performance of its services for this project consistent with professional standards for those providing similar services at the same time, in the same locale, and under like circumstances. Unless otherwise stated, the work performed by HRGS should be understood to be exploratory and interpretational in character and any results, findings or recommendations contained in this Report or resulting from the work proposed may include decisions which are judgmental in nature and not necessarily based solely on pure science or engineering. It should be noted that our conclusions might be modified if subsurface conditions were better delineated with additional subsurface exploration including, but not limited to, test pits, soil borings with collection of soil and water samples, and laboratory testing.

Except as expressly provided in this limitations section, HRGS makes no other representation or warranty of any kind whatsoever, oral or written, expressed or implied; and all implied warranties of merchantability and fitness for a particular purpose, are hereby disclaimed. If you have any questions or

Shear Wave Velocity Testing
Auburn-Lewiston Airport
80 Airport Drive
Auburn, Maine
File 24J90 Page 5

HRGS

comments on this letter report, please contact us at your convenience. It has been a pleasure to work with R.W. Gillespie on this project. We look forward to working with you again in the future.

Sincerely,
HAGER-RICHTER GEOSCIENCE, INC.



Vanja Dezelic, Ph.D.
Geophysicist

Attachments: Table 1
Figures 1 – 2

TABLE 1 – pVs TEST RESULTS

Geologic Unit *	Line 1A		Line 1B		Line 1	
	Depth Interval (ft)	Vs** (ft/s)	Depth Interval (ft)	Vs** (ft/s)	Depth Interval (ft)	Vs** (ft/s)
Low V	0 – 21	557	0 – 20	520	0 – 18	548
Medium V	21 – 90	985	20 – 90	1,084	18 – 90	760
High V/Rock	90+	1,288	90+	1,302	90+	1,689
Vs₁₀₀ (ft/s)	866		904		750	
RMS (%)	0.3		1.4		0.8	

Geologic Unit *	Line 2A		Line 2B		Line 2	
	Depth Interval (ft)	Vs** (ft/s)	Depth Interval (ft)	Vs** (ft/s)	Depth Interval (ft)	Vs** (ft/s)
Low V	0 – 18	553	0 – 19	512	0 – 19	535
Medium V	18 – 90	917	19 – 88	846	19 – 90	824
High V/Rock	90+	1,025	88+	1,009	90+	974
Vs₁₀₀ (ft/s)	828		767		756	
RMS (%)	1.5		3.1		2.6	

*Stratigraphy is based on Boring Logs where applicable

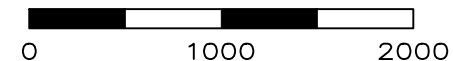
** Shear wave velocity profile is determined for the midpoint of the test line as shown in Site Sketch



N



APPROXIMATE SCALE (feet)



LOCATION

NOTE:

Modified from Google Earth Pro aerial photograph.

Figure 1
General Site Location
Auburn-Lewiston Airport
80 Airport Drive
Auburn, Maine

File 24J90

November, 2024

HRGS

**Atkinson, NH
Fords, NJ**

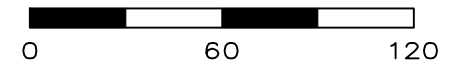


LEGEND



pVs TEST LINE
WITH MIDPOINT

SCALE (feet)



NOTE:

Modified from Google Earth Pro aerial photograph.

Figure 2
pVs Test Line Locations
Auburn-Lewiston Airport
80 Airport Drive
Auburn, Maine

File 24J90

November, 2024

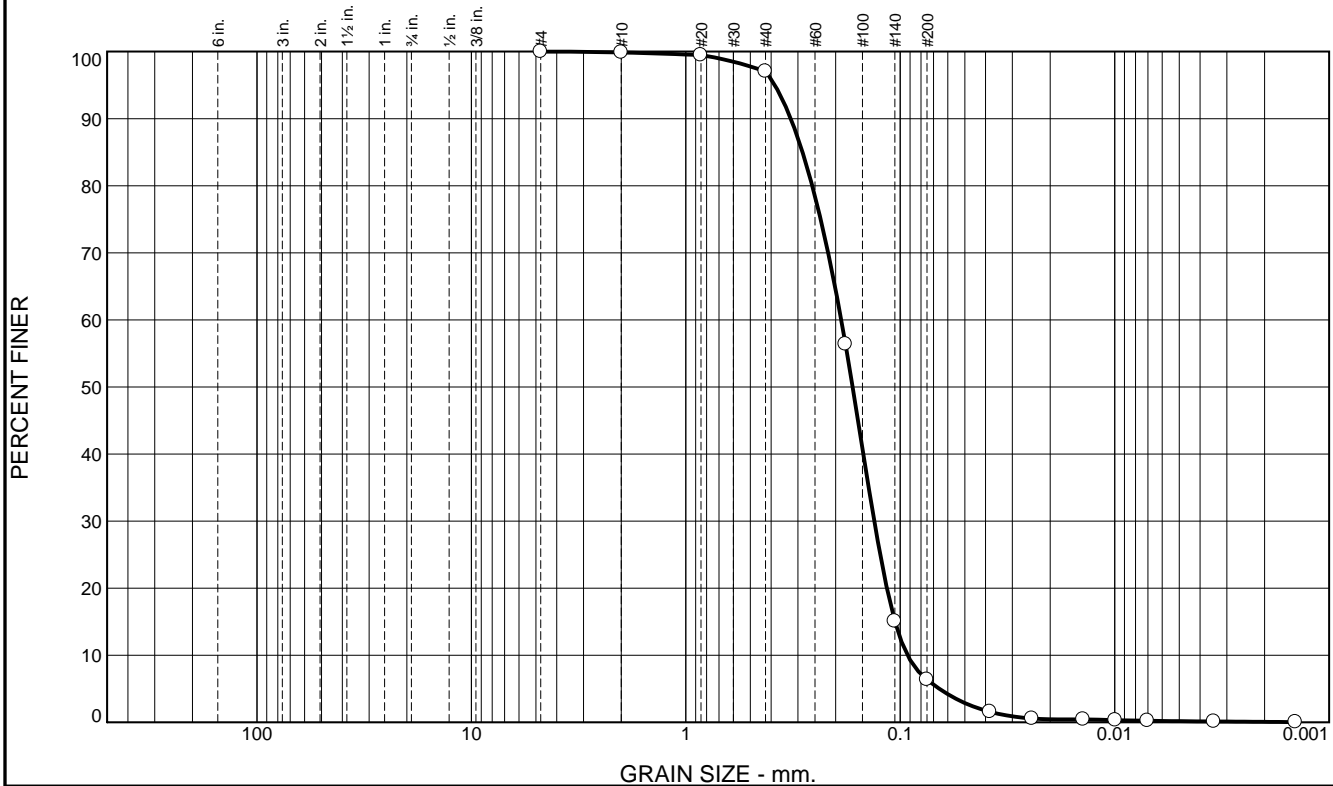
HRGS

**Atkinson, NH
Fords, NJ**

APPENDIX E
LABORATORY TEST RESULTS

Geotechnical Evaluation
Proposed T Hangar
Auburn-Lewiston Municipal Airport
Auburn, Maine

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	2.9	90.6	6.3	0.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	99.5		
#40	97.0		
#80	56.4		
#140	15.1		
#200	6.4		
0.0382 mm.	1.6		
0.0243 mm.	0.6		
0.0140 mm.	0.4		
0.0099 mm.	0.3		
0.0070 mm.	0.2		
0.0034 mm.	0.1		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
poorly graded sand with silt		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.3239	D ₈₅ = 0.2855	D ₆₀ = 0.1885
D ₅₀ = 0.1668	D ₃₀ = 0.1322	D ₁₅ = 0.1059
D ₁₀ = 0.0926	C _u = 2.04	C _c = 1.00
<u>Classification</u>		
USCS= SP-SM	AASHTO= A-3	
<u>Remarks</u>		
Moisture Content: 4.8%		

Location: TP-1

Sample Number: Bulk

Depth: 1-4'

Date: 09/30/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson

Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

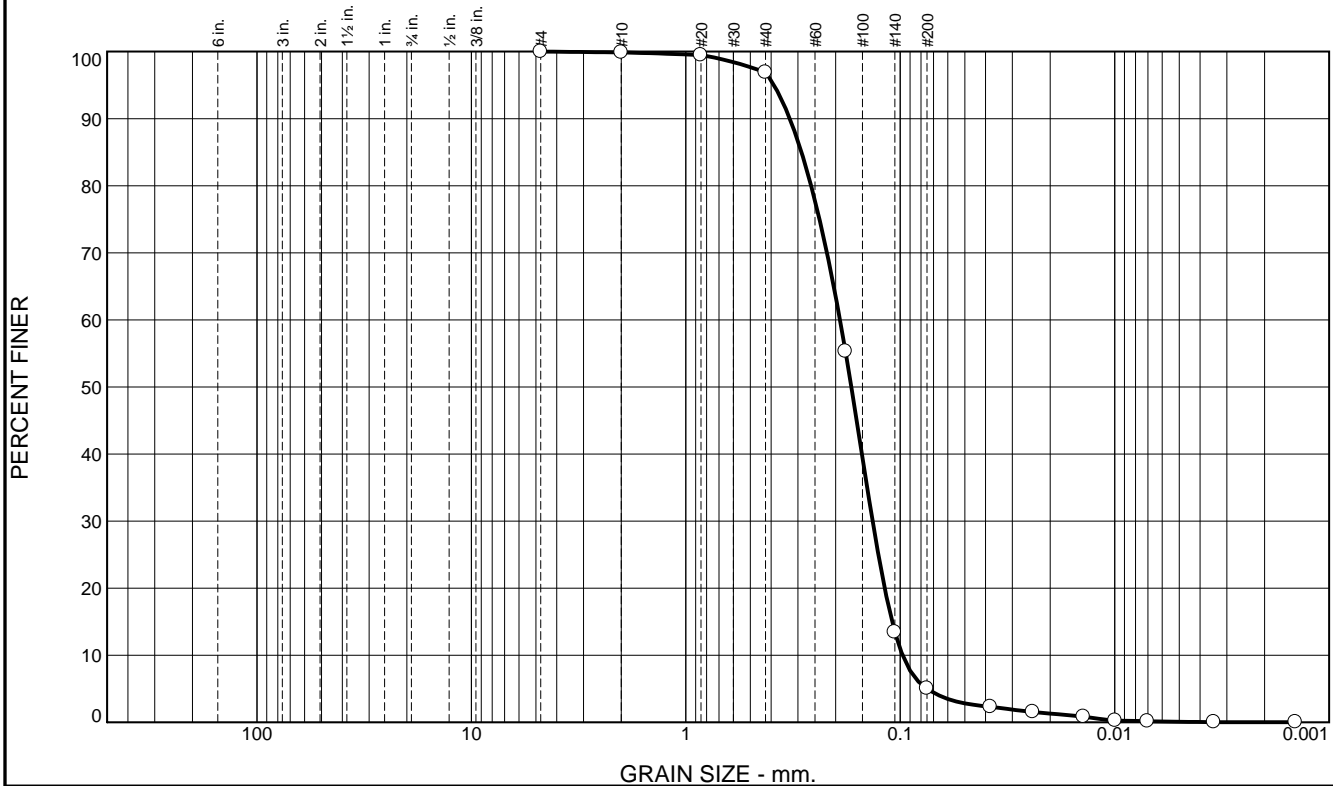
Lab No. 18184-01

Tested By: MES/CAG

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	3.0	91.9	5.0	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	99.5		
#40	96.9		
#80	55.3		
#140	13.4		
#200	5.0		
0.0380 mm.	2.3		
0.0241 mm.	1.5		
0.0140 mm.	0.8		
0.0099 mm.	0.3		
0.0070 mm.	0.2		
0.0034 mm.	0.0		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
poorly graded sand with silt		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.3272	D ₈₅ = 0.2887	D ₆₀ = 0.1910
D ₅₀ = 0.1691	D ₃₀ = 0.1346	D ₁₅ = 0.1092
D ₁₀ = 0.0976	C _u = 1.96	C _c = 0.97
<u>Classification</u>		
USCS= SP-SM	AASHTO= A-3	
<u>Remarks</u>		
Moisture Content: 2.4%		

Location: TP-2

Sample Number: Bulk

Depth: 1-4'

Date: 09/30/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson

Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

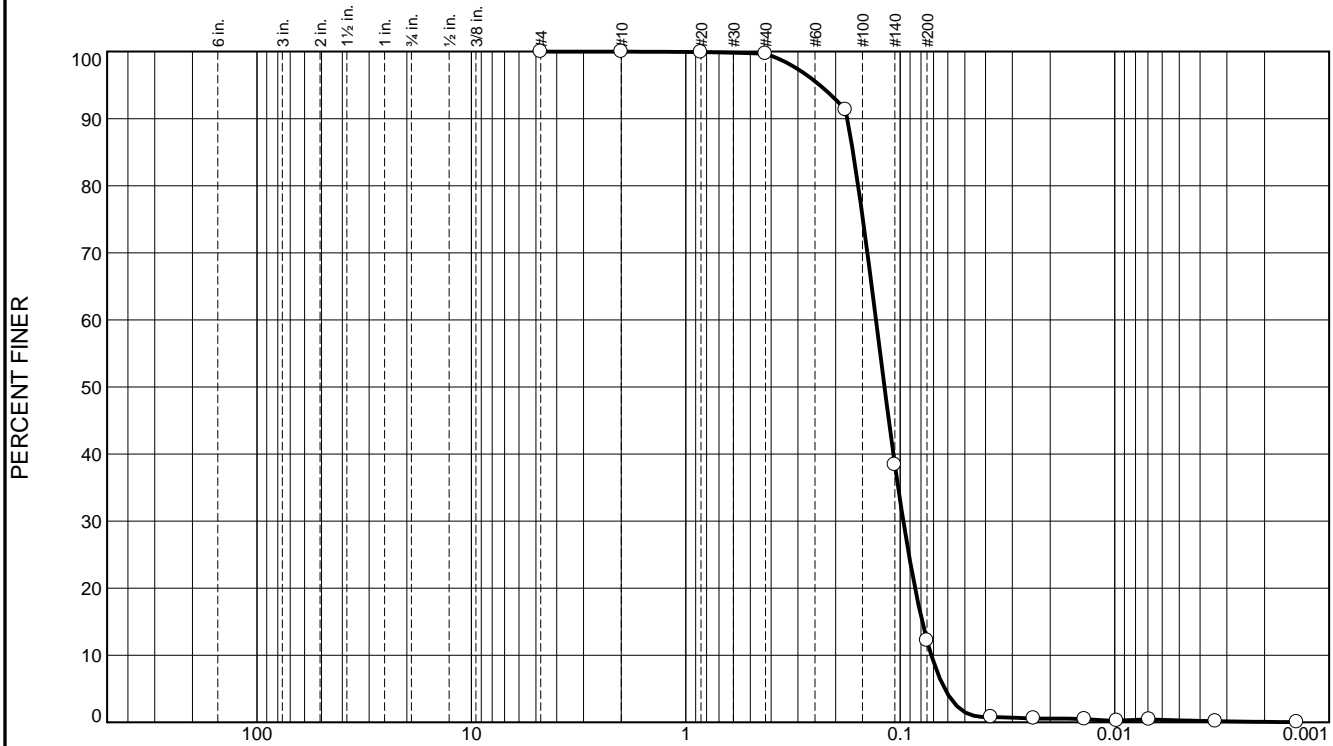
Lab No. 18184-02

Tested By: MES/CAG

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	87.5	12.1	0.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.7		
#80	91.3		
#140	38.4		
#200	12.2		
0.0377 mm.	0.8		
0.0239 mm.	0.6		
0.0138 mm.	0.5		
0.0098 mm.	0.2		
0.0069 mm.	0.4		
0.0034 mm.	0.2		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
silty sand		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.1767	D ₈₅ = 0.1660	D ₆₀ = 0.1298
D ₅₀ = 0.1185	D ₃₀ = 0.0969	D ₁₅ = 0.0789
D ₁₀ = 0.0716	C _u = 1.81	C _c = 1.01
<u>Classification</u>		
USCS= SM	AASHTO= A-2-4(0)	
<u>Remarks</u>		
Moisture Content: 23.5%		

Location: TP-3

Sample Number: Bulk

Depth: 7-10'

Date: 09/30/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson

Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

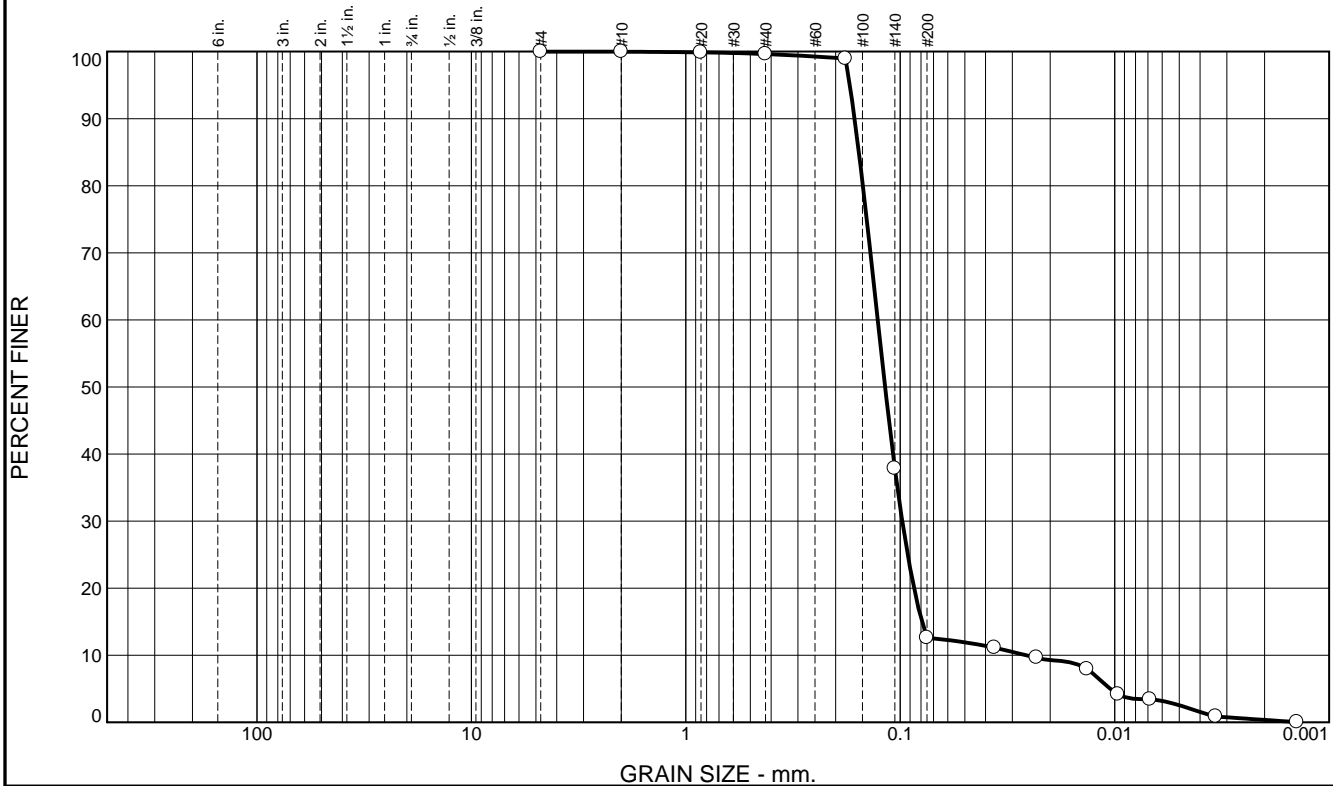
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Tested By: MES/CAG

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.4	87.0	12.2	0.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.6		
#80	99.0		
#140	37.8		
#200	12.6		
0.036 mm.	11.1		
0.0232 mm.	9.6		
0.0135 mm.	7.9		
0.0096 mm.	4.2		
0.0068 mm.	3.4		
0.0034 mm.	0.9		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
silty sand		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.1632	D ₈₅ = 0.1559	D ₆₀ = 0.1274
D ₅₀ = 0.1177	D ₃₀ = 0.0980	D ₁₅ = 0.0792
D ₁₀ = 0.0258	C _u = 4.94	C _c = 2.92
<u>Classification</u>		
USCS= SM	AASHTO= A-2-4(0)	
<u>Remarks</u>		
Moisture Content: 21.7%		

Location: TP-4

Sample Number: Bulk

Depth: 4.5-9.5'

Date: 09/30/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson

Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

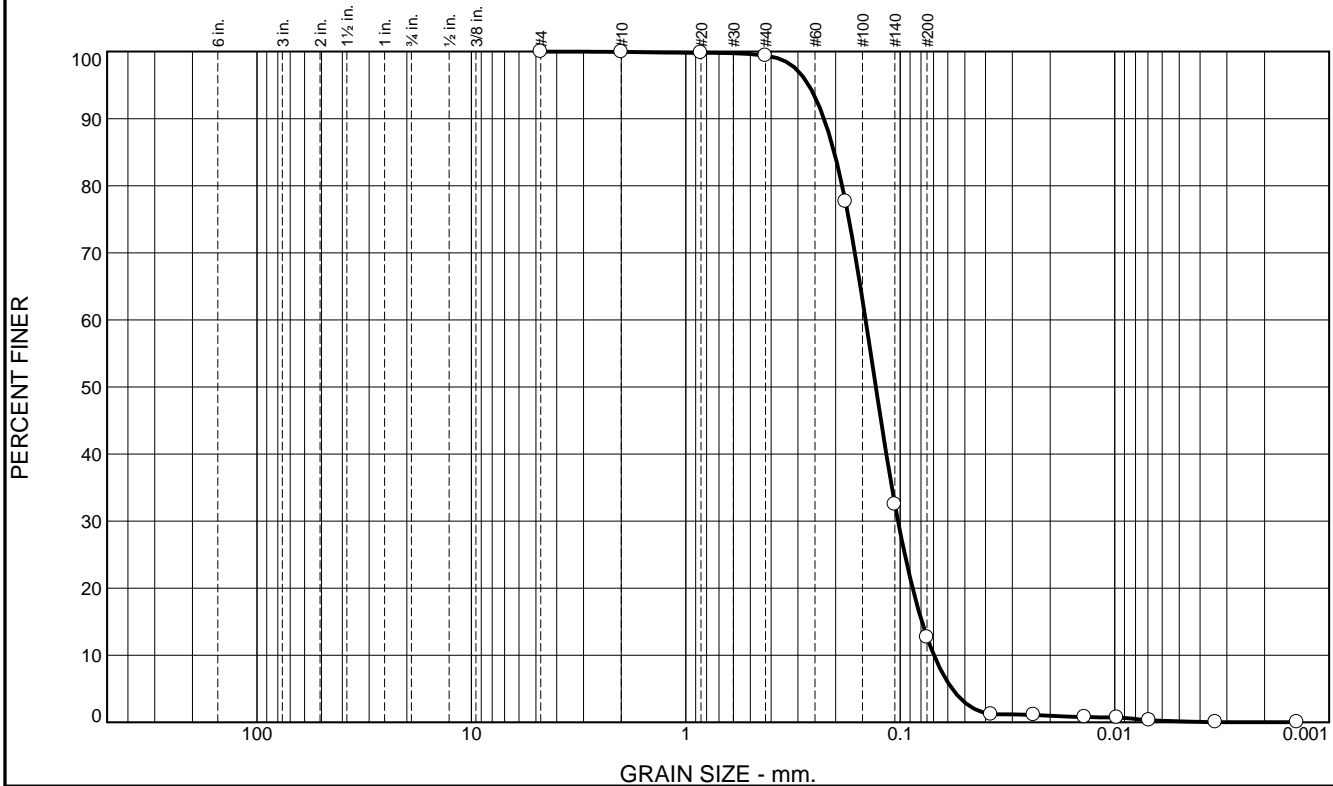
Lab No. 18184-04

Tested By: MES/CAG

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.5	86.7	12.7	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	99.8		
#40	99.4		
#80	77.6		
#140	32.5		
#200	12.7		
0.0375 mm.	1.2		
0.0239 mm.	1.1		
0.0138 mm.	0.8		
0.0098 mm.	0.7		
0.0069 mm.	0.3		
0.0034 mm.	0.0		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
silty sand		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 0.2267	D ₈₅ = 0.2032	D ₆₀ = 0.1451
D ₅₀ = 0.1300	D ₃₀ = 0.1025	D ₁₅ = 0.0792
D ₁₀ = 0.0696	C _u = 2.08	C _c = 1.04
<u>Classification</u>		
USCS= SM	AASHTO= A-2-4(0)	
<u>Remarks</u>		
Moisture Content: 13.1%		

Location: TP-5
Sample Number: Bulk

Depth: 1-4.5'

Date: 09/30/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

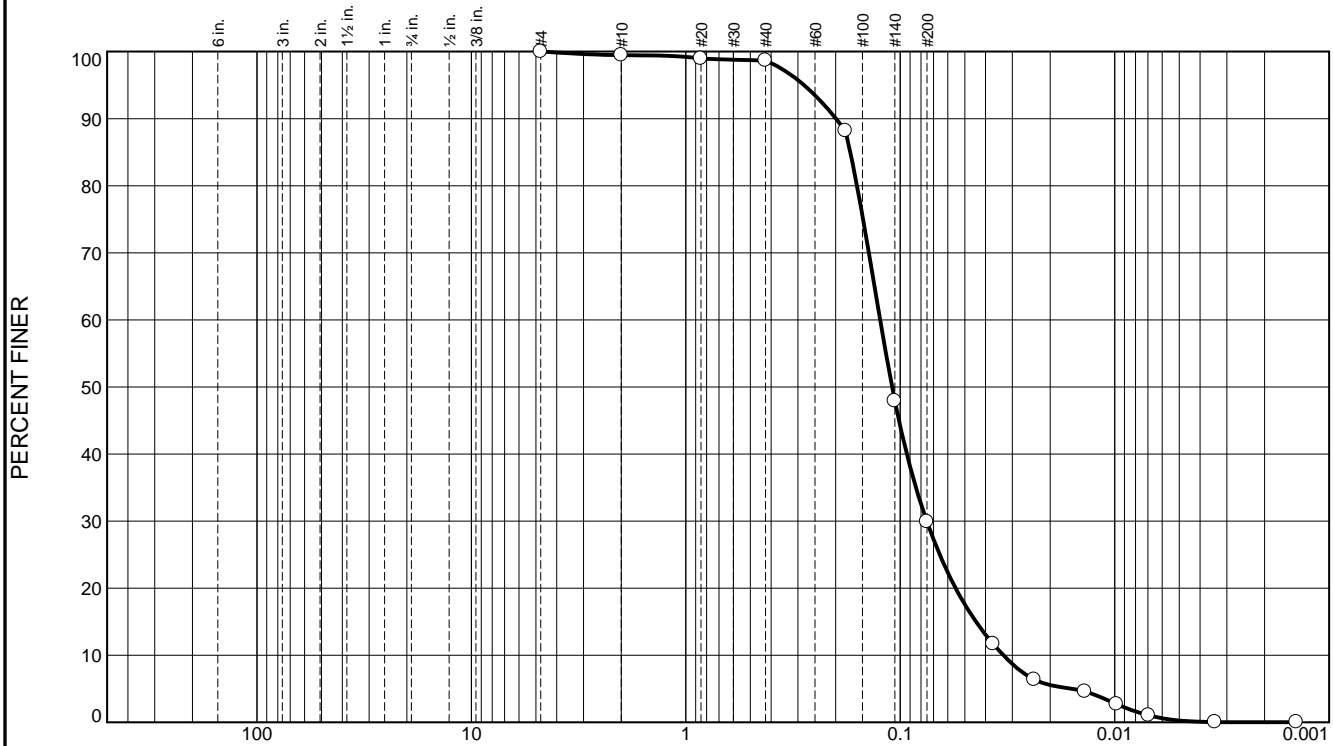
Lab No. 18184-05

Tested By: MES/CAG

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.5	0.8	68.8	29.9	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.5		
#20	99.0		
#40	98.7		
#80	88.2		
#140	47.9		
#200	29.9		
0.0369 mm.	11.7		
0.0237 mm.	6.4		
0.0138 mm.	4.6		
0.0098 mm.	2.7		
0.0070 mm.	1.0		
0.0034 mm.	0.0		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
silty sand		
<u>Atterberg Limits</u>		
PL= NP	LL= NV	PI= NP
<u>Coefficients</u>		
D ₉₀ = 0.1994	D ₈₅ = 0.1709	D ₆₀ = 0.1241
D ₅₀ = 0.1092	D ₃₀ = 0.0752	D ₁₅ = 0.0444
D ₁₀ = 0.0330	C _u = 3.76	C _c = 1.38
<u>Classification</u>		
USCS= SM	AASHTO= A-2-4(0)	
<u>Remarks</u>		
Moisture Content: 32.9%		

Location: B-6
Sample Number: S-2 Depth: 5-7'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

Lab No. 18238-01

Tested By: CAG/MES

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	1.3	26.7	71.7	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.7		
#20	99.2		
#40	98.4		
#80	94.6		
#140	83.8		
#200	71.7		
0.0356 mm.	23.0		
0.0232 mm.	13.8		
0.0136 mm.	10.0		
0.0097 mm.	4.6		
0.0069 mm.	2.8		
0.0034 mm.	0.0		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
silt with sand		
<u>Atterberg Limits</u>		
PL= NP	LL= NV	PI= NP
<u>Coefficients</u>		
D ₉₀ = 0.1381	D ₈₅ = 0.1113	D ₆₀ = 0.0620
D ₅₀ = 0.0540	D ₃₀ = 0.0406	D ₁₅ = 0.0264
D ₁₀ = 0.0135	C _u = 4.58	C _c = 1.97
<u>Classification</u>		
USCS= ML	AASHTO= A-4(0)	
<u>Remarks</u>		
Moisture Content: 18.4%		

Location: B-7
Sample Number: S-1 Depth: 0-2'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

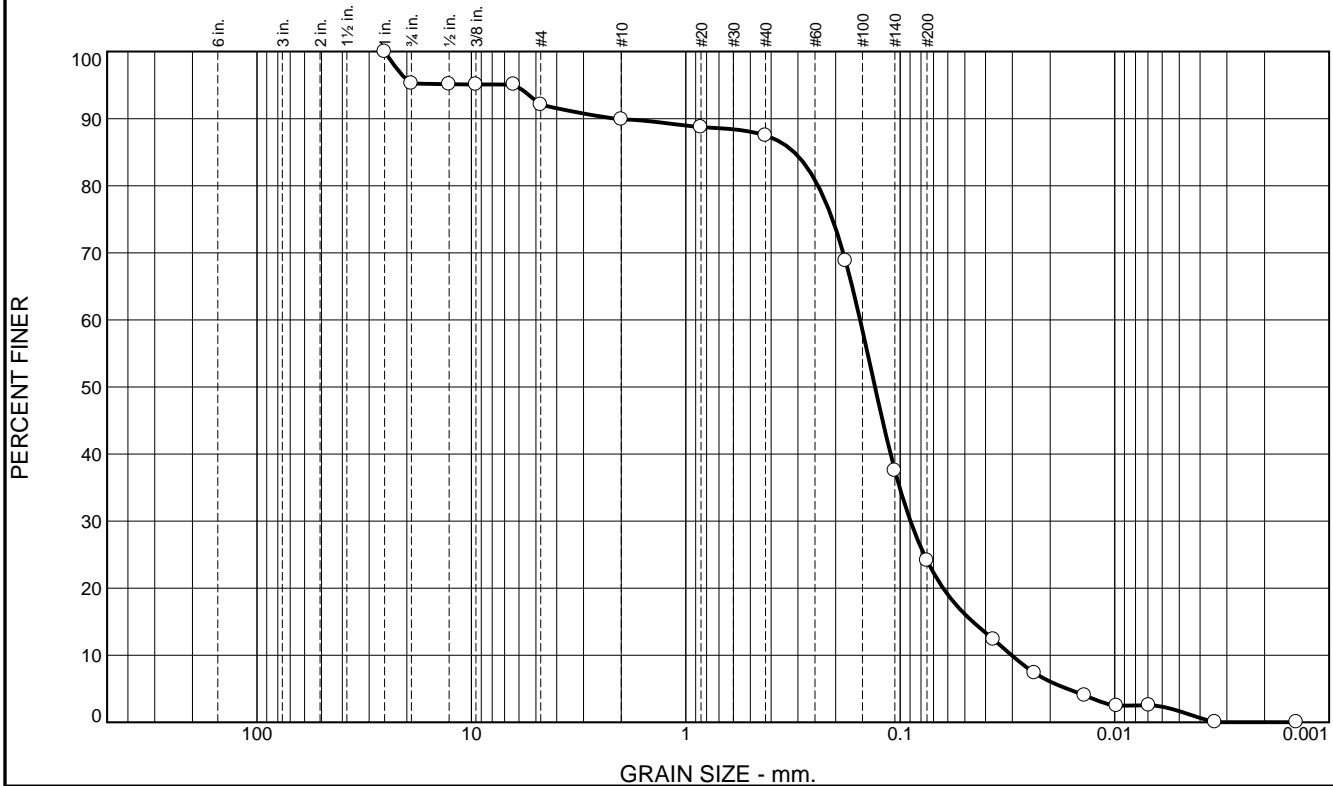
Lab No. 18238-02

Tested By: CAG/MES

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.7	3.2	2.2	2.4	63.4	24.1	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	95.3		
1/2"	95.1		
3/8"	95.1		
1/4"	95.1		
#4	92.1		
#10	89.9		
#20	88.7		
#40	87.5		
#80	68.8		
#140	37.5		
#200	24.1		
0.0368 mm.	12.4		
0.0237 mm.	7.4		
0.0138 mm.	4.0		
0.0098 mm.	2.5		
0.0069 mm.	2.6		
0.0034 mm.	0.0		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
silty sand		
<u>Atterberg Limits</u>		
PL= NP	LL= NV	PI= NP
<u>Coefficients</u>		
D ₉₀ = 2.1326	D ₈₅ = 0.3122	D ₆₀ = 0.1539
D ₅₀ = 0.1312	D ₃₀ = 0.0897	D ₁₅ = 0.0459
D ₁₀ = 0.0302	C _u = 5.09	C _c = 1.73
<u>Classification</u>		
USCS= SM	AASHTO= A-2-4(0)	
<u>Remarks</u>		
Moisture Content: 14.2%		

Location: B-8
Sample Number: S-1 Depth: 0-2'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

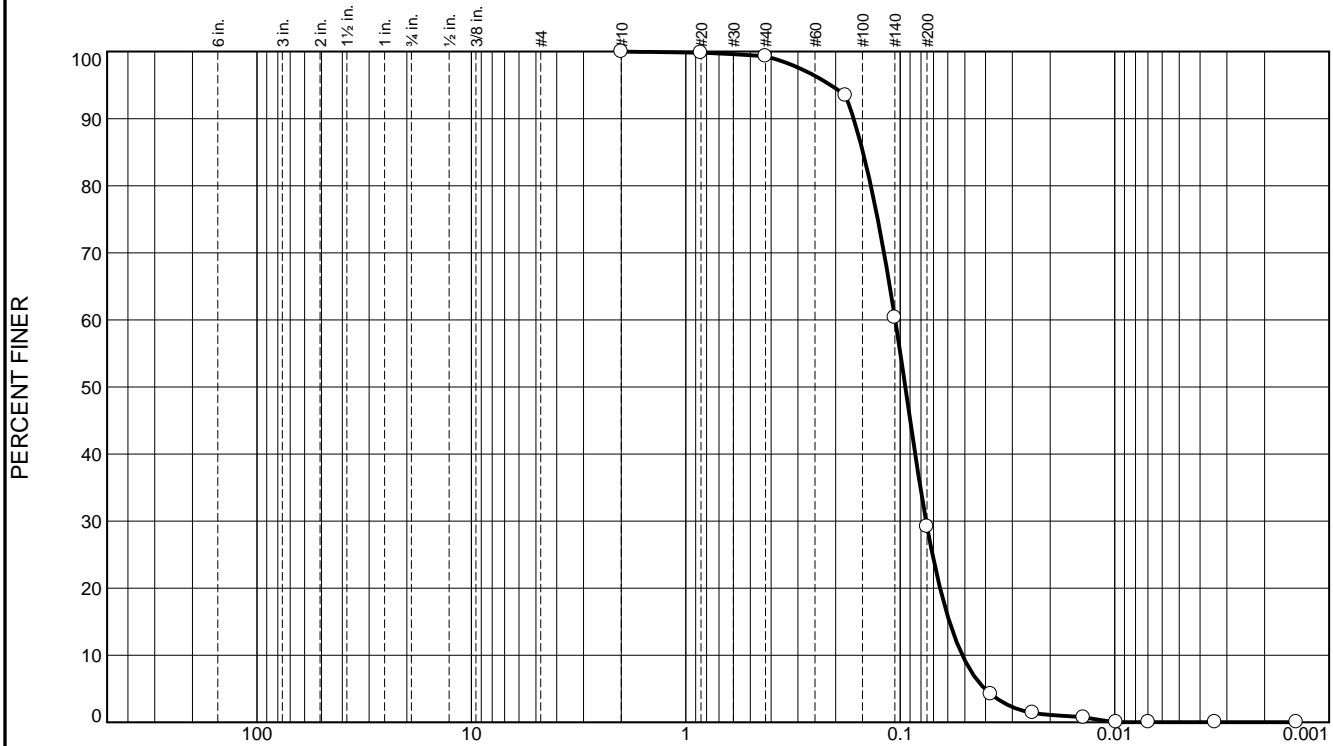
Lab No. 18238-03

Tested By: CAG/MES

Checked By: MTG

MTG

Particle Size Distribution Report



GRAIN SIZE - mm.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.7	70.1	29.2	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.8		
#40	99.3		
#80	93.5		
#140	60.3		
#200	29.2		
0.0378 mm.	4.2		
0.0241 mm.	1.4		
0.0140 mm.	0.7		
0.0098 mm.	0.0		
0.0070 mm.	0.0		
0.0034 mm.	0.0		
0.0014 mm.	0.0		

* (no specification provided)

Soil Description

silty sand

Atterberg Limits

PL= NP

LL= NV

PI= NP

Coefficients

D₉₀= 0.1649

D₈₅= 0.1492

D₆₀= 0.1056

D₅₀= 0.0948

D₃₀= 0.0758

D₁₅= 0.0590

D₁₀= 0.0514

C_u= 2.05

C_c= 1.06

Classification

USCS= SM

AASHTO= A-2-4(0)

Remarks

Moisture Content: 12.5%

Location: B-9

Sample Number: S-2

Depth: 5-7'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson

Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

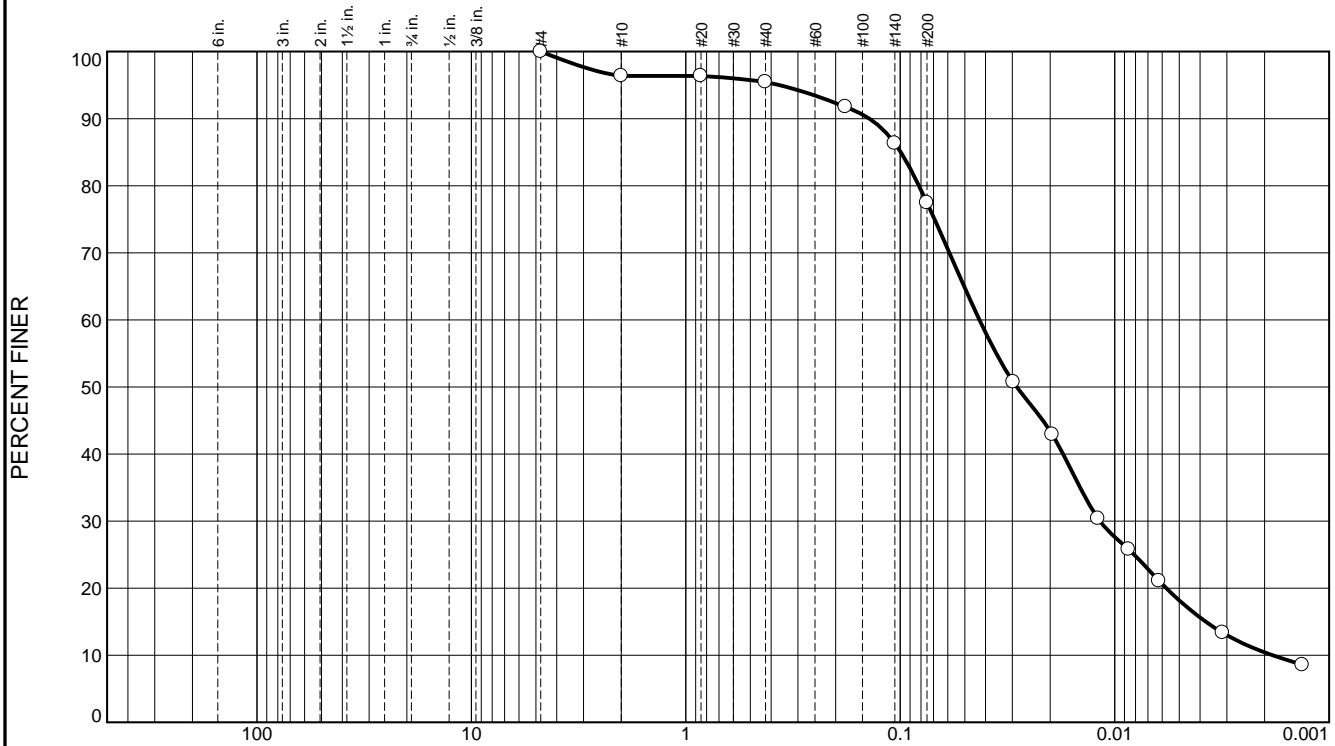
Lab No. 18238-04

Tested By: CAG/MES

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.6	0.9	18.0	67.1	10.4

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	96.4		
#20	96.4		
#40	95.5		
#80	91.7		
#140	86.3		
#200	77.5		
0.0297 mm.	50.7		
0.0195 mm.	42.9		
0.0120 mm.	30.4		
0.0086 mm.	25.8		
0.0062 mm.	21.1		
0.0031 mm.	13.4		
0.0013 mm.	8.6		

* (no specification provided)

<u>Soil Description</u>		
lean clay with sand		
<u>Atterberg Limits</u>		
PL= 21.3	LL= 30.8	PI= 9.5
<u>Coefficients</u>		
D ₉₀ = 0.1393	D ₈₅ = 0.0995	D ₆₀ = 0.0428
D ₅₀ = 0.0286	D ₃₀ = 0.0117	D ₁₅ = 0.0038
D ₁₀ = 0.0018	C _u = 23.31	C _c = 1.75
<u>Classification</u>		
USCS= CL	AASHTO= A-4(7)	
<u>Remarks</u>		
Moisture Content: 30.6%		

Location: B-10
Sample Number: S-4

Depth: 15-17'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

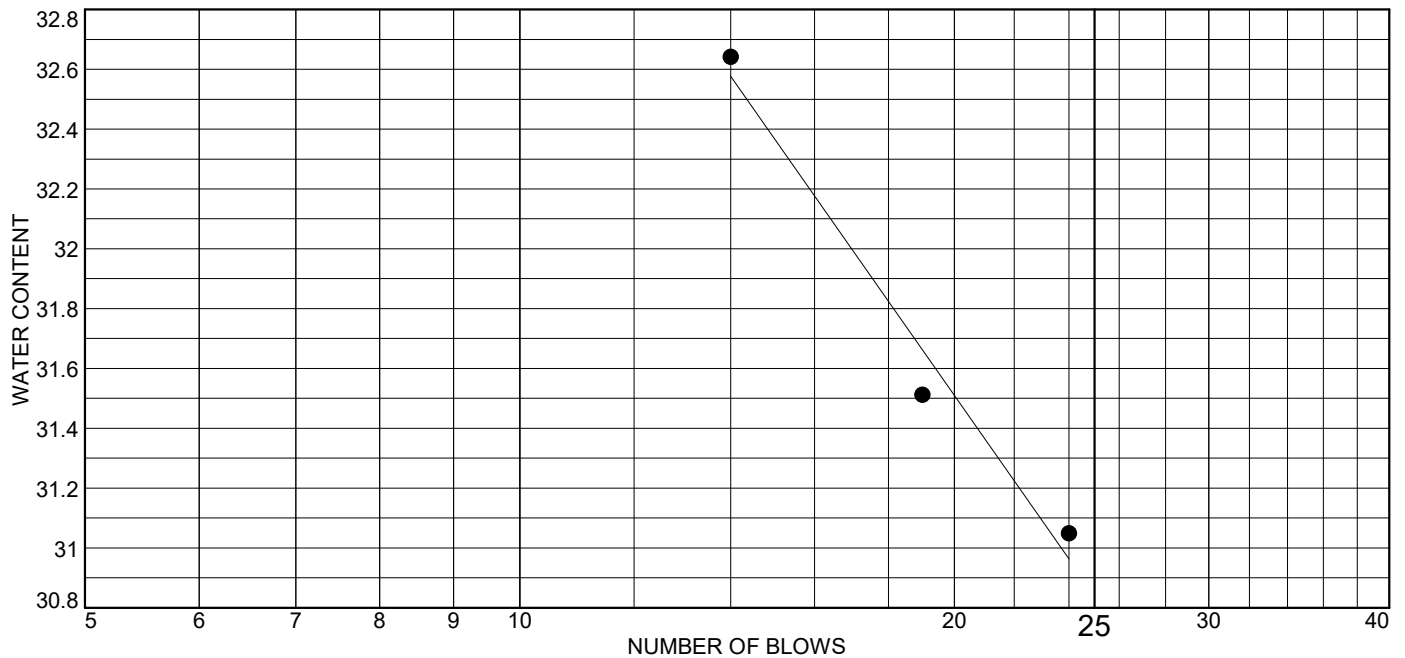
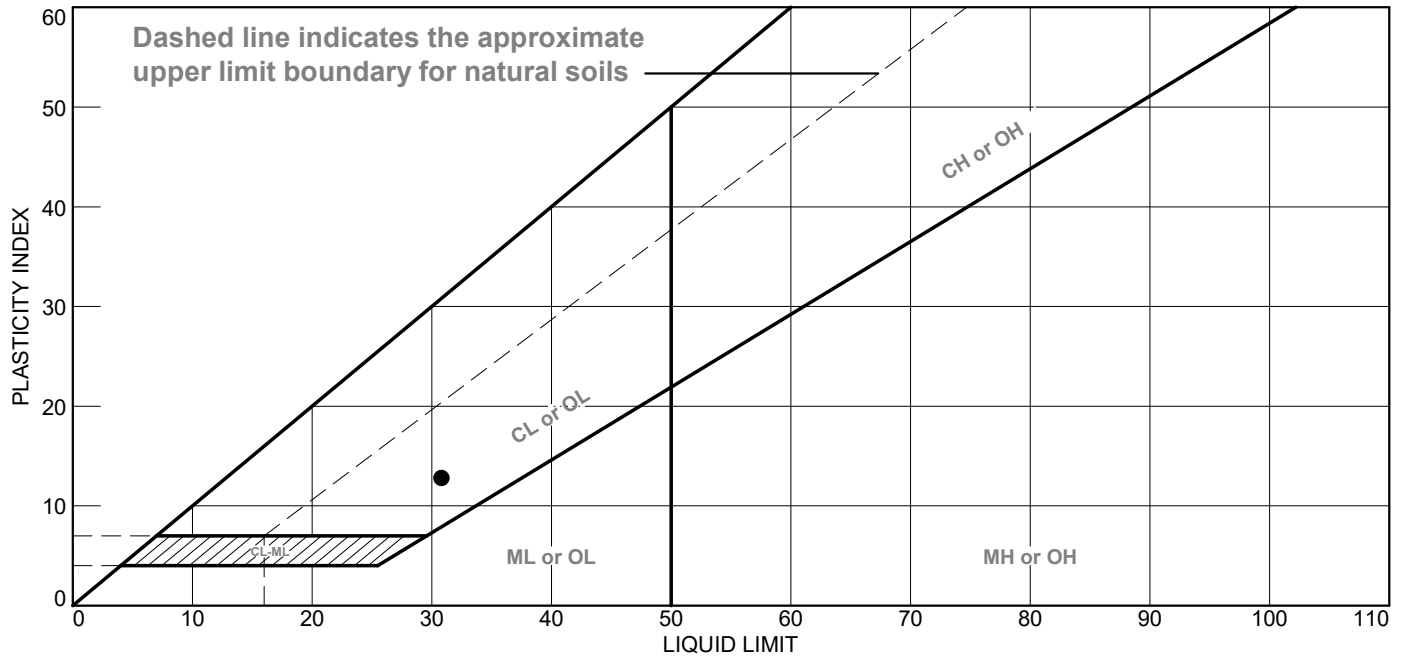
Lab No. 18238-05

Tested By: CAG/MES

Checked By: MTG

MTG

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
•	lean clay with sand	30.8	18.0	12.8	95.5	77.5	CL

Project No. 1569-019 **Client:** McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME
Location: B-10
Sample Number: S-4 **Depth:** 15-17'

R.W. Gillespie & Associates, Inc.

Biddeford, Maine

Remarks:

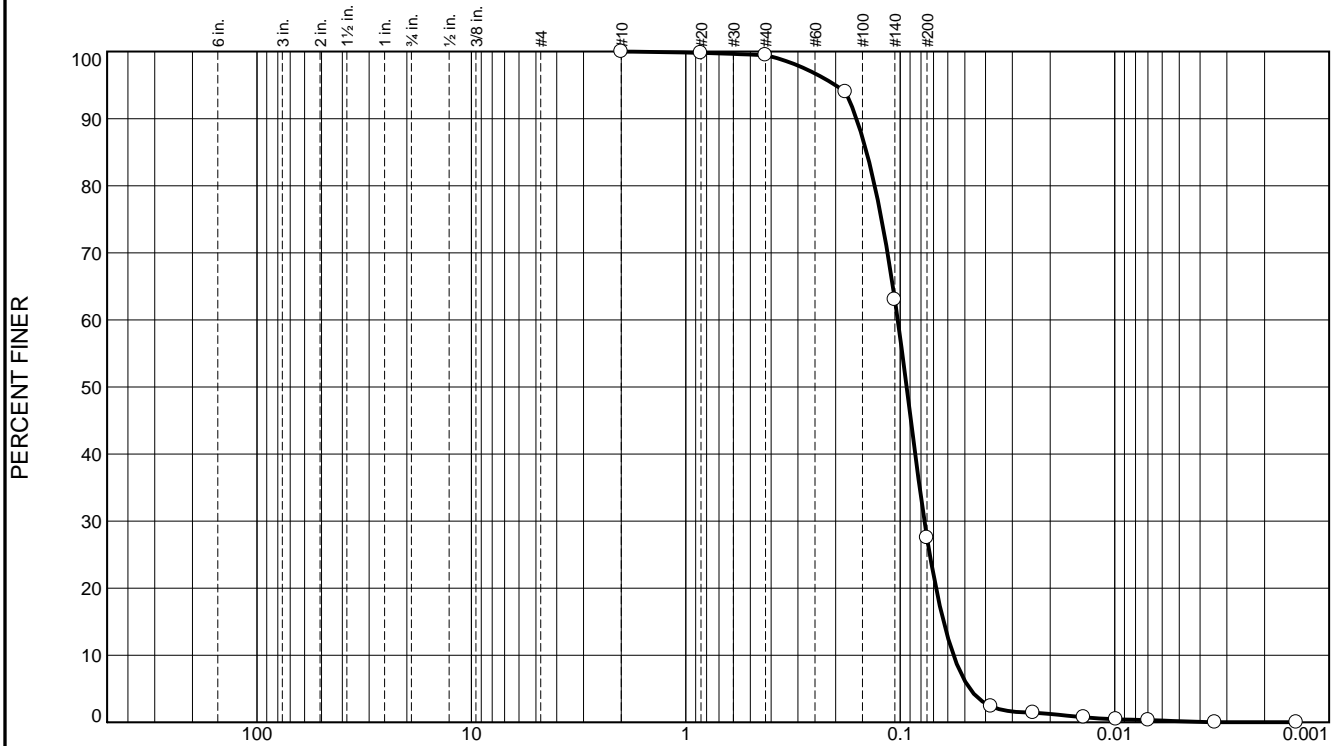
Lab No. 18238-05

Tested By: CAG

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.5	72.0	27.5	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.8		
#40	99.5		
#80	94.0		
#140	63.0		
#200	27.5		
0.0378 mm.	2.4		
0.0240 mm.	1.4		
0.0139 mm.	0.7		
0.0099 mm.	0.5		
0.0070 mm.	0.3		
0.0034 mm.	0.0		
0.0014 mm.	0.0		

* (no specification provided)

<u>Soil Description</u>		
silty sand		
<u>Atterberg Limits</u>		
PL= NP	LL= NV	PI= NP
<u>Coefficients</u>		
D ₉₀ = 0.1601	D ₈₅ = 0.1435	D ₆₀ = 0.1028
D ₅₀ = 0.0934	D ₃₀ = 0.0771	D ₁₅ = 0.0629
D ₁₀ = 0.0565	C _u = 1.82	C _c = 1.02
<u>Classification</u>		
USCS= SM	AASHTO= A-2-4(0)	
<u>Remarks</u>		
Moisture Content: 33.3%		

Location: B-11
Sample Number: S-3

Depth: 10-12'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

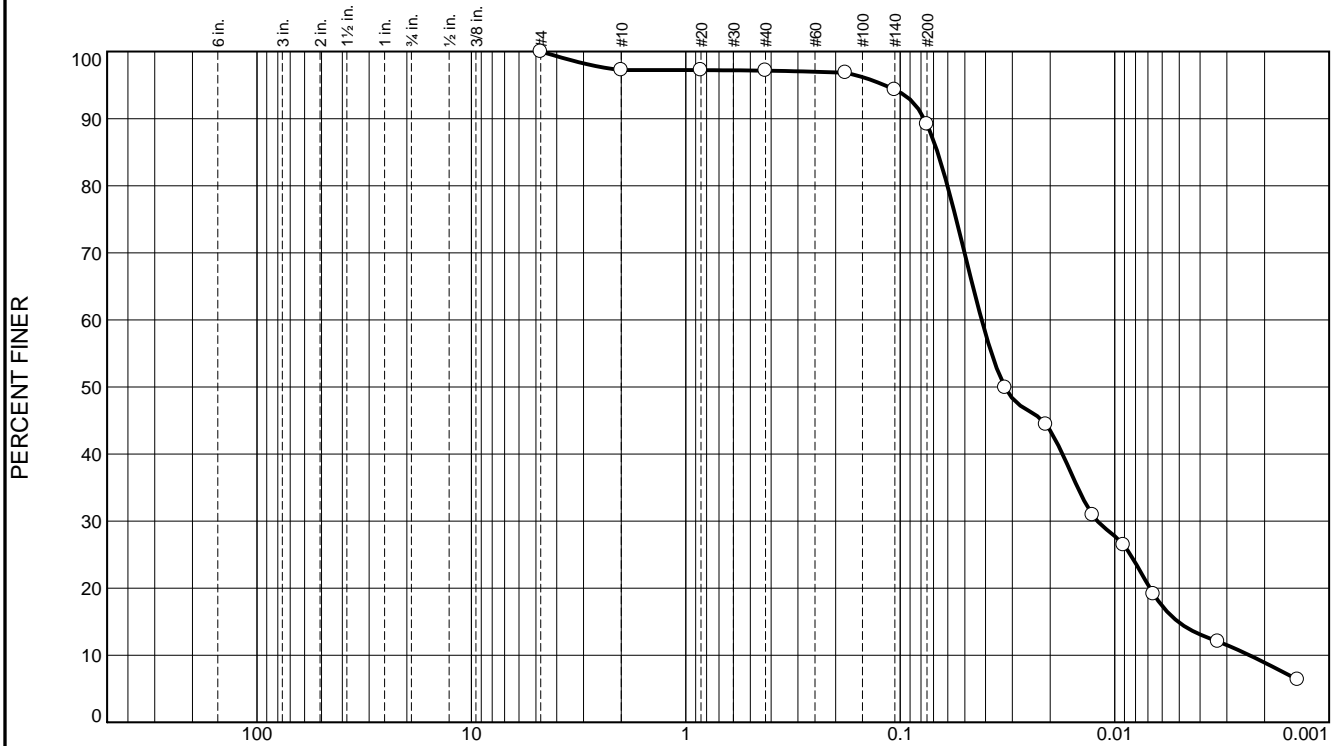
Lab No. 18238-06

Tested By: CAG/MES

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.7	0.1	8.0	80.3	8.9

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	97.3		
#20	97.2		
#40	97.2		
#80	96.8		
#140	94.3		
#200	89.2		
0.0324 mm.	49.9		
0.0209 mm.	44.4		
0.0127 mm.	30.9		
0.0091 mm.	26.4		
0.0066 mm.	19.1		
0.0033 mm.	12.0		
0.0014 mm.	6.3		

* (no specification provided)

Soil Description		
silt		
Atterberg Limits		
PL= NP	LL= NV	PI= NP
Coefficients		
D ₉₀ = 0.0772	D ₈₅ = 0.0670	D ₆₀ = 0.0417
D ₅₀ = 0.0325	D ₃₀ = 0.0120	D ₁₅ = 0.0051
D ₁₀ = 0.0024	C _u = 17.74	C _c = 1.48
Classification		
USCS= ML	AASHTO= A-4(0)	
Remarks		
Moisture Content: 31.7%		

Location: B-12
Sample Number: S-5

Depth: 20-22'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

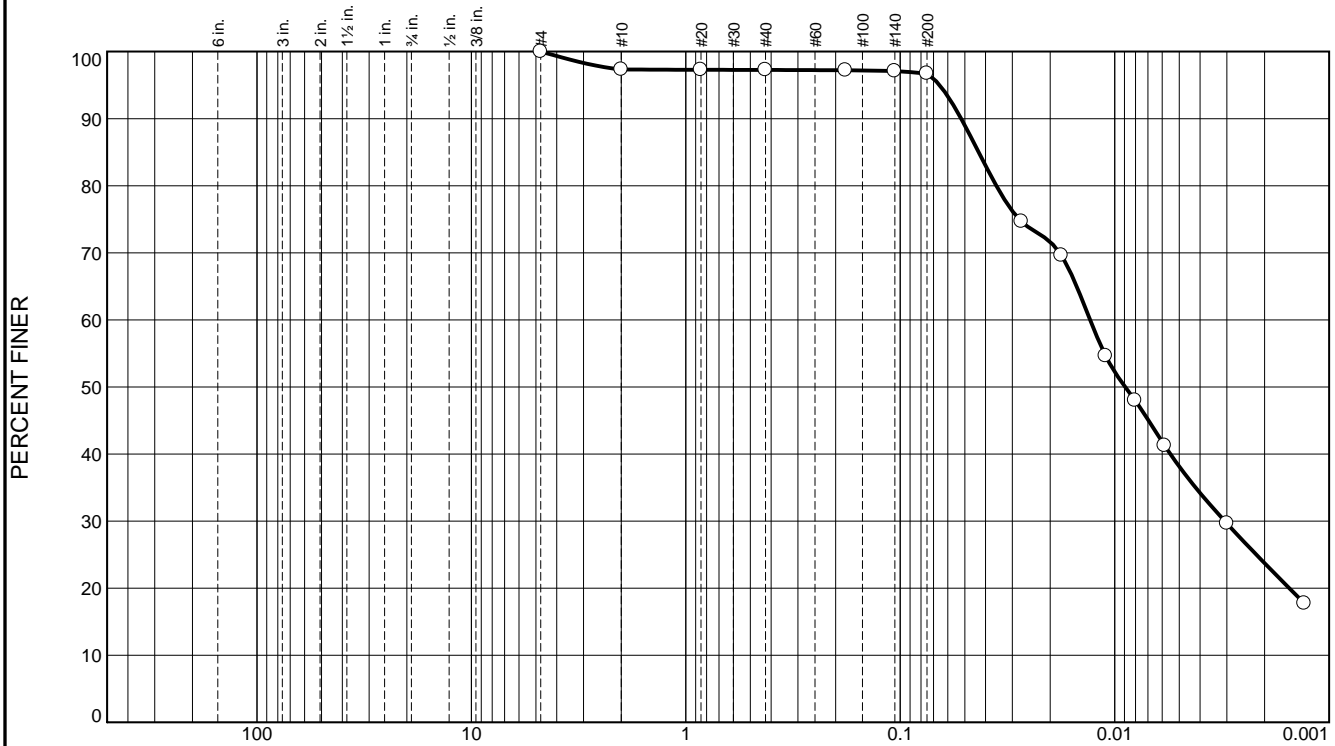
Lab No. 18238-07

Tested By: CAG/MES

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.7	0.0	0.6	73.0	23.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	97.3		
#20	97.3		
#40	97.3		
#80	97.2		
#140	97.1		
#200	96.7		
0.0272 mm.	74.7		
0.0177 mm.	69.6		
0.0110 mm.	54.6		
0.0080 mm.	48.0		
0.0058 mm.	41.2		
0.0030 mm.	29.6		
0.0013 mm.	17.7		

* (no specification provided)

<u>Soil Description</u>		
lean clay		
<u>Atterberg Limits</u>		
PL= 19.2	LL= 27.5	PI= 8.3
<u>Coefficients</u>		
D ₉₀ = 0.0520	D ₈₅ = 0.0431	D ₆₀ = 0.0130
D ₅₀ = 0.0089	D ₃₀ = 0.0031	D ₁₅ =
D ₁₀ =	C _u =	C _c =
<u>Classification</u>		
USCS= CL	AASHTO= A-4(8)	
<u>Remarks</u>		
Moisture Content: 29.7%		

Location: B-12
Sample Number: S-11 Depth: 50-52'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

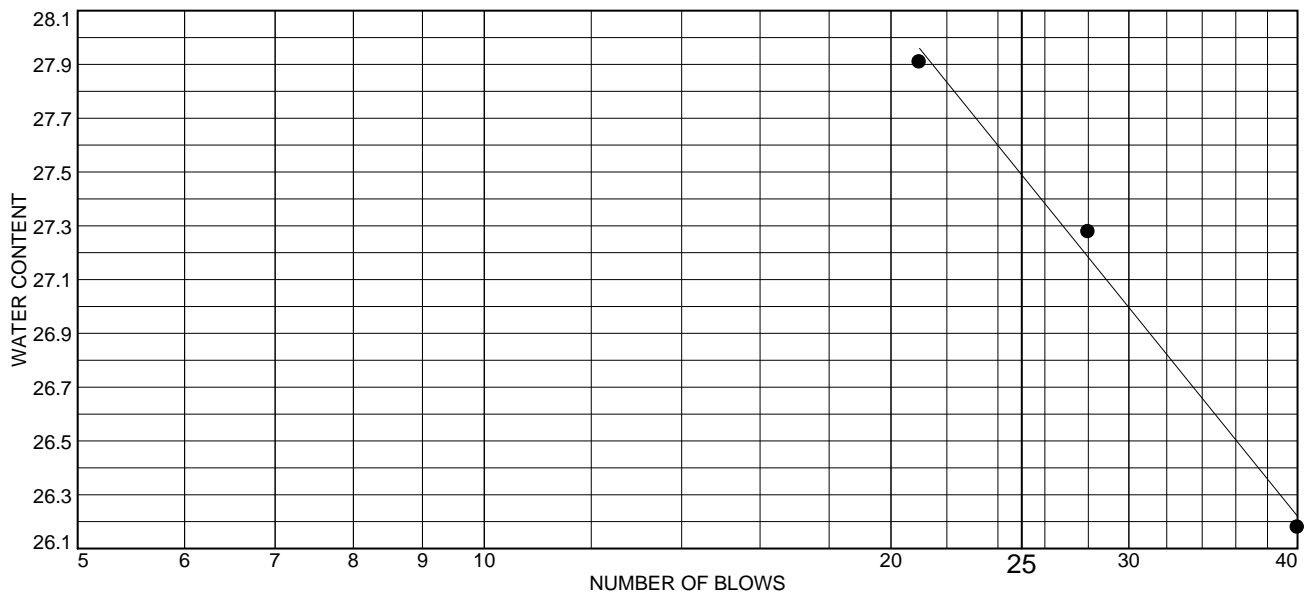
Project No: 1569-019

Lab No. 18238-08

Tested By: CAG/MES

Checked By: MTG

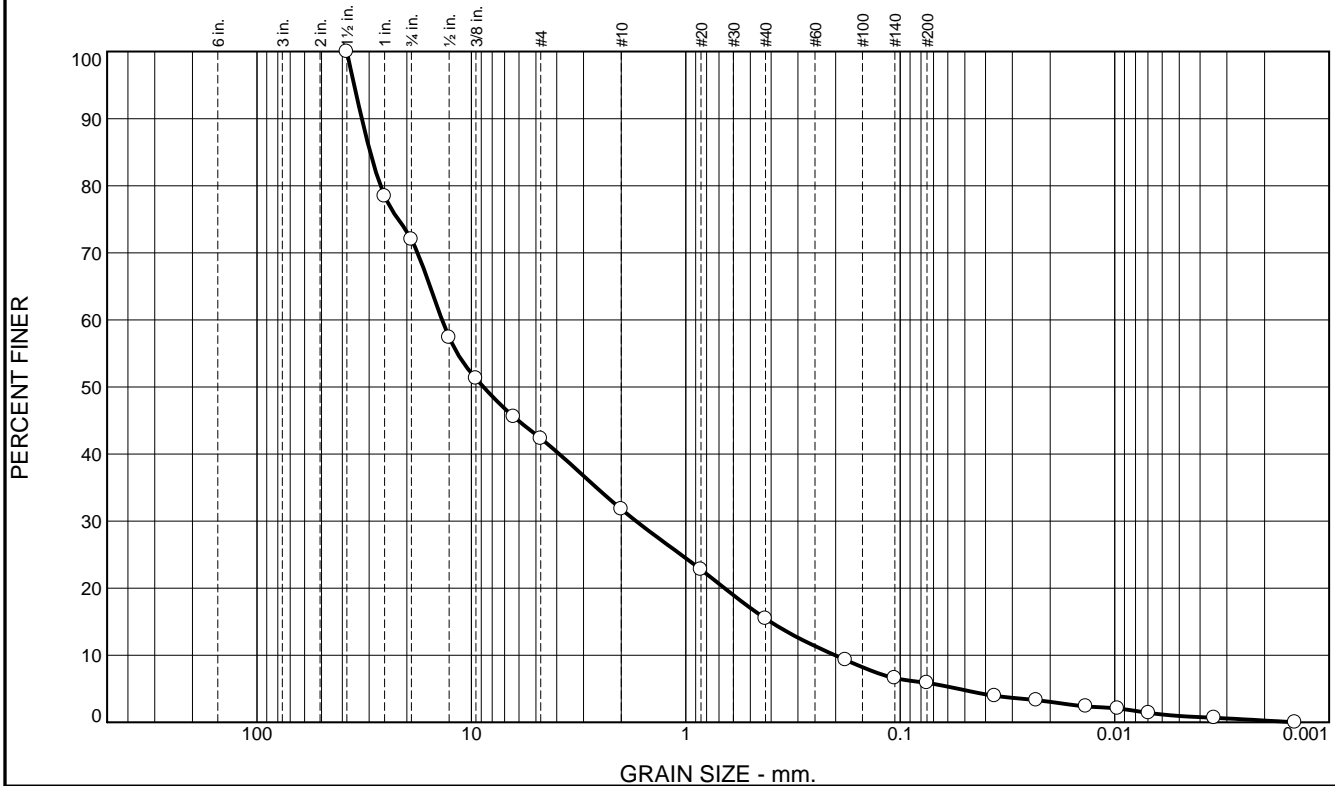
MTG



Tested By: CAG **Checked By:** MTG

MT6

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	28.0	29.7	10.5	16.3	9.6	5.6	0.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100.0		
1"	78.4		
3/4"	72.0		
1/2"	57.4		
3/8"	51.3		
1/4"	45.6		
#4	42.3		
#10	31.8		
#20	22.8		
#40	15.5		
#80	9.3		
#140	6.6		
#200	5.9		
0.0363 mm.	4.0		
0.0232 mm.	3.3		
0.0136 mm.	2.4		
0.0097 mm.	2.1		
0.0069 mm.	1.4		
0.0034 mm.	0.7		
0.0014 mm.	0.0		

* (no specification provided)

Soil Description well-graded gravel with silt and sand		
Atterberg Limits PL= NP LL= NV PI= NP		
Coefficients D ₉₀ = 32.4391 D ₈₅ = 29.6416 D ₆₀ = 13.7097 D ₅₀ = 8.7751 D ₃₀ = 1.7058 D ₁₅ = 0.4039 D ₁₀ = 0.2013 C _u = 68.09 C _c = 1.05		
Classification USCS= GW-GM AASHTO= A-1-a		
Remarks Moisture Content: 6.4%		

Location: B-13
Sample Number: S-1A

Depth: 0.3-0.6'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

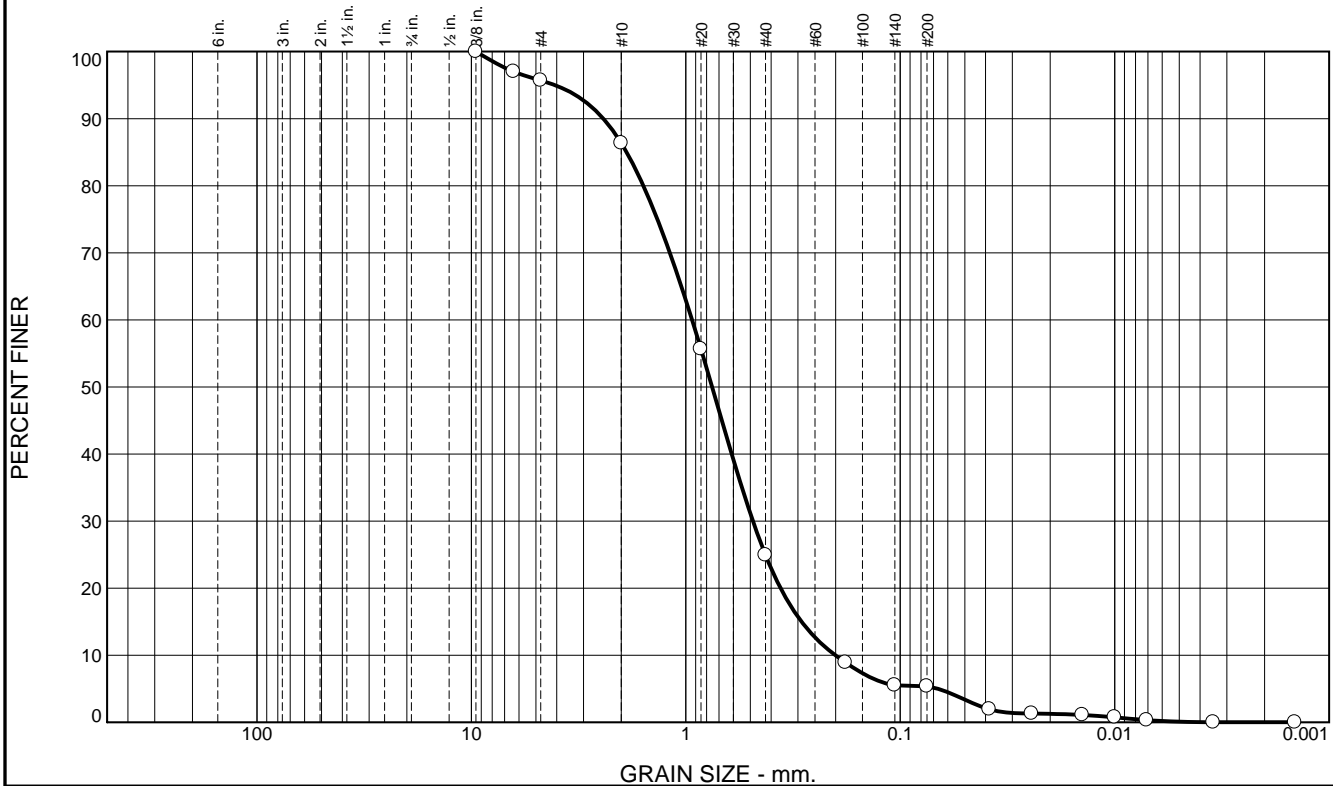
Lab No. 18238-09

Tested By: CAG/MES

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	4.3	9.3	61.5	19.5	5.4	0.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
1/4"	97.0		
#4	95.7		
#10	86.4		
#20	55.6		
#40	24.9		
#80	8.9		
#140	5.5		
#200	5.4		
0.0384 mm.	1.9		
0.0243 mm.	1.3		
0.0141 mm.	1.1		
0.0100 mm.	0.7		
0.0071 mm.	0.3		
0.0035 mm.	0.0		
0.0014 mm.	0.0		

* (no specification provided)

Soil Description

poorly graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D₉₀= 2.4236 D₈₅= 1.8881 D₆₀= 0.9354
D₅₀= 0.7540 D₃₀= 0.4865 D₁₅= 0.2886
D₁₀= 0.2008 C_u= 4.66 C_c= 1.26

Classification

USCS= SP-SM AASHTO= A-1-b

Remarks

Moisture Content: 15.4%

Location: B-13

Sample Number: S-1B

Depth: 0.6-2.3'

Date: 11/07/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson

Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

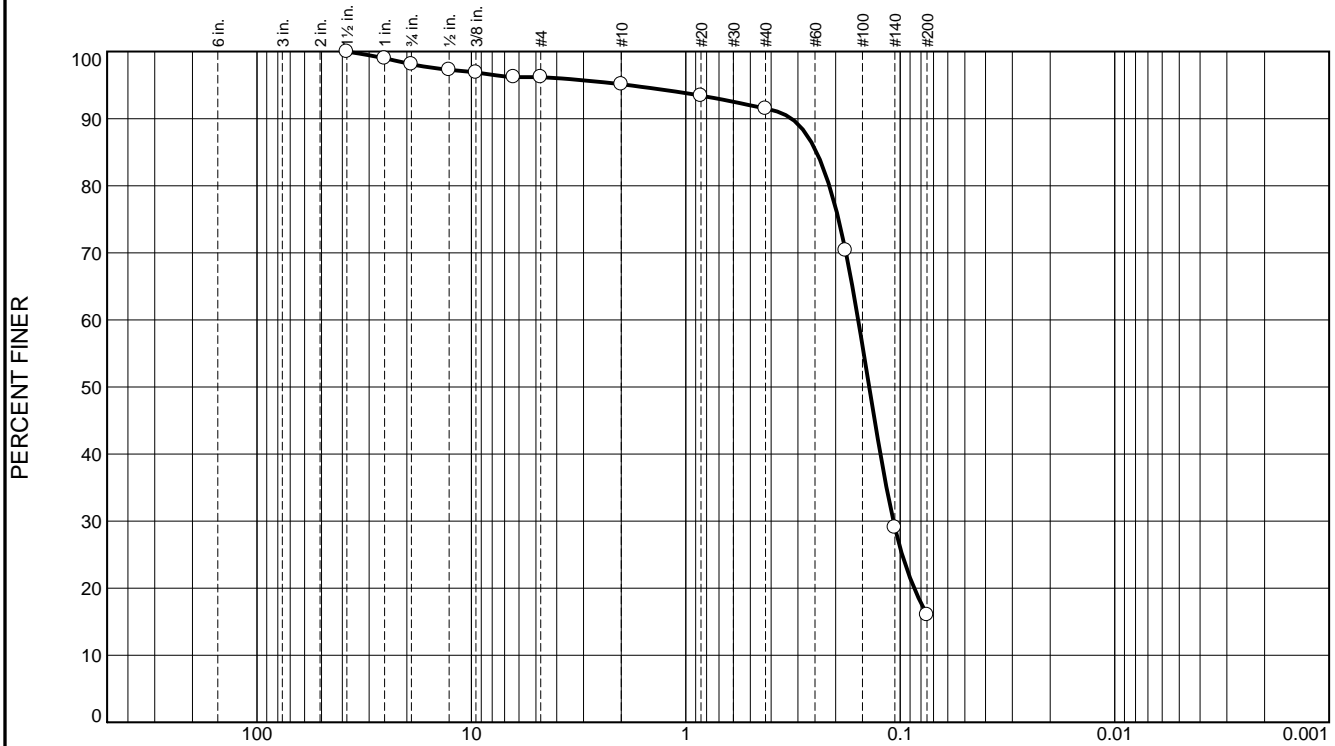
Lab No. 18238-10

Tested By: CAG/MES

Checked By: MTG

MTG

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.9	1.9	1.1	3.6	75.5	16.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100.0		
1"	99.0		
3/4"	98.1		
1/2"	97.3		
3/8"	96.9		
1/4"	96.2		
#4	96.2		
#10	95.1		
#20	93.4		
#40	91.5		
#80	70.4		
#140	29.0		
#200	16.0		

* (no specification provided)

Soil Description
 silty sand

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 0.3209 D₈₅= 0.2455 D₆₀= 0.1571
 D₅₀= 0.1396 D₃₀= 0.1077 D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-2-4(0)

Remarks
 As Tested Moisture Content: 2.9%

Location: B-6
Sample Number: Bulk Depth: 1-5'

Date: 11/05/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

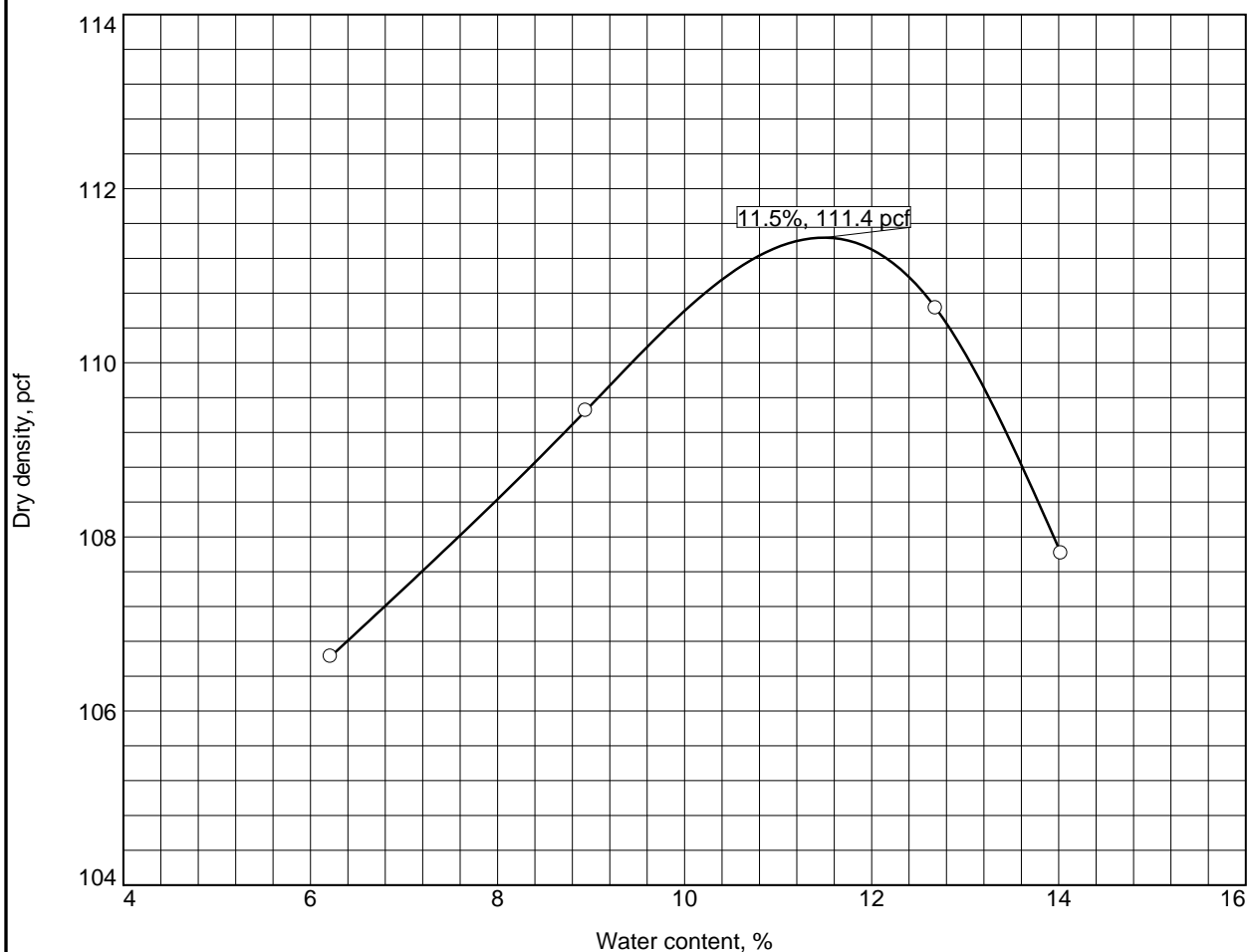
Lab No. 18238-11

Tested By: AFH/JMT

Checked By: MTG

MTG

ZAV for
Sp.G. =
2.65



Test specification: ASTM D 1557-02 Method A Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev./ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
1-5'	SM	A-2-4(0)					3.8	16.0

ROCK CORRECTED TEST RESULTS		MATERIAL DESCRIPTION
Maximum dry density = 111.4 pcf		silty sand
Optimum moisture = 11.5 %		
Project No. 1569-019 Client: McFarland Johnson Project: Proposed T Hangar Building - Auburn-Lewiston Airport Auburn, ME Location: B-6 Sample Number: Bulk		Remarks:
R.W. Gillespie & Associates, Inc. Biddeford, Maine		
		Lab No. 18238-11

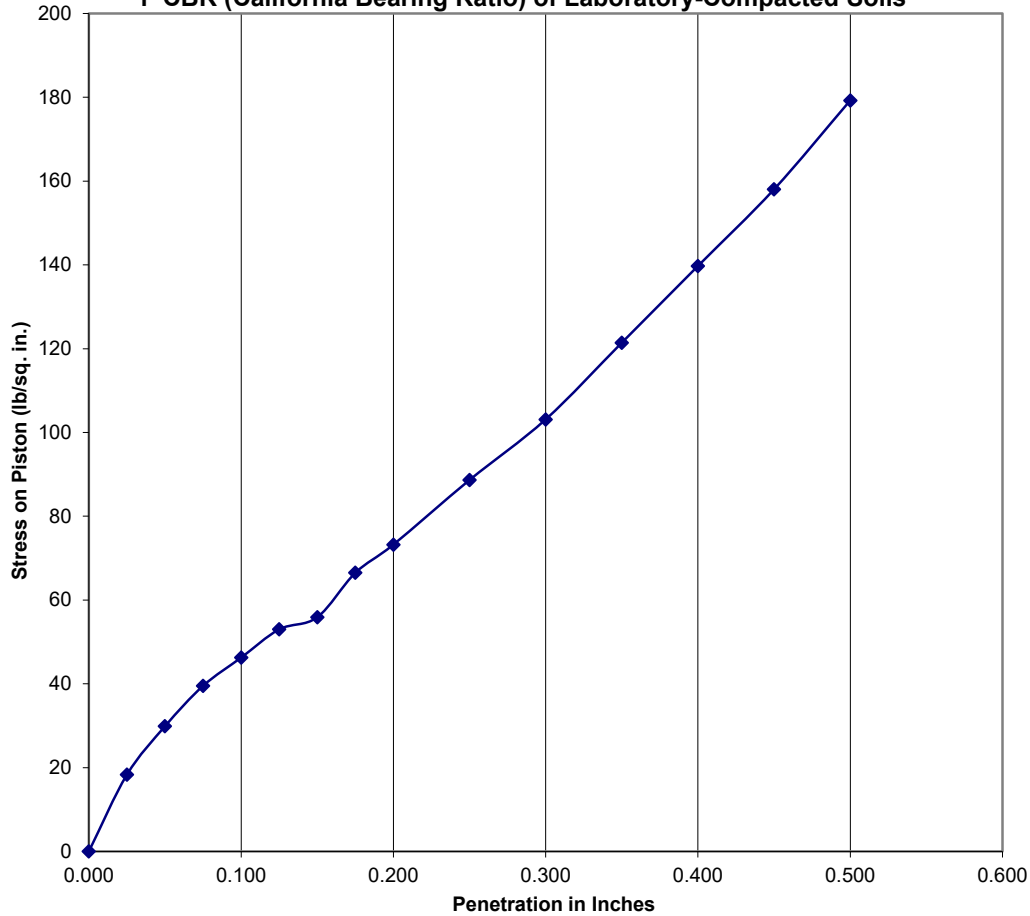
Tested By: JMT **Checked By:** MTG

MT6

Lab California Bearing Ratio

ASTM D 1883

1' CBR (California Bearing Ratio) of Laboratory-Compacted Soils

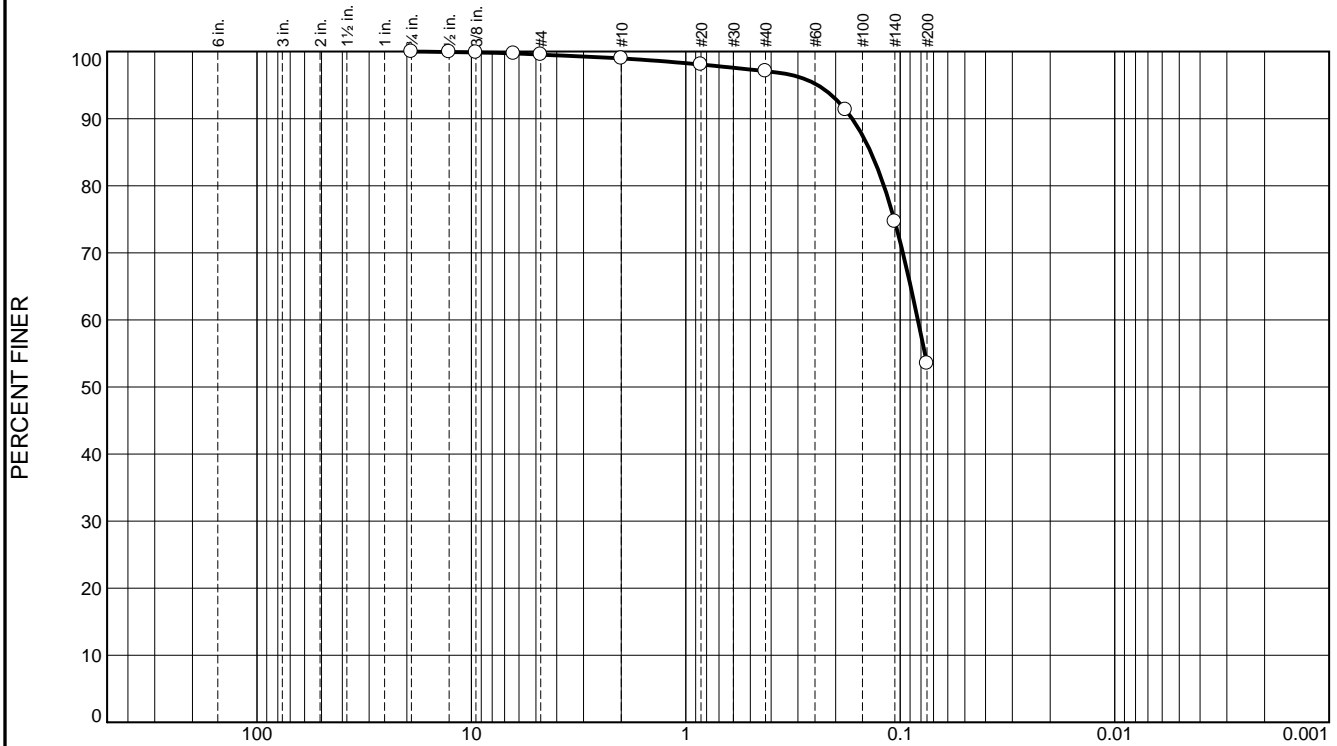


Bearing Ratio = 4.6 at 97.8% Compaction

Test Location: B-6		Sample #/Test Depth: Bulk/1'-5'	
Prep Method:	D1557	As Compacted Moisture Content:	11.6%
Curing Conditions:	Soaked	Top 1" of Test Sample Moisture Content:	23.8%
Tested Dry Density:	109.0	Sample Swell:	0%
Surcharge Weight:	10 lbs	% Retained on 19mm Sieve:	0%
Special Sample Testing Procedures or Comments from Above			
None			
Project: Proposed T Hangar Building - Auburn-Lewiston Airport		Client: McFarland Johnson	
Project #: 1569-019		Date: 11/8/2024	
Location: Auburn, ME		Sample #: 18238-11	
R. W. Gillespie & Associates			
20 Pomerleau St. Suite 100 Biddeford, ME 04005		177 Shattuck Way, Suite 1 West Newington, NH 03801	

MTB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.5	0.5	1.9	43.6	53.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	99.9		
3/8"	99.9		
1/4"	99.7		
#4	99.5		
#10	99.0		
#20	98.1		
#40	97.1		
#80	91.3		
#140	74.7		
#200	53.5		

* (no specification provided)

Soil Description
sandy silt

Atterberg Limits
PL= LL= PI=

Coefficients
D₉₀= 0.1676 D₈₅= 0.1372 D₆₀= 0.0828
D₅₀= D₃₀= D₁₅=
D₁₀= C_u= C_c=

Classification
USCS= ML AASHTO= A-4(0)

Remarks
As Tested Moisture Content: 1.4%

Location: B-7
Sample Number: Bulk Depth: 1-5'

Date: 11/05/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

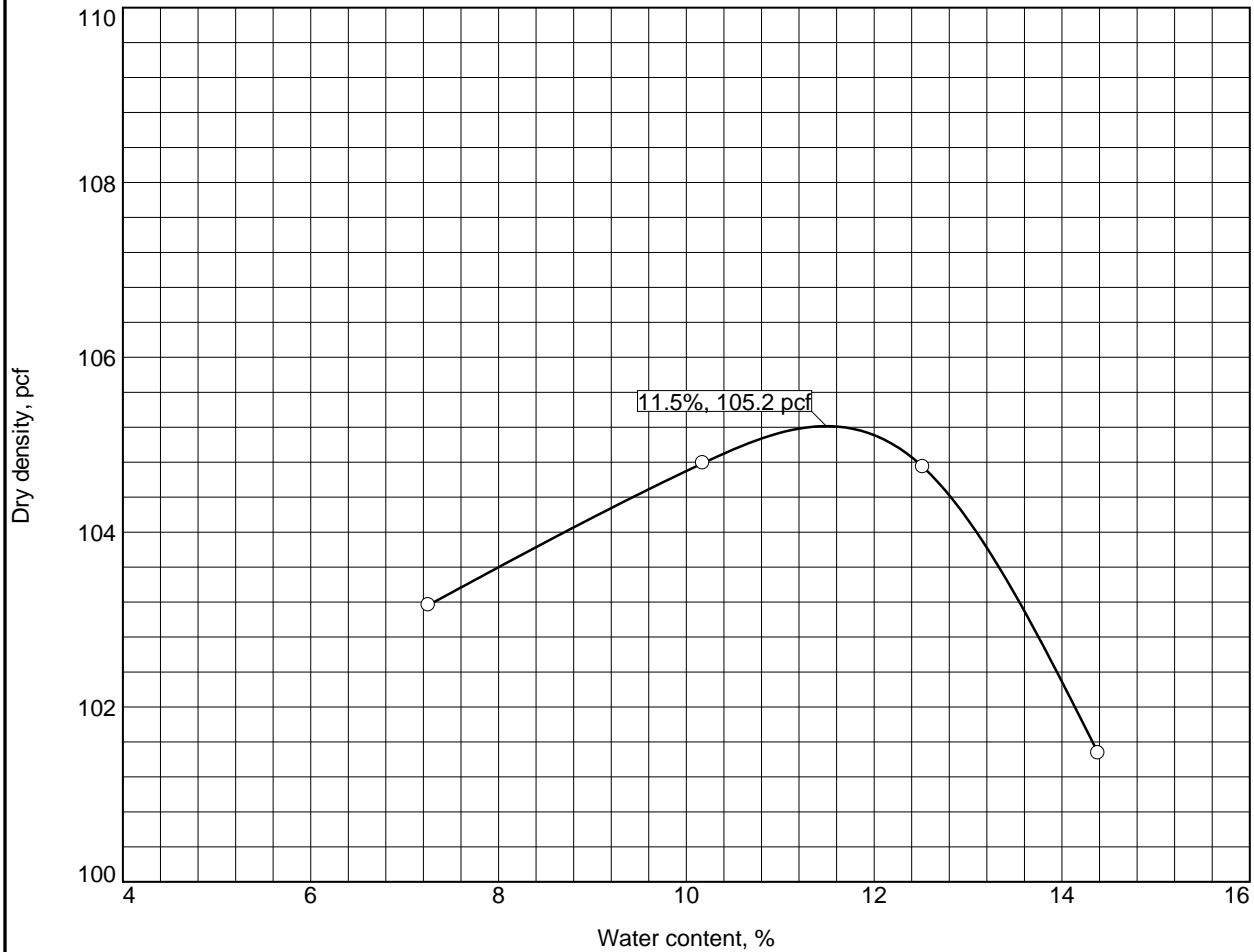
Lab No. 18238-12

Tested By: GMN Checked By: MTG

MTG

MOISTURE-DENSITY REPORT

ZAV for
Sp.G. =
2.65



Test specification: ASTM D 1557-02 Method A Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
1-5'	ML	A-4(0)					0.5	53.5

ROCK CORRECTED TEST RESULTS		MATERIAL DESCRIPTION	
Maximum dry density = 105.2 pcf		sandy silt	
Optimum moisture = 11.5 %			
Project No. 1569-019 Client: McFarland Johnson Project: Proposed T Hangar Building - Auburn-Lewiston Airport Auburn, ME <input type="radio"/> Location: B-7 Sample Number: Bulk		Remarks:	
R.W. Gillespie & Associates, Inc. Biddeford, Maine			
		Lab No. 18238-12	

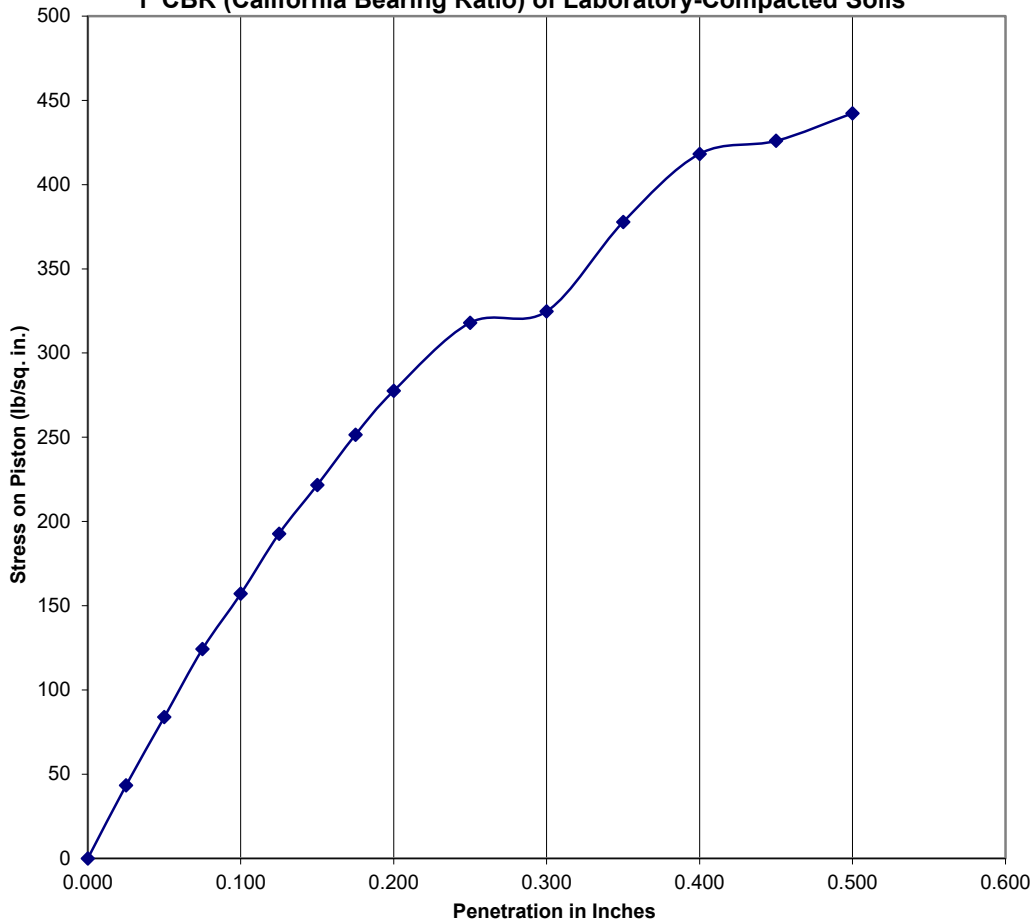
Tested By: JMT Checked By: MTG

MTG

Lab California Bearing Ratio

ASTM D 1883

1' CBR (California Bearing Ratio) of Laboratory-Compacted Soils



Bearing Ratio = 15.7 at 100.0% Compaction

Test Location:	B-7	Sample #/Test Depth:	Bulk/1'-5'
Prep Method:	D1557	As Compacted Moisture Content:	11.4%
Curing Conditions:	Soaked	Top 1" of Test Sample Moisture Content:	19.4%
Tested Dry Density:	105.2	Sample Swell:	0%
Surcharge Weight:	10 lbs	% Retained on 19mm Sieve:	0%
Special Sample Testing Procedures or Comments from Above			
None			
Project:	Proposed T Hangar Building - Auburn- Lewiston Airport		Client: McFarland Johnson
Project #:	1569-019		Date: 11/8/2024
Location:	Auburn, ME		Sample #: 18238-12
R. W. Gillespie & Associates			
20 Pomerleau St. Suite 100 Biddeford, ME 04005		177 Shattuck Way, Suite 1 West Newington, NH 03801	

MTB

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.1	4.5	3.3	5.8	66.0	20.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	99.9		
1/2"	98.8		
3/8"	98.1		
1/4"	96.9		
#4	95.4		
#10	92.1		
#20	88.8		
#40	86.3		
#80	75.1		
#140	39.3		
#200	20.3		

* (no specification provided)

Soil Description		
silty sand		
Atterberg Limits		
PL=	LL=	PI=
Coefficients		
D ₉₀ = 1.0945	D ₈₅ = 0.3648	D ₆₀ = 0.1418
D ₅₀ = 0.1236	D ₃₀ = 0.0906	D ₁₅ =
D ₁₀ =	C _u =	C _c =
Classification		
USCS= SM	AASHTO=	A-2-4(0)
Remarks		
As Tested Moisture Content: 1.6%		

Location: B-9
Sample Number: Bulk Depth: 1-5'

Date: 11/05/2024

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: McFarland Johnson
Project: Proposed T Hangar Building - Auburn-Lewiston Airport
Auburn, ME

Project No: 1569-019

Lab No. 18238-13

Tested By: GMN/AHF Checked By: MTG

MTG

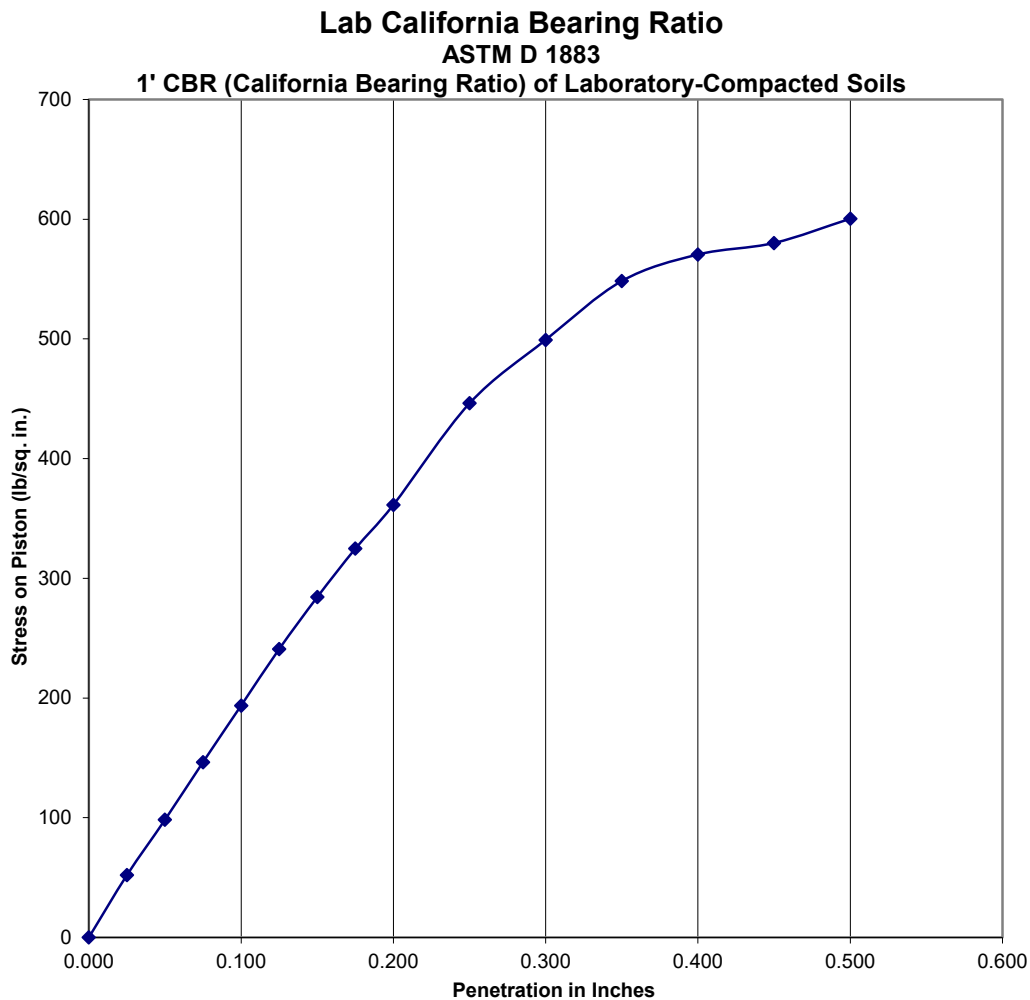
The graph plots Dry density (pcf) on the y-axis (ranging from 95 to 120) against Water content (%) on the x-axis (ranging from 0 to 30). A parabolic curve represents the relationship between dry density and water content, with its peak labeled '15.7%, 104.6 pcf'. A straight line, labeled 'ZAV for Sp.G. = 2.65', represents the Zero Air Voids line. The curve starts at approximately (11.2, 100.6) and ends at (21.4, 97.6).

Water content (%)	Dry density (pcf)
11.2	100.6
14.8	104.4
15.7	104.6
17.5	103.8
21.4	97.6

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
1-5'	SM	A-2-4(0)					4.6	20.3

ROCK CORRECTED TEST RESULTS		MATERIAL DESCRIPTION
Maximum dry density = 104.6 pcf Optimum moisture = 15.7 %		silty sand
Project No. 1569-019 Client: McFarland Johnson Project: Proposed T Hangar Building - Auburn-Lewiston Airport Auburn, ME <input type="radio"/> Location: B-9 Sample Number: Bulk		Remarks:
R.W. Gillespie & Associates, Inc. Biddeford, Maine		
		Lab No. 18238-13

MTB



Bearing Ratio = 19.4 at 100.0% Compaction

Test Location: B-9		Sample #/Test Depth: Bulk/1'-5'	
Prep Method:	D1557	As Compacted Moisture Content:	8.7%
Curing Conditions:	Soaked	Top 1" of Test Sample Moisture Content:	17.7%
Tested Dry Density:	104.6	Sample Swell:	0%
Surcharge Weight:	10 lbs	% Retained on 19mm Sieve:	0%
Special Sample Testing Procedures or Comments from Above			
None			
Project: Proposed T Hangar Building - Auburn-Lewiston Airport		Client: McFarland Johnson	
Project #: 1569-019		Date: 11/8/2024	
Location: Auburn, ME		Sample #: 18238-13	
R. W. Gillespie & Associates			
20 Pomerleau St. Suite 100 Biddeford, ME 04005		177 Shattuck Way, Suite 1 West Newington, NH 03801	

MTB

11/12/2024	7609	B-6	ANDROSCOGGIN	
PRINT DATE	LAB NO.	SAMPLE IDENTIFICATION	COUNTY	ACRES OR SQ. FT.

•SOIL TEST REPORT FOR:

R.W. GILLESPIE & ASSOCIATES
20 POMERLEAU ST, SUITE 100
BIDDEFORD ME 04005

MAINE SOIL TESTING SERVICE
UNIVERSITY OF MAINE 1865
5722 DEERING HALL
ORONO,MAINE 04469-5722



•SOIL TEST SUMMARY & INTERPRETATION
(see Numerical Results section for more information)

	Level Found	LOW	MEDIUM	OPTIMUM	ABOVE OPTIMUM
Soil pH	5.5	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Organic Matter(%)	4.6	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
<u>Major nutrients</u>					
Phosphorus(lb/A)	7.7	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Potassium (% Sat)	2.7	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Calcium (% Sat)	41.8	XXXXXXXXXXXXXXXXXXXX			
Magnesium (% Sat)	5.3	XXXXXXXXXXXXXXXXXXXX			
Sulfur (ppm)	21	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
<u>Micronutrients</u>					
Boron (ppm)	0.3	XXXXXXXXXXXXXXXXXXXX			
Copper (ppm)	0.16	XXXXXXXXXXXXXXXXXXXX			
Iron (ppm)	25	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Manganese (ppm)	4.5	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			
Zinc (ppm)	8.5	XXXXXXXXXXXXXXXXXXXXXXXXXXXX			

•RECOMMENDED ADDITIONS FOR ALL TURF-NEW SEEDING - Crop Code # 211

To raise soil pH to 6.0, apply 60 pounds of lime per 1000 sq. ft.

To meet crop magnesium requirement, use a magnesium lime.

Calculated major nutrient requirements as follows:

2.0 pounds nitrogen per 1000 sq. ft.

1.9 pounds phosphate per 1000 sq. ft.

0.7 pounds potash per 1000 sq. ft.

To meet major nutrient requirements:

Apply 20 lb 10-10-10 fertilizer/1000 sq. ft.

Other fertilizers of similar N-P-K ratio may be substituted.

Till in lime (if needed) and fertilizer to a 4-6 inch depth.

Till in an inch of compost or peat, with lime & fertilizer, to a 4-6 inch depth before seeding to improve soil nutrient & water holding capacity.

For information on micronutrient management and recommendations, see enclosed form.

•NUMERICAL RESULTS (Test methodology: pH in water and Mehlich buffer, available nutrients by modified Morgan extract)
(Organic matter measured by LOI, P determined colorimetrically, all others measured by ICP-OES)

CEC and nutrient balance calculations assume the pH will be raised to 6.0

Level Found	5.5	5.81	7.7	110	66	855	5.1	2.7	5.3	41.8	50.2
	Soil pH	Lime Index 2	Phosphorus (lb/A)	Potassium (lb/A)	Magnesium (lb/A)	Calcium (lb/A)	CEC (me/100 g)	K	Mg (% Saturation)	Ca	Acidity
Optimum Range	5.5-6.5	N/A	10-20	see % Saturation levels			> 5	2.1-3.0	10-20	60-80	< 10
Level Found	4.6	21	0.16	24.5	4.5	8.5	<u>Additional Results or Comments:</u> Metals scan: NORMAL BACKGROUND LEVEL - no health risk.				
	Organic Matter(%)	Sulfur (ppm)	Copper (ppm)	Iron (ppm)	Manganese (ppm)	Zinc (ppm)					
Normal Range	5 - 8	> 15	.25-.60	6 - 10	4 - 8	1 - 2					
Level Found	0.3	N/A	N/A	N/A	N/A						
(Extras)	Boron (ppm)	Sodium (ppm)	Soluble Salts (mmhos/cm)	Nitrate-N (ppm)	Ammonium-N (ppm)	Full payment received for this sample. Thank you					
Normal Range	0.5-1.2										

Additional Results or Comments:

Metals scan:

NORMAL BACKGROUND LEVEL -
no health risk.

Full payment received for this sample. Thank you.

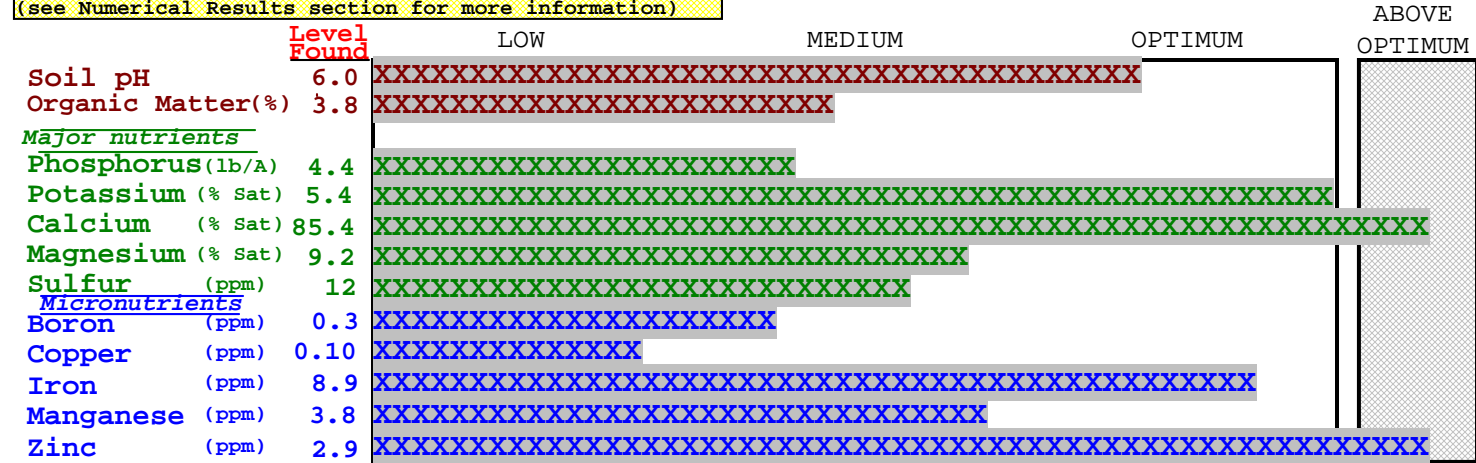
11/12/2024	7610	B-7	ANDROSCOGGIN	
PRINT DATE	LAB NO.	SAMPLE IDENTIFICATION	COUNTY	ACRES OR SQ. FT.

•SOIL TEST REPORT FOR:
 R.W. GILLESPIE & ASSOCIATES
 20 POMERLEAU ST, SUITE 100
 BIDDEFORD ME 04005

MAINE SOIL TESTING SERVICE
 UNIVERSITY OF MAINE
 5722 DEERING HALL
 ORONO,MAINE 04469-5722



•SOIL TEST SUMMARY & INTERPRETATION
 (see Numerical Results section for more information)



•RECOMMENDED ADDITIONS FOR ALL TURF-NEW SEEDING - Crop Code # 211

No lime recommended. Soil pH is at or above the optimum level for this crop.

To meet crop magnesium requirement, use a fertilizer containing magnesium if possible.

Calculated major nutrient requirements as follows:

- 2.0 pounds nitrogen per 1000 sq. ft.
- 2.6 pounds phosphate per 1000 sq. ft.
- 0.7 pounds potash per 1000 sq. ft.

To meet major nutrient requirements:

Apply 20 lb 10-20-10 or 40 lb 5-10-5 fertilizer/1000 sq. ft.

Other fertilizers of similar N-P-K ratio may be substituted.

Till in lime (if needed) and fertilizer to a 4-6 inch depth.

Till in an inch of compost or peat, with lime & fertilizer, to a 4-6 inch depth before seeding to improve soil nutrient & water holding capacity.

For information on micronutrient management and recommendations, see enclosed form.

•NUMERICAL RESULTS (Test methodology: pH in water and Mehlich buffer, available nutrients by modified Morgan extract) (Organic matter measured by LOI, P determined colorimetrically, all others measured by ICP-OES)

CEC and nutrient balance calculations are based on present pH of 6.0

Level Found	6.0	6.11	4.4	189	99	1519	4.4	5.4	9.2	85.4	0.0
	Soil pH	Lime Index 2	Phosphorus (lb/A)	Potassium (lb/A)	Magnesium (lb/A)	Calcium (lb/A)	CEC (me/100 g)	K	Mg (% Saturation)	Ca	Acidity
Optimum Range	5.5-6.5	N/A	10-20	see % Saturation levels			> 5	2.1-3.0	10-20	60-80	< 10
Level Found	3.8	12	0.10	8.9	3.8	2.9	<div>Additional Results or Comments:</div> <div>Metals scan:</div> <div>NORMAL BACKGROUND LEVEL - no health risk.</div>				
	Organic Matter(%)	Sulfur (ppm)	Copper (ppm)	Iron (ppm)	Manganese (ppm)	Zinc (ppm)					
Normal Range	5 - 8	> 15	.25-.60	6 - 10	4 - 8	1 - 2					
Level Found	0.3	N/A	N/A	N/A	N/A						
(Extras)	Boron (ppm)	Sodium (ppm)	Soluble Salts (mmhos/cm)	Nitrate-N (ppm)	Ammonium-N (ppm)	Full payment received for this sample. Thank you					
Normal Range	0.5-1.2										

Additional Results or Comments:
 Metals scan:
 NORMAL BACKGROUND LEVEL - no health risk.

Full payment received for this sample. Thank you.

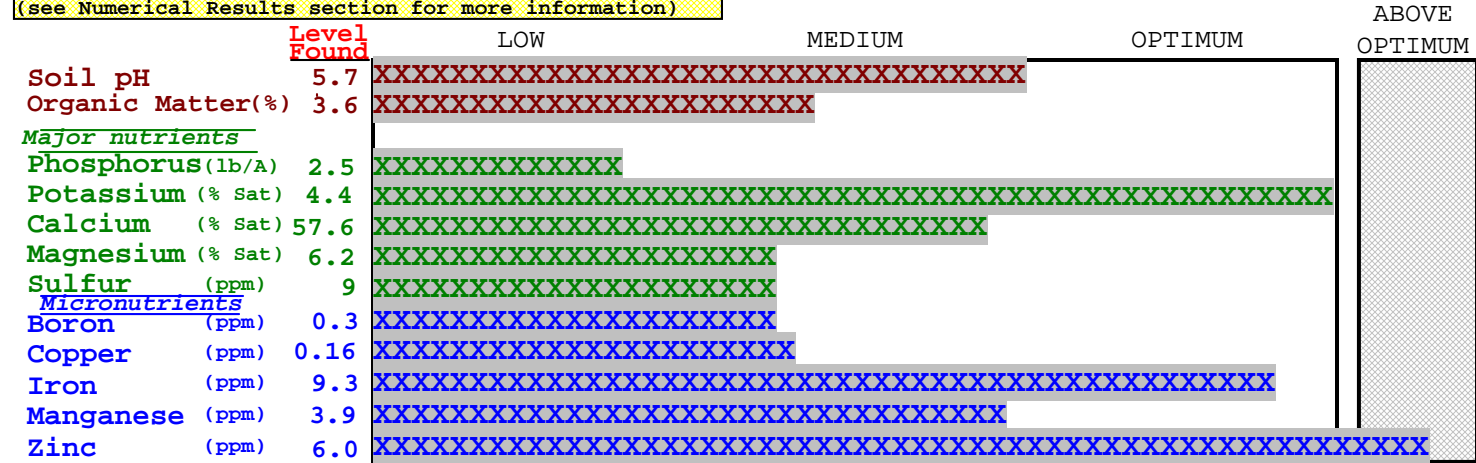
11/12/2024	7611	B-8	ANDROSCOGGIN	
PRINT DATE	LAB NO.	SAMPLE IDENTIFICATION	COUNTY	ACRES OR SQ. FT.

•SOIL TEST REPORT FOR:
 R.W. GILLESPIE & ASSOCIATES
 20 POMERLEAU ST, SUITE 100
 BIDDEFORD ME 04005

MAINE SOIL TESTING SERVICE
 UNIVERSITY OF MAINE
 5722 DEERING HALL
 ORONO,MAINE 04469-5722



•SOIL TEST SUMMARY & INTERPRETATION
 (see Numerical Results section for more information)



•RECOMMENDED ADDITIONS FOR ALL TURF-NEW SEEDING - Crop Code # 211

To raise soil pH to 6.0, apply 40 pounds of lime per 1000 sq. ft.

To meet crop magnesium requirement, use a magnesium lime.

Calculated major nutrient requirements as follows:

- 2.0 pounds nitrogen per 1000 sq. ft.
- 3.4 pounds phosphate per 1000 sq. ft.
- 0.7 pounds potash per 1000 sq. ft.

To meet major nutrient requirements:

Apply 20 lb 10-20-10 or 40 lb 5-10-5 fertilizer/1000 sq. ft.

Other fertilizers of similar N-P-K ratio may be substituted.

Till in lime (if needed) and fertilizer to a 4-6 inch depth.

Till in an inch of compost or peat, with lime & fertilizer, to a 4-6 inch depth before seeding to improve soil nutrient & water holding capacity.

For information on micronutrient management and recommendations, see enclosed form.

•NUMERICAL RESULTS (Test methodology: pH in water and Mehlich buffer, available nutrients by modified Morgan extract)
 (Organic matter measured by LOI, P determined colorimetrically, all others measured by ICP-OES)

CEC and nutrient balance calculations assume the pH will be raised to 6.0

Level Found	5.7	5.89	2.5	172	75	1158	5.0	4.4	6.2	57.6	31.9
	Soil pH	Lime Index 2	Phosphorus (lb/A)	Potassium (lb/A)	Magnesium (lb/A)	Calcium (lb/A)	CEC (me/100 g)	K	Mg (% Saturation)	Ca	Acidity
Optimum Range	5.5-6.5	N/A	10-20	see % Saturation levels			> 5	2.1-3.0	10-20	60-80	< 10
Level Found	3.6	9	0.16	9.3	3.9	6.0	<u>Additional Results or Comments:</u> Metals scan: NORMAL BACKGROUND LEVEL - no health risk. Full payment received for this sample. Thank you				
	Organic Matter(%)	Sulfur (ppm)	Copper (ppm)	Iron (ppm)	Manganese (ppm)	Zinc (ppm)					
Normal Range	5 - 8	> 15	.25-.60	6 - 10	4 - 8	1 - 2					
Level Found	0.3	N/A	N/A	N/A	N/A						
(Extras)	Boron (ppm)	Sodium (ppm)	Soluble Salts (mmhos/cm)	Nitrate-N (ppm)	Ammonium-N (ppm)						
Normal Range	0.5-1.2										

Additional Results or Comments:
 Metals scan:
 NORMAL BACKGROUND LEVEL -
 no health risk.

Full payment received for this sample. Thank you.

DIVISION 2 – SPECIAL PROVISIONS

PERMITS

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DIVISION 2 – SPECIAL PROVISIONS

State of MAINE – Environmental Permits

Maine Department of Environmental Protection (Maine DEP)

Maine Site Location of Development Act – Minor Amendment
(Attached Planning Board Approval Letter 10/8/2024)

Maine Construction General Permit (MCGP)

(Notice of Intent to be submitted by the Contractor)

City of Auburn Maine

Development Review Application

(Attached Planning Board Approval Letter 10/8/2024)

**THE CONTRACTOR SHALL OBTAIN ANY OTHER PERMITS AND
COMPLY WITH ALL PERMIT APPROVAL CONDITIONS
NECESSARY FOR CONSTRUCTION OF THE PROJECT.**

REFER TO SPECIFICATION B-001 CONSTRUCT T-HANGAR BUILDING FOR RELATED
PERMIT REQUIREMENTS

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City of Auburn, Maine

Department of Planning & Permitting

Eric Cousens, Director

60 Court Street | Auburn, Maine 04210

www.auburnmaine.gov | 207.333.6601

October 08, 2024

Applicant/Property Owner:
Airport Manager C/O Jonathan LaBonte
City of Auburn, Maine
60 Court Street
Auburn, Maine 04210

Agent:
McFarland-Johnson, Inc.
53 Regional Dr, Ste 3
Concord, NH 03301-8500

Re: Approval Letter for Auburn-Lewiston Municipal T-Hangar and Taxilines

Dear Mr. Gorham,

This letter is to notify you that City of Auburn, Planning Board has approved the submitted Site Plan for the construction of three new t-hangars, apron pavement and the associated taxi line on Flightline Drive, also City Assessor's Parcel I.D. 131/143-007 in the Industrial Zoning District. This approval also includes State Delegated Review for Site Location of Development.

Referenced Approved Plans and Materials:

- Application Set: Auburn-Lewiston Municipal Airport, Construction of New Hangars and Taxiline, Dated 09/06/2024 and most recently revised on 09/11/2024.
- Site Location of Development Permit Amendment for Construction of New T-Hangars and Taxiline, Dated September 2024.
- Auburn-Lewiston Municipal Airport T-Hangar Project – Landscaping Waiver Request Dated 10/02/2024.
- Plan Set (Utility, Grading, Drainage, Erosion Control & Layout) Dated 09/05/2024 with Revised Site Location Dated 10/02/2024.
- Staff Memo re: Item #7 T-Hangar Project Supplemental Information Supplied by Consulting Engineer, Dated 10/08/2024.

Findings: Planning Board approved the changes with the following findings:

The application meets the conditions of Sec. 60-1277 in that the development has made provisions for:

- (1) Protection of adjacent areas against detrimental or offensive uses on the site by provision of adequate surface water drainage, buffers against artificial and reflected light, sight, sound, dust and vibration; and preservation of light and air;
- (2) Convenience and safety of vehicular and pedestrian movement within the site and in relation to adjacent areas;

- (3) Adequacy of the methods of disposal for wastes; and
- (4) Protection of environment features on the site and in adjacent areas.

Further, the application meets the conditions of Sec. 60-1336 in that it:

- (1) Fulfills the specific requirements, if any, set forth in the zoning ordinance relative to such exception.
- (2) Will neither create nor aggravate a traffic hazard, a fire hazard or any other safety hazard.
- (3) Will not block or hamper the master development plan pattern of highway circulation or of planned major public or semipublic land acquisition.
- (4) Will not alter the essential characteristics of the neighborhood and will not tend to depreciate the value of property adjoining and neighboring the property under application.
- (5) Reasonable provisions have been made for adequate land space, lot width, lot area, stormwater management in accordance with section 60-1301(14), green space, driveway layout, road access, off-street parking, landscaping, building separation, sewage disposal, water supply, fire safety, and where applicable, a plan or contract for perpetual maintenance of all of the common green space and clustered off-street parking areas to ensure all such areas will be maintained in a satisfactory manner.
- (6) The standards imposed are, in all cases, at least as stringent as those elsewhere imposed by the city building code and by the provisions of this chapter.
- (7) Essential city services which will be required for the project are presently available or can be made available without disrupting the city's master development plan.

The Planning Board granted one Waiver with regards to Section 60-579(g)(4) & (5) of the Auburn Code of Ordinances due to the nature of the project and potential hazards associated with vegetation on the airport property.

Conditions:

1. No development activity until any bonding or inspection fees is determined by the Auburn Engineering Department.
2. Provide updated plans that meet the Auburn Water and Sewer District requirements.
3. Provide sewer and water easements to the satisfaction of the Auburn Water and Sewer District.

Sincerely,

Megan Norwood

Megan Norwood, Planning Coordinator
C: File

Item C-100 Contractor Quality Control Program (CQCP)

100-1 General. Quality is more than test results. Quality is the combination of proper materials, testing, workmanship, equipment, inspection, and documentation of the project. Establishing and maintaining a culture of quality is key to achieving a quality project. The Contractor shall establish, provide, and maintain an effective Contractor Quality Control Program (CQCP) that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified here and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The Contractor shall establish a CQCP that will:

- a. Provide qualified personnel to develop and implement the CQCP.
- b. Provide for the production of acceptable quality materials.
- c. Provide sufficient information to assure that the specification requirements can be met.
- d. Document the CQCP process.

The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the CQCP has been reviewed and approved by the Resident Project Representative (RPR). No partial payment will be made for materials subject to specific quality control (QC) requirements until the CQCP has been reviewed and approved.

The QC requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the quality assurance (QA) testing requirements. QA testing requirements are the responsibility of the RPR or Contractor as specified in the specifications.

A Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Resident Project Representative (RPR), Contractor, subcontractors, testing laboratories, and Owner's representative must be held prior to start of construction. The QC/QA workshop will be facilitated by the Contractor. The Contractor shall coordinate with the Airport and the RPR on time and location of the QC/QA workshop. Items to be addressed, at a minimum, will include:

- a. Review of the CQCP including submittals, QC Testing, Action & Suspension Limits for Production, Corrective Action Plans, Distribution of QC reports, and Control Charts.
- b. Discussion of the QA program.
- c. Discussion of the QC and QA Organization and authority including coordination and information exchange between QC and QA.
- d. Establish regular meetings to discuss control of materials, methods and testing.
- e. Establishment of the overall QC culture.

100-2 Description of program.

a. General description. The Contractor shall establish a CQCP to perform QC inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. The CQCP shall ensure conformance to applicable specifications and plans with respect to materials, off-

site fabrication, workmanship, construction, finish, and functional performance. The CQCP shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of QC.

b. Contractor Quality Control Program (CQCP). The Contractor shall describe the CQCP in a written document that shall be reviewed and approved by the RPR prior to the start of any production, construction, or off-site fabrication. The written CQCP shall be submitted to the RPR for review and approval at least 10 calendar days before the CQCP Workshop. The Contractor's CQCP and QC testing laboratory must be approved in writing by the RPR prior to the Notice to Proceed (NTP).

The CQCP shall be organized to address, as a minimum, the following:

1. QC organization and resumes of key staff
2. Project progress schedule
3. Submittals schedule
4. Inspection requirements
5. QC testing plan
6. Documentation of QC activities and distribution of QC reports
7. Requirements for corrective action when QC and/or QA acceptance criteria are not met
8. Material quality and construction means and methods. Address all elements applicable to the project that affect the quality of the pavement structure including subgrade, subbase, base, and surface course. Some elements that must be addressed include, but is not limited to mix design, aggregate grading, stockpile management, mixing and transporting, placing and finishing, quality control testing and inspection, smoothness, laydown plan, equipment, and temperature management plan.

The Contractor must add any additional elements to the CQCP that is necessary to adequately control all production and/or construction processes required by this contract.

100-3 CQCP organization. The CQCP shall be implemented by the establishment of a QC organization. An organizational chart shall be developed to show all QC personnel, their authority, and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all QC staff by name and function, and shall indicate the total staff required to implement all elements of the CQCP, including inspection and testing for each item of work. If necessary, different technicians can be used for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the CQCP, the personnel assigned shall be subject to the qualification requirements of paragraphs 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The QC organization shall, as a minimum, consist of the following personnel:

a. Program Administrator. The Contractor Quality Control Program Administrator (CQCPA) must be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The CQCPA must have a minimum of five (5) years of experience in QC pavement construction with prior QC experience on a project of comparable size and scope as the contract.

Included in the five (5) years of paving/QC experience, the CQCPA must meet at least one of the following requirements:

- (1) Professional Engineer with one (1) year of airport paving experience.

(2) Engineer-in-training with two (2) years of airport paving experience.

(3) National Institute for Certification in Engineering Technologies (NICET) Civil Engineering Technology Level IV with three (3) years of airport paving experience.

(4) An individual with four (4) years of airport paving experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

The CQCPA must have full authority to institute any and all actions necessary for the successful implementation of the CQCP to ensure compliance with the contract plans and technical specifications. The CQCPA authority must include the ability to immediately stop production until materials and/or processes are in compliance with contract specifications. The CQCPA must report directly to a principal officer of the construction firm. The CQCPA may supervise the Quality Control Program on more than one project provided that person can be at the job site within two (2) hours after being notified of a problem.

b. QC technicians. A sufficient number of QC technicians necessary to adequately implement the CQCP must be provided. These personnel must be either Engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II in Civil Engineering Technology or higher, and shall have a minimum of two (2) years of experience in their area of expertise.

The QC technicians must report directly to the CQCPA and shall perform the following functions:

(1) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by paragraph 100-6.

(2) Performance of all QC tests as required by the technical specifications and paragraph 100-8.

(3) Performance of tests for the RPR when required by the technical specifications.

Certification at an equivalent level of qualification and experience by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

c. Staffing levels. The Contractor shall provide sufficient qualified QC personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The CQCP shall state where different technicians will be required for different work elements.

100-4 Project progress schedule. Critical QC activities must be shown on the project schedule as required by Section 80, paragraph 80-03, *Execution and Progress*.

100-5 Submittals schedule. The Contractor shall submit a detailed listing of all submittals (for example, mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include as a minimum:

a. Specification item number

b. Item description

c. Description of submittal

d. Specification paragraph requiring submittal

e. Scheduled date of submittal

100-6 Inspection requirements. QC inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by paragraph 100-9.

Inspections shall be performed as needed to ensure continuing compliance with contract requirements until completion of the particular feature of work. Inspections shall include the following minimum requirements:

a. During plant operation for material production, QC test results and periodic inspections shall be used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The CQCP shall detail how these and other QC functions will be accomplished and used.

b. During field operations, QC test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The CQCP shall document how these and other QC functions will be accomplished and used.

100-7 Contractor QC testing facility.

a. For projects that include Item P-401, Item P-403, and Item P-404, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM D3666, *Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials*:

8.1.3 Equipment Calibration and Checks;

8.1.9 Equipment Calibration, Standardization, and Check Records;

8.1.12 Test Methods and Procedures

b. For projects that include P-501, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM C1077, *Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation*:

7 Test Methods and Procedures

8 Facilities, Equipment, and Supplemental Procedures

100-8 QC testing plan. As a part of the overall CQCP, the Contractor shall implement a QC testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification Item, as well as any additional QC tests that the Contractor deems necessary to adequately control production and/or construction processes.

The QC testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

a. Specification item number (e.g., P-401)

b. Item description (e.g., Hot Mix Asphalt Pavements)

c. Test type (e.g., gradation, grade, asphalt content)

d. Test standard (e.g., ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)

e. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated)

f. Responsibility (e.g., plant technician)

g. Control requirements (e.g., target, permissible deviations)

The QC testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. The RPR shall be provided the opportunity to witness QC sampling and testing.

All QC test results shall be documented by the Contractor as required by paragraph 100-9.

100-9 Documentation. The Contractor shall maintain current QC records of all inspections and tests performed. These records shall include factual evidence that the required QC inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the RPR daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCPA.

Contractor QC records required for the contract shall include, but are not necessarily limited to, the following records:

a. Daily inspection reports. Each Contractor QC technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These technician's daily reports shall provide factual evidence that continuous QC inspections have been performed and shall, as a minimum, include the following:

- (1) Technical specification item number and description
- (2) Compliance with approved submittals
- (3) Proper storage of materials and equipment
- (4) Proper operation of all equipment
- (5) Adherence to plans and technical specifications
- (6) Summary of any necessary corrective actions
- (7) Safety inspection.
- (8) Photographs and/or video, if required by the RPR

The daily inspection reports shall identify all QC inspections and QC tests conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible QC technician and the CQCPA. The RPR shall be provided at least one copy of each daily inspection report on the work day following the day of record. When QC inspection and test results are recorded and transmitted electronically, the results must be archived.

b. Daily test reports. The Contractor shall be responsible for establishing a system that will record all QC test results. Daily test reports shall document the following information:

- (1) Technical specification item number and description
- (2) Test designation
- (3) Location
- (4) Date of test
- (5) Control requirements

- (6) Test results
- (7) Causes for rejection
- (8) Recommended remedial actions
- (9) Retests

Test results from each day's work period shall be submitted to the RPR prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical QC charts. When QC daily test results are recorded and transmitted electronically, the results must be archived.

100-10 Corrective action requirements. The CQCP shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the CQCP as a whole, and for individual items of work contained in the technical specifications.

The CQCP shall detail how the results of QC inspections and tests will be used for determining the need for corrective action and shall contain clear rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and use statistical QC charts for individual QC tests. The requirements for corrective action shall be linked to the control charts.

100-11 Inspection and/or observations by the RPR. All items of material and equipment are subject to inspection and/or observation by the RPR at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate QC system in conformance with the requirements detailed here and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to inspection and/or observation by the RPR at the site for the same purpose.

Inspection and/or observations by the RPR does not relieve the Contractor of performing QC inspections of either on-site or off-site Contractor's or subcontractor's work.

100-12 Noncompliance.

a. The Resident Project Representative (RPR) will provide written notice to the Contractor of any noncompliance with their CQCP. After receipt of such notice, the Contractor must take corrective action.

b. When QC activities do not comply with either the CQCP or the contract provisions or when the Contractor fails to properly operate and maintain an effective CQCP, and no effective corrective actions have been taken after notification of non-compliance, the RPR will recommend the Owner take the following actions:

- (1) Order the Contractor to replace ineffective or unqualified QC personnel or subcontractors and/or
- (2) Order the Contractor to stop operations until appropriate corrective actions are taken.

METHOD OF MEASUREMENT

100-13 Basis of measurement and payment. Contractor Quality Control Program (CQCP) is for the personnel, tests, facilities and documentation required to implement the CQCP. The CQCP will be paid as a lump sum with the following schedule of partial payments:

- a. With first pay request, 25% with approval of CQCP and completion of the Quality Control (QC)/Quality Assurance (QA) workshop.
- b. When 25% or more of the original contract is earned, an additional 25%.
- c. When 50% or more of the original contract is earned, an additional 20%.
- d. When 75% or more of the original contract is earned, an additional 20%
- e. After final inspection and acceptance of project, the final 10%.

BASIS OF PAYMENT

100-14 Payment will be made under:

Item C-100 Contractor's Quality Control Program (CQCP) - Lump Sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

National Institute for Certification in Engineering Technologies (NICET)

ASTM International (ASTM)

ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

END OF ITEM C-100

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Item C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control**DESCRIPTION**

102-1. This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

Compliance with the Maine Department of Environmental Protection Construction General Permit is required.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901 shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

102-2.2 Mulches. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

102-2.3 Fertilizer. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

102-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 Erosion Control Barrier. Erosion Control barrier shall consist of 8" min dia or square straw wattle with stakes spaced at 5' max.

102-2.6 Inlet Protection (Catch Basin Filter Bag). A filter bag shall be inserted into the catch basin just below the grating as shown on the plans or directed by the RPR

102-2.7 Erosion Control Matting. The jute or excelsior erosion control matting shall be made of unbleached,

undyed, and loosely-twisted yarn. The unit yarn weight shall be from 0.90 to 1.50 lb/yd². A 48-inch width shall show between 76 and 80 warpings, and a 36-inch length shall show between 39 and 43 weftings. Furnish woven mesh strips of at least 45 inches.

102-2.8 Check dams. Check dams will be made from erosion sedimentation barriers such as waddles, erosion control mix berm, stone, etc. and shall be spaced so that the elevation of the crest of the downstream dam is at the same elevation as the toe of the upstream dam.

102-2.9 Stone slope with geotextile. The Stone slope shall be a gradation stone size D₅₀ with 50% having an average dimension greater than 9 inches as shown on the Drawings. Geotextile bedding shall be installed under the rip rap.

102-2.10 Catch Basin Filter Bag. Filter Bags shall have a tensile strength of 450 x 300 and an apparent opening size of 30 US std Sieve with a 2 foot containment area

102-2.11 Inlet control. Pipe inlet control shall have temporary erosion control barrier encircling the inlet as noted on the plans and details.

102-2.12 Other. All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project. These items shall be paid for with section, paragraph 90-05 payment for extra work

CONSTRUCTION REQUIREMENTS

102-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

102-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

102-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in

keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

102-3.4 Installation, maintenance and removal of silt fence. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

102-3.5 Installation, maintenance and removal of other materials. All other materials and devices shall be installed in accordance with the manufacturer's recommendations and as shown in the plan details. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control and/or restoration of growth. All device materials shall be maintained in good working condition until permanent erosion control is established. All temporary devices shall be removed upon approval of the RPR.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the RPR. Completed and accepted work will be measured as follows:

- a. Installation and removal of stabilized construction entrance will be measured by each.
- b. Installation and removal of erosion control barrier will be measured by the linear foot.
- c. Installation and removal of check dams will be measured by each.
- d. Installation of erosion control matting will be measured by the square yards.
- e. Installation and removal of inlet protection will be measured by each.

f. Installation of stone slope with geotextile will be measured by the cubic yard. Geotextile provided in accordance with Section 31 0519 “Geosynthetics for Earthwork” will not be measured separately but shall be considered incidental to the stone slope.

g. Installation of outlet protection will be measured by each.

102-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

102-4.3 Application and payment to the Maine Department of Environmental Protection related to the “Notice of Intent to Comply” with the Maine Construction General Permit shall be completed by the Contractor and will not be measured and paid for separately but shall be considered incidental to the project. In addition, the Contractor shall submit the “Notice of Termination for use with Construction General Permit” at the project completion. Notice forms are available through [Construction General Permit, Stormwater Program, Bureau of Land & Water Quality, Maine Department of Environmental Protection](#) website.

102.4.4 Inspection and maintenance requirements specified in Appendix B of the Maine Construction General Permit shall be the responsibility of Contractor and will not be measured and paid for separately but shall be considered incidental to the project. Appendix B is available through the Maine Department of Environmental Protection [APPENDICES -- BASIC PERFORMANCE STANDARDS](#) website.

102.4.5 Housekeeping requirements specified in Appendix C of the Maine Construction General Permit shall be the responsibility of Contractor and will not be measured and paid for separately but shall be considered incidental to the project. Appendix C is available through the Maine Department of Environmental Protection [APPENDICES -- BASIC PERFORMANCE STANDARDS](#) website.

BASIS OF PAYMENT

102-5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the RPR and measured as provided in paragraph 102-4.1 will be paid for under:

Item C-102-5.1a	Installation and Removal of Pipe inlet protection – per each
Item C-102-5.1b	Installation and removal of erosion control barrier - per linear foot (meter)
Item C-102-5.1c	Installation and removal of check dam - per each
Item C-102-5.1d	Installation of erosion control matting - per square yard (meter)
Item C-102-5.1e	Installation and removal of inlet protection - per each (meter)
Item C-102-5.1f	Installation of stone slope with geotextile- per cubic yard (meter)

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items.

Temporary control features not covered by contract items that are ordered by the RPR will be paid for in accordance with Section 90, paragraph 90-05 *Payment for Extra Work*.

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5200-33 *Hazardous Wildlife Attractants on or Near Airports*

AC 150/5370-2 *Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461 *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM C-102

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Item C-105 Mobilization

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to ten (10) percent of the total project cost excluding the cost of Mobilization.

105-3 Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster “Equal Employment Opportunity is the Law” in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL “Notice to All Employees” Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-4 Engineer/RPR field office. The Contractor shall provide dedicated space for the use of the field RPR and inspectors, as a field office for the duration of the project. This space shall be located conveniently near the construction and shall be separate from any space used by the Contractor. The Contractor shall furnish water, sanitary facilities, heat, air conditioning, and electricity in accordance with local building codes.

METHOD OF MEASUREMENT

105-5 Basis of measurement and payment. Based upon the contract lump sum price for “Mobilization” partial payments will be allowed as follows:

- a. With first pay request, 25%.
- b. When 25% or more of the original contract is earned, an additional 25%.
- c. When 50% or more of the original contract is earned, an additional 40%.
- d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, *Contractor Final Project Documentation*, the final 10%.

BASIS OF PAYMENT

105-6 Payment will be made under:

Item C-105 Mobilization - Lump Sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

Item M-001 Special Work Requirements**DESCRIPTION**

001-1.1 GENERAL. The special requirements set forth in this section of these Specifications shall govern any aspect of the Contract work where such requirements are deemed applicable by the Owner or the Engineer/Resident Project Representative (RPR). The purpose of these requirements is to help ensure that the Contract work complies with Airport Operation requirements, does not create any hazard to aircraft operations and point out special coordination or schedule conditions of which the Contractor should be aware. It shall be the Contractor's responsibility to conduct all work in strict accordance with the special requirements set forth herein, the Construction Safety and Phasing Plan (CSPP), the Contractor's Safety Plan Compliance Document (SPCD) and to fully cooperate with the Owner and the Engineer/RPR in every way necessary to fulfill the purposes of these requirements as set forth above.

Under this item, the Contractor shall set up his/her necessary general plant, including shops, storage areas, office, and such sanitary and other facilities as are required by local or state law or regulation. No separate measurement for payment will be made for work required by this item but rather the work shall be considered incidental to the overall project, unless covered by elsewhere.

Required materials that are not to be a part of the completed contract shall be, as determined by the Contractor, except that they shall conform to any pertinent local or state law, regulation, or code.

Work in providing the facilities and services under this item shall be done in a safe and workmanlike manner and shall conform to any pertinent local or state law, regulation, or code. Good housekeeping consistent with safety shall be maintained.

001-1.2 PROJECT DESCRIPTION.

The project is to construct the new T-hangar and Taxilane at the Auburn-Lewiston Municipal Airport. The new T-hangar will be approximately 10,000 SF with a concrete slab foundation and structural steel truss framing. The Taxilane is 25' wide and approximately 600' long hot mix asphalt. The T-Hangar is surrounded by an apron with a width of 30-50'.

The new construction will include but is not limited to: installation of temporary and permanent erosion control measures, excavation, removal of existing bituminous pavements, placement of new subbase and base course materials, placement of Airport Asphalt Mix Pavement, Underground Electrical Conduit/Duct Installation, Installation of Underground electrical Cable(s), installation of electrical Handholes/Manholes, Installation of Airport Taxiway Edge Lighting, Installation of Airport Signage, Drainage Installation, Topsoiling, Seeding, Mulching, Airfield Pavement Markings, Concrete slab pouring, Structural steel installation, water, sewer, natural gas, and communication connections and other work as shown on the plans, as specified here in and as directed by the Engineer/RPR.

The Project is contingent upon the receipt of funding assistance from the Federal Aviation Administration (FAA) under the Airport Improvement Program (AIP), Federal Congressional Discretionary Funding, and the city of Auburn.

001-1.3 PROJECT TIMETABLE & AWARD.

Anticipated Project Timetable is as follows:

- It is anticipated that the construction start date of the project will be in the Fall of 2025.
- Notice of award is anticipated during the Summer of 2025 depending on FAA grants being issued.

- The FAA does not allow unit price escalation clauses for work under this contract.
- The contract time allowed for the construction will be 150 consecutive calendar days

The project has been divided up into separate work areas for safety and to minimize disturbance to Airport operations by construction activities.

In general, there are two (2) work areas as follows:

The Contractor shall complete all work in all work areas within **one-hundred fifty (150) calendar days**. Within the one-hundred fifty days, the Contractor shall complete each Work Area within the following time periods:

- **Work Area 1** –within the **one hundred fifty (150) calendar days** total contract time
- **Work Area 2** – **Fourteen (14)** calendar days concurrent within the **one hundred fifty (150) calendar days** total contract time

001-1.5 EXISTING CONDITIONS AND PROJECT REQUIREMENTS. With the submission of a bid, it shall be understood that the Contractor has fully examined the Plans, Specifications and existing field conditions and understands fully all project requirements and obligations. Any claims for additional compensation for failure to completely understand the project requirements and obligations will be rejected by the Owner.

The Owner will be holding a pre-bid conference at which time prospective bidders will have access to investigate the work site. Additional access to the Airfield may be obtained with the permission of the Owner. All requests for additional access shall be made by contacting the Engineer/RPR.

Data on pavement core thickness, soil borings and the geotechnical report are being provided for your use and reference (refer to the Special Provisions of the project specifications). It is the sole responsibility of the Contractor regarding interpretations, assumptions or conclusions drawn from these reference items and test results in the preparation of their bid proposal.

001-1.6 WETLANDS. There are no wetlands located within the project site.

001-1.7 PERMIT AND REGULATION COMPLIANCE. The Contractor shall comply with all project permits, general permits, state laws, and local regulations. Any fines assessed against the Airport and related expenses due to non-compliance with the permits, laws, rules, and regulations cited in the Contract Documents and caused by the Contractor and their personnel, Subcontractors and Vendors shall be paid for by the Contractor.

For permit requirements refer to the Special Provisions of the project specifications.

001-1.8 PRE-CONSTRUCTION VIDEO SURVEY. The Contractor shall perform a video survey prior to the start of construction. The intent of the survey will be to document existing conditions prior to construction. The video survey shall include but not be limited to:

- Apron (areas adjacent to work and to be used for a haul route)
- Existing Electrical Vault
- Existing fence
- Haul Routes
- Staging Area
- And other areas subject to Contractor Activities

Audio notes shall accompany the video to identify the existing condition of the items being surveyed. A copy

of the video shall be provided to the Engineer/RPR in DVD format prior to the start of construction.

001-1.9 COORDINATION WITH THE AIRPORT AND OTHER CONTRACTORS. The Owner reserves the right to contract for and perform other work on the airfield within and outside the work areas of this contract.

When separate Contractors are let within the limits of any one project, each Contractor shall conduct their work so as not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working within the same project area shall cooperate with each other as directed. Where necessary, each Contractor shall make reasonable adjustments in their schedules to allow for the proper sequencing of work by others.

The Contractor shall arrange their work and shall place and dispose of the materials being used or stored for later use so as not to interfere with the operations of the other Contractors. Contractors utilizing haul routes shall share in the responsibility of maintenance, dust control, and restoration of the haul routes. The responsibilities shall be pro-rated to each Contractor based on use. In areas of dispute between Contractors on the responsibilities for maintenance, dust control, and restoration of the haul routes or other items, the Engineer/RPR shall have the sole judgment as to the assessment of responsibilities to each respective Contractor.

Coordination between Contractors shall be at no additional cost to the Owner.

No additional compensation will be considered eligible due to contractor claims of delay, hindrance, or interference from other contractors.

001-1.10 CONSTRUCTION SAFETY AND PHASING PLAN (CSPP). To enhance safety and to minimize disturbance to daily airport operations the project has been divided in separate phases or work areas as shown on the Safety and Phasing Drawings. The safety and phasing drawings are part of the Construction Safety and Phasing Plan (CSPP). The Contractor shall follow the CSPP explicitly. Deviations from the CSPP will require a revision to the CSPP subject to the Owner and FAA approval. Refer to Specification M-120 for additional information on the Maintenance and Protection of Traffic.

001-1.11 SAFETY PLAN COMPLIANCE DOCUMENT (SPCD). The Contractor will be required to provide a Safety Plan Compliance Document (SPCD). The SPCD will detail how the CSPP will be compiled to. Within the SPCD the Contractor shall provide details including but not limited to contact names and numbers, barricades proposed, runway closed markers proposed, haul routes to work areas, communication plan, fueling of equipment, Foreign Object Debris (FOD) and dust control, verification of height restriction on stock piles and equipment, and other safety procedures. The Contractor shall also include a SPCD certification that they have read, understand the requirements of, and will follow the CSPP. Approval of the SPCD by the Owner will be required prior to the issuance of the Notice to Proceed (NTP).

001-1.12 UNDERGROUND UTILITIES AND CABLES. The approximate locations of known utilities and underground cables are shown on the Plans. There may exist active or inactive underground cables and utilities within the project areas that are not shown on the Plans. Prior to commencement of any excavation the Contractor shall locate and verify the locations and depths of all underground utilities and cables.

The Contractor shall coordinate all work with the following agencies as appropriate.

1. The Federal Aviation Administration – Airways Facilities Branch (Tech Ops)
2. The National Oceanic and Atmospheric Administration – National Weather Bureau
3. DIG-SAFE and other non-member utility companies (as necessary)
4. Central Maine Power Company

The Contractor shall furnish and install all materials necessary to protect existing underground utilities and cables that are to remain. The Contractor shall comply with the current version of the

Dig Safe Law, effective Dec 17, 1998 or as revised. The Contractor is required to pre-mark the construction-site and give notice of planned digging near utility, cable, and fuel lines.

The Contractor shall locate and verify all underground utilities and cables (by a third party underground survey company) at no additional cost to the Owner.

The Contractor shall repair, at their own expense, utilities damaged by their operations, including any damage done by driving their equipment over existing underground cables. The repair of utilities shall be inspected and approved by the appropriate utility and witnessed by the Engineer/RPR.

001-1.13 SUBMITTALS. Upon receipt of the “NOTICE OF AWARD” of the Contract, the Contractor shall submit all appropriate Shop Drawings, material certifications, Buy American Certifications, federal compliance documents, and equipment data sheets in accordance with relevant sections of these Specifications. Once approvals have been obtained, the Contractor shall order all necessary equipment and materials and shall notify the Engineer/RPR of their receipt. Please note that Contract Time will not start until the date specified in the “NOTICE TO PROCEED”.

The Contractor shall identify all long lead-time material items and incorporate them into the construction schedule. The Contractor is reminded to include sufficient time for material Shop Drawing review in this schedule. In general, submittals requiring in-office review only will be processed within ten (10) business days. Submittals requiring outside review can take up to twenty (20) business days. It shall be the Contractor's responsibility to identify long lead-time material items and incorporate their delivery into the overall work schedule.

No additional Contract time will be provided for failure to identify long lead-time materials.

001-1.14 WORK HOURS. Work hours available to the Contractor are Monday through Friday **6:00 a.m. to 6:00 p.m. and Saturday 7:00 a.m. to 4:30 p.m. With prior authorization or as required in the bid documents, nighttime work may be allowed between the hours of 7:00 p.m. to 7:00 a.m.** If applicable, local work hour ordinances shall also apply and supersede the above work hours. Additional hours may be allowed, but only with the prior written approval of the Engineer/RPR and Owner. In case of conflict in the Work Hours noted herein and local ordinances or agreements, the more stringent shall govern.

001-1.15 OVERALL WORK SCHEDULE. The Contractor shall be required to submit a proposed schedule of how the work will be accomplished over the Contract period. The schedule shall be prepared using Microsoft Project or similar computer software. The schedule shall indicate detailed tasks with early and late start dates and critical path activities. This overall schedule shall be submitted to the Engineer/RPR prior to the Pre-Construction Conference. The Contractor shall be prepared to review the schedule at the Pre-Construction Conference with all parties. If so requested, the Contractor shall make modifications to the schedule to minimize disruption to Airport operations. The overall construction schedule is subject to the approval of the Airport and the Engineer/RPR.

It shall be understood that the “NOTICE TO PROCEED” will not be provided until the overall work schedule is submitted and determined to be acceptable by the Engineer/RPR and Owner.

During construction, the overall project schedule shall be updated biweekly with copies provided to the Engineer/RPR.

In accordance with the FAA General Provisions paragraph 80-02 of section 80, the Contractor shall notify the Engineer/RPR at least seventy-two (72) hours in advance of the time they intend to start work. It should be noted by the Contractor that seventy-two (72) hours is the time required by the Owner to issue a proper NOTAM of the pending construction activities.

001-1.16 MONTHLY, WEEKLY, AND DAILY SCHEDULES REQUIRED. To facilitate the specific requirements and intent of this section, the Contractor shall weekly prepare and submit a schedule of

operations for the following workweek. The schedule shall be given to the Engineer/RPR by the end of the work week, proceeding the week covered by the schedule. The weekly schedule shall be subject to the approval of the Engineer/RPR, and shall include as a minimum, the following:

1. Major work items to be accomplished.
2. Subcontractors to be on-site.
3. Names of each Contractor's and Subcontractor's personnel to be on-site.
4. Type and quantity of equipment to be on-site.
5. Areas of the site where construction is scheduled.
6. Any anticipated closing of facilities that will be required.
7. Other information requested by the Owner or Engineer/RPR.

A daily schedule shall be provided to the Engineer/RPR each morning of activities that will be accomplished that day. The daily schedule may be verbal. The Engineer/RPR may disallow work that is not included in the current weekly work schedule.

001-1.17 ON-SITE SUPERVISION. The Contractor shall have a competent superintendent on the work site **at all times** that workers of the Contractor and/or Subcontractors are on-site.

Any time that work is proceeding without the Contractor's superintendent on-site by the Prime Contractor, Subcontractors and Vendors will result in an immediate suspension of work by the Owner. If a suspension of work order is issued, the Contractor shall secure and maintain the site during the period of the suspension of work. No additional compensation will be considered for work performed in preparation of the suspension of work or maintenance of the site during the suspension. No additional Contract time or compensation will be considered for delays or work required by the Contractor for failure to have a competent superintendent on-site at all times.

The superintendent(s) shall be fully authorized to act as the Contractor's agent on the project. The superintendent shall be capable of reading and thoroughly understanding the Plans and Specifications and shall receive and fulfill instructions from the Engineer/RPR or the Owner. The superintendent(s) shall be experienced in the type and nature of the work to be completed.

001-1.18 CONTRACTOR "ON-CALL NAMES AND PHONE NUMBERS". The Contractor shall provide the Engineer/RPR and the Airport Manager with the name(s) and telephone number(s) of persons (two (2) minimum) that can be contacted before or after work hours for emergency situations affecting the construction. The Contractor shall be "on call" at all times during the length of the construction period until the end of the Warranty Period as described in the Supplemental General Provisions. The Contractor contact information shall be provided to the Engineer/RPR one (1) week prior to the Pre-Construction Conference.

001-1.19 ADDITIONAL RESIDENT ENGINEER/PROJECT REPRESENTATIVE SERVICES. The Owner has established a Resident Engineer/Project Representative budget based on the work hours made available to the Contractor. If the Contractor's work schedule exceeds the weekly Resident Engineer/Project Representative hours budgeted for the project, the Contractor agrees to pay the Owner the additional cost for the Resident Engineer/Project Representative in excess of the budgeted hours. The Resident Engineer/Project Representative budget is limit to part time resident work. The cost to the Contractor shall be based on the Resident Engineer/Project Representative's actual billing rate plus expenses and fifteen percent (15%) profit in effect at the time the services were provided. For budgeting purposes, an hourly rate of \$140.00/hour is recommended. It shall be understood that these charges are in addition to any other damage claims available to the Owner (Liquidated Damages, Breach of Contract, etc.), as described within the Contract Documents.

001-1.20 CONTRACTOR'S AUTHORIZED AREA. The Contractor shall not have access to the whole

Airport. The Contractor shall be restricted to the designated work areas, haul route(s), staging area(s) and employee parking area shown on the plans.

The Contractor shall keep personnel and equipment clear of all other Airport critical areas and active Aircraft Operations Areas (AOA) at all times during construction.

No stationary equipment or stockpiles of materials will be allowed to penetrate the Runway 14-32 FAR Part 77 Approach Surfaces, or the runway transitional surfaces, and the runway or taxiway object free areas unless the area is closed to aircraft operations. At no time shall any construction equipment or stockpiles of materials penetrate the threshold approach surface.

For additional information refer to the Safety Plans.

001-1.21 CONTRACTOR STAGING AREA AND EQUIPMENT YARD. The area(s) for the location of the Contractor's field office and for storing materials and servicing, repairing, and parking construction equipment (Contractor's staging areas and auto parking areas) are located as shown on the Plans.

The Contractor will only be permitted to store equipment and materials in the Contractor's staging area. All equipment booms shall be lowered at the close of each day's work or when stored.

The Contractor (and their Subcontractors) shall provide all necessary temporary fencing and gates to protect materials and equipment from pilferage. The Owner will not be responsible for any vandalized equipment or material stored on the Airport property.

All areas occupied by the Contractor shall be maintained in a clean and orderly condition satisfactory to the Engineer/RPR. Attention shall be given to the elimination of combustible rubbish or debris in the areas and none shall be left exposed overnight or at other periods of time the work is shut down.

At the completion of the Contract, all Contractor's and Subcontractor's facilities shall be removed promptly in a workmanlike manner and the area restored to original or better condition and left clean and free of all debris or surplus material.

001-1.22 HAUL ROUTES. The Contractor shall not be granted access to the entire airfield and shall restrict their activities to the designated haul routes (roads) and service roads, staging areas and work areas as shown on the Plans.

Haul routes on the Airport shall be shown on the Plans. The Contractor shall stake, delineate with construction fence the haul routes to be used by Contractor vehicles. The maximum speed limit on all haul routes is **15 mph**.

The Contractor shall construct haul routes shown in non-paved or turf areas. The haul routes shall be constructed to support the equipment and vehicles that will be using them. The haul routes shall be constructed with a smooth and constant grade that will allow positive drainage off of the pavement to the existing drainage swale or drainage devices. Portions of the haul routes within the taxiway safety area and taxiway object free area shall be maintained at all times to allow for the safe use of the taxiway pavement by aircraft. Any ruts or holes greater than three inches (3") in depth shall be filled or graded smooth. Any stones, foreign objects and debris over three inches (3") in any diameter shall be removed. No windrows will be allowed within the taxiway safety area and no windrows that exceed three inches (3") in height above the taxiway centerline elevation will be allowed within the taxiway object free area.

In areas that haul routes cross underground cable(s) or utilities, the crossing shall be protected by placing steel plates over the cable(s) or utility. Any damage to the underground cable(s) or utilities shall be repaired or replaced at the Owners discretion at no additional cost to the Owner.

When active airfield pavements (runways, taxiways, and aprons) are used for haul routes they shall be kept clean of all stones, dirt, debris and foreign matter at all times.

The Contractor shall be responsible for all improvements necessary to construct the haul routes. These improvements shall include but not be limited to stripping and stockpiling of topsoil, excavation, placement of base material (gravel, recycled asphalt pavement, or other suitable material), grading and compaction of the base material. The thickness of the haul route base material shall be sufficient to allow passage of heaviest vehicle anticipated to utilize the haul route without considerable rutting.

The Contractor shall maintain all haul routes (roads) during the course of construction. At the completion of the work, all haul routes constructed by the Contractor shall be removed and the area restored to its original or better condition.

All paved haul routes shall be kept clean at all times to prevent the accumulation of dirt and mud and other debris. Haul routes shall be cleaned at regular intervals not to exceed two (2) hours and prior to opening areas for use by aircraft. If, in the opinion of the Engineer/RPR, sweeping of the pavement surface will generate too much dust, then a vacuum type of street cleaner or other approved pavement cleaning equipment shall be used.

The Contractor shall always provide dust control on the haul routes during the duration of this project. The Contractor shall have on-site at all times a functional water truck and operator who shall monitor construction activities for dust and take corrective action as required.

The Contractor shall construct stabilized construction entrance in accordance with Best Management Practices (BMP) before entering a paved surface or a non-paved surface.

All haul routes constructed or disturbed shall be restored to their original condition or better before the Contract will be considered complete. This includes any damage to paved surfaces caused by the Contractor's activities. Unless otherwise shown on the Plans, the construction, or improvements to haul routes, all restoration of haul routes (including pavement repair) and dust control shall not be measured separately for payment but rather shall be considered incidental to the project.

All non-paved turf areas disturbed by the Contractor's operations shall be scarified or otherwise loosened to a depth not less than five inches (5"). Clods shall be broken and the top three inches (3") of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means. This area shall then be seeded, fertilized and mulched.

Haul routes constructed with gravel shall be restored by removing a sufficient amount of gravel to allow for four inches (4") of topsoil to be placed, graded, seeded and mulched. Grades and grading required for the restoration of constructed gravel haul routes shall be as directed by the Engineer/RPR.

All pavements damaged by the Contractor's activities shall be repaired to equal or better than prior conditions and to the satisfaction of the Engineer/RPR. The work may include, but not be limited to; saw cutting and removing damaged pavement, repair or replacement of base materials, tack coating of existing pavement edges, placement of hot bituminous concrete pavement meeting P-401 Specifications, placed in two (2) lifts or more matching the thickness of the existing pavement, and re-marking of the pavements.

When public roads and highways are used as haul routes, it will become the Contractor's responsibility to obtain the proper permits needed for this function and to obey all rules and regulations pertinent to the public road and highway.

001-1.23 REQUIRED COMPLIANCE OF CONTRACTOR PERSONNEL WITH AIRPORT SAFETY AND SECURITY MEASURES. The Contractor shall take all precautions necessary to ensure the safety of operating aircraft; airport security is maintained, as well as the safety of their own equipment and personnel.

The Contractor shall be responsible for meeting all applicable FAA, and Airport regulations concerning safety and security.

The Contractor is responsible for any temporary fencing, gates or security arrangements needed to meet these requirements. See Plans for additional information on operations and safety during construction.

001-1.24 TRENCHES AND EXCAVATIONS AND COVER REQUIREMENTS. The Contractor will not be permitted to leave any trenches or excavations exceeding three (3) inches in depth open within active Safety Areas (RSA/TSA), Object Free Areas (ROFA/TOFA) and other active Aircraft Operation Areas (AOA) at night, on weekends, or at other times when work is not actually taking place on the excavation. All excavations shall be backfilled, compacted, and the pavement repaired and properly cured prior to the area being reopened to traffic.

Prior to the close of work each day, the Contractor shall ensure that the work area within active Safety Areas, Object Free Areas, and other active Aircraft Operation Areas (AOAs) are graded away from the pavements at a maximum slope of five percent (5%) and shall be left in such a condition that it will drain readily and effectively and will not pose a hazard to vehicles or aircraft. No piles of soil shall be left unspread, no sharp changes in grade will be permitted, and the surface shall be thoroughly compacted.

001-1.25 AIRFIELD BADGES. There is no badging procedure at **Auburn-Lewiston Municipal Airport**. The site superintendent is responsible for being educated on airport security, and safe airport operating procedures either from the Airport Manager, the Engineer/RPR or both, and relaying their message to other employees, and subcontractors. Security and safe airport operating procedures will also be discussed at the start of everyday during the daily Tailgate sections held by the Engineer/RPR.

The Owner and Engineer/RPR reserves the right to deny airfield access to any personnel, whom in the opinion of the Airport present a safety or security risk.

001-1.26 AIRFIELD DRIVING. All Contractor and Subcontractor shall follow haul routes as shown on the safety and phasing plans, the prime contractor is responsible for making all subs aware of these haul routes. No active taxiways or runways shall be crossed without the ability to monitor the airport **UNICOM: 122.80 MHz**.

The Owner and Engineer/RPR reserves the right to deny airfield access to any personnel, whom in the opinion of the Airport present a safety or security risk.

001-1.27 VEHICLE IDENTIFICATION. All Contractor vehicles shall have the company identification plainly visible on both sides of the vehicle in order to identify the vehicle and a unique and visible identification number or letter.

In addition, each Contractor's vehicle operating on the Airport or public roads shall be equipped with an amber flashing light. Each Contractor's motorized vehicle operating within the Airport or in the vicinity of an active runway approach shall be equipped with an amber flashing light and/or a three foot (3') square flag consisting of international orange and white squares not less than one foot (1') displayed in full view above the vehicle. Work during poor visibility conditions and at night will require amber flashing light.

001-1.28 ESCORT VEHICLES. The Contractor shall provide an airfield escort for all vehicles requiring access to the work area locations which are not radio equipped and are crossing active Taxiways or Runways.

0001-1.29 ESCORTS. No dedicated Escorts will be needed on this project. The superintendent will inform all employees and subcontractors of safe airport operating procedures.

01-1.30 WILDLIFE MANAGEMENT. The Contractor shall be responsible to assist the Airport in the management of wildlife in the designated work areas to the satisfaction of the Engineer/RPR.

No wildlife attractants such as food scraps, grass seeds or ponded water shall remain on or near the Airport property. The Contractor shall be responsible for maintaining the construction site in the designated work areas to the satisfaction of the Engineer/RPR. Spotted wildlife shall be reported to Airport Operations.

001-1.31 FOREIGN OBJECT DEBRIS (FOD) CONTROL PROVISIONS. Waste and loose materials, commonly referred to as Foreign Object Debris (FOD) are capable of damaging aircraft and are a life safety concern. Contractors and their employees shall not leave or place FOD on or near active aircraft movement areas. Materials tracked onto these areas shall be continuously removed during the construction project.

The Contractor shall continuously monitor the active aircraft pavements for FOD and immediately, notify the Engineer/RPR and Airport operations if FOD is observed. With authorization, the Contractor will be responsible to remove or mitigate the FOD concern.

The Contractor shall have on-site at all times a sweeper which is capable of removing, to the satisfaction of the Engineer/RPR, any dirt or FOD tracked onto active pavements.

Prior to leaving the work site each night, the Contractor shall coordinate a FOD inspection with Airport Operations of all active pavement surfaces impacted by the construction activities that day and coordinate with Airport Operations the removal of any and all FOD encountered.

The Contractor shall take all necessary precautions to prevent FOD, including but not limited to covering dumpsters, securing store materials, cleaning tires prior to traveling on pavements, and other measures as directed by the Engineer/RPR.

001-1.32 HAZARDOUS MATERIAL (HAZMAT) MANAGEMENT. All hazardous and unsuitable materials, as identified on the Plans and Specifications or as removed by the Contractor, shall be legally disposed of by the Contractor off Airport property.

001-1.33 INSPECTION REQUIREMENTS. At the end of each workday, the Contractor shall coordinate with the Engineer/RPR for an inspection of all active aircraft areas; construction work areas, temporary runway/taxiway markings, temporary visual aids, lighted barricades, runway lights (if required), runway/taxiway safety areas, runway/taxiway surfaces and other items to ensure that conditions allow for safe Airport operations to the satisfaction of the Airport prior to leaving the site for the day.

Any deficiencies encountered in the Engineer/RPR inspection shall be remedied prior to the Contractor leaving the site for the day. The Contractor shall provide written daily reports of the inspection, noting deficiencies found and corrective action taken to remedy the deficiency.

001-1.34 RADIO CONTROL. The Contractor shall have reliable two-way communication between all work crews, the Resident Engineer/Project Representative and Airport Operations at all times. No FAA or other Airport radio frequency will be used for this purpose. Contractor provided radios or cellular phones will be considered acceptable.

The Contractor shall have on-site at all times radio equipped vehicles, at least one (1) per working crew, which shall be monitored by a competent individual at all times during working hours. The radio shall have a two-way radio capable of communicating over the UNICOM/CTAF frequency of **122.8 MHz**. The radio shall be capable of reliable two-way communication from any location on the Airport.

The Contractor shall supplement the radio equipped vehicles, with handheld radios for when the radio equipped vehicles are not occupied. Before the start of daily activities, the Contractor shall perform a radio check to ensure radios are in proper working order.

001-1.35 RESIDENT ENGINEER/PROJECT REPRESENTATIVE COMMUNICATION. The Contractor shall supply the Engineer/RPR with one (1) two-way radio, set at the Contractor's frequency as specified above. At the end of the project, the radio will revert back to the Contractor. At the option of the Contractor, a cell phone may be provided in place of a radio.

001-1.36 ENGINEER/RPR'S AIRFIELD RADIOS. The Contractor shall supply the Engineer/RPR for their use, one (1) Airport hand-held radios for two-way communications with the Airports frequencies as specified above. The radios shall be handheld units, supplied new, with spare batteries, exterior antennas

(magnetic mount), ear plug, remote mike, belt carrying case and battery chargers. At the end of the project the radios will revert back to the Contractor.

001-1.37 ENGINEER'S FIELD OFFICE AND EQUIPMENT. Refer to Specification Section M-110.

001-1.38 CONSTRUCTION LAYOUT. The Engineer/RPR will provide layout information that includes horizontal and vertical control points. Prior to layout, the Contractor shall inverse between these points and satisfy to them self as to the accuracy of the control points provided. The layout for construction shall be the sole responsibility of the Contractor.

The Contractor shall furnish assistance to the Engineer/RPR as requested to check the layout or otherwise control the work. Such assistance shall be understood to include the provision of suitable manpower to assist the Engineer/RPR in taping measurements, holding a survey rod for checking grades and the like. The Contractor's obligations for layout and furnishing assistance to the Engineer/RPR shall be deemed incidental to the completion of the various work items and no separate payment will be made for such layout, final survey, and assistance.

Refer to Specification Section M-150 for additional requirements.

001-1.39 MAINTENANCE OF THE CONSTRUCTION-SITE. The Contractor shall keep the construction-site free of paper, boxes, and other debris, which could be blown onto the runways and taxiways. The Contractor's main staging area shall be supplied with a dumpster with cover. All Airport pavements shall be kept clear and clean at all times. All rocks, mud, and other debris carried onto the Airport pavement by the Contractor's equipment must be reported to the Engineer/RPR or the Owner. The Owner will then close the affected area to traffic and the Contractor will immediately sweep, wash, and/or vacuum the area to the satisfaction of the Owner.

The Contractor shall also be responsible for supplying any other equipment as may be necessary to clean all areas that are contaminated as a result of their operations to the complete satisfaction of the Engineer/RPR and the Owner.

Trucks loaded in the construction area shall have loads trimmed as necessary to assure that no particles, stones, or debris will fall off and that no legal load limits are exceeded.

The Contractor shall be particularly careful not to track foreign material onto pavements outside of and within the Airport. The Contractor shall be responsible for removing foreign materials from vehicle tires prior to the vehicle leaving its work area.

001-1.40 WASTE REDUCTION AND RECYCLE PLAN. The Contractor shall prepare a waste reduction and recycle plan which will specify how the Contractor intends to minimize and reduce waste and recycle waste materials for review by the Engineer/RPR.

001-1.41 TEMPORARY WORK STOPPAGES. Temporary work stoppages are subject to the approval of the Owner. If the Contractor desires to request a temporary work stoppage, it shall be made in writing to the Owner through the Engineer/RPR. The request shall state the reason for temporary work stoppage request. It shall be understood that it is the Owner sole decision whether a temporary work stoppage request will be granted or denied.

The Owner reserve the right to order a temporary work stoppage for any reason deem by the Owner to be in the Airport's best interest. If the Owner does implement a temporary work stoppage, it shall be in writing to the Contractor. No contract time will be incurred by the Contractor for Temporary work stoppage ordered by the Owner. In addition, no additional compensation will be allowed for a temporary work stoppage ordered by the Owner.

The Contractor shall be responsible to secure and stabilize all areas disturbed by Contractor operations for the period of the shut down and maintain the site to the satisfaction of the Engineer/RPR. All erosion and

sedimentation control measures shall be put in place and maintained and checked regularly through the course of the temporary work stoppage. The Contractor agrees to compensate the Owner for additional all additional soft costs No additional compensation will be allowed for temporary work stoppages.

001-1.42 "AS-BUILT DRAWINGS" (RECORD DRAWINGS) AND FINAL SURVEY.

A. The Contractor shall maintain at the site, a set of drawings on which shall be recorded accurately as the work progresses, the actual "As-Built" dimensions, areas, clearing methods and grades of all their work, indicating thereon all variations from the Plans. This record of "As-Built" conditions shall include the work of all Subcontractors. Notations on mechanical and electrical drawings shall include nameplate data for all installed equipment. These drawings shall be kept current and available for review by the Engineer/RPR at all times.

The Contractor shall record on the final "As-Built" drawings any unknown active or abandoned underground cables discovered during construction. If a cable is damaged during construction, the permanent repair must be clearly marked in full description on the "As-Built" drawings.

B. Prior to final acceptance of the work, the Contractor shall have a final survey made by a land surveyor licensed in the State the project is located. The final survey shall consist of taking cross sections at the same stations as the design cross sections with elevations recorded at every location where a proposed grade was shown on the design cross section, at all changes in grade, at the top and toes of slopes, and at the limits of work. The survey shall include the distance from the construction baseline or centerline of each elevation, measured horizontally to the nearest 0.1 foot. The "As-Built" locations (station and offset from the construction baseline or centerline) and "As-Built" rim and invert elevations of all drainage structures and pipes and electrical structures will be included in the survey. The elevation of all pavements and structures and pipes shall be measured to the nearest 0.01 foot and elevation in turf area shall be measured to the nearest 0.1 foot and shall be based on NGVD MSL from the project benchmarks.

All "As-Built" information from the final survey shall be shown on the "As-Built" drawings. In addition, a copy of the electronic survey information prepared in a standard surveyor's format that can be easily followed and checked shall be provided.

The Contractor shall record on the final "As-Built" drawings any unknown active or abandoned underground cables discovered during construction. If a cable is damaged during construction, the permanent repair must be clearly marked in full description on the "As-Built" drawings.

C. The final "As-Built" drawings (Record Drawings) shall be submitted to the Engineer/RPR for review and shall be corrected by the Contractor as required. The "As-Built" drawings shall be completed and accepted by the Engineer/RPR before the time when the final payment shall be due and payable. The preparation of the "As-Built" drawings shall be deemed incidental to the completion of the various work items and no separate payment will be made for such.

001-1.43 LIGHTED RUNWAY CLOSURE MARKERS AND BARRICADES. Airfield Lighted Runway Closure Markers will be **provided by the Contractor as part of the Maintenance and Protection of Traffic**. The Runway Closure Marker to be used shall be listed on the current AC 150/5345-53 *FAA Airport Lighting Equipment Certification Program, Appendix 1 Third Party Certification List* as a L-893 Lighted Visual Aid to Indicate Temporary Runway Closure. The Contractor will be responsible for setting up, ongoing maintenance, and removal of the Runway Closed Markers as shown on the Plans and as directed by the Engineer/RPR and Airport. The Lighted Runway Closure Marker shall be used as shown on the plans and any time that the runway needs to be closed for work by the Contractor that is within the Runway Safety Area that work can't be performed within the Airport's Prior Permission Required (PPR) rules. The Runway Closure Markers may be rented and returned to the supplier, or if purchased shall become the property of the

Contractor at the end of the project.

Low-profile Lighted barricades shall be **provided by the Contractor as part of the Maintenance and Protection of Traffic**. The Contractor shall be responsible for the set-up, adjustment, relocation, ongoing maintenance, and final removal of the low-profile barricades as shown on the Plans and as directed by the Engineer/RPR and Airport. The low-profile barricades may be rented and returned to the supplier, or if purchased shall become the property of the Contractor at the end of the project.

001-1.44 MAINTENANCE OF THE EXISTING AIRFIELD LIGHTING. The existing airfield lighting systems shall be maintained throughout construction (except for periods when the runway is closed). At the end of each day's construction activities, the Contractor shall assist the Engineer/RPR in a lighting check to verify that construction activities have not affected the operation of the airfield lights. All lights and signs on closed taxiway shall be covered during the duration of the phase.

001-1.45 ACCEPTANCE TESTING. All acceptance testing of materials required by various sections of the Specifications will be at no cost to the Contractor unless otherwise specified herein. However, the Contractor will pay for the cost of any retesting required because the materials did not pass the acceptance tests.

PROJECT AERIAL PHOTOGRAPHS – NOT REQUIRED

001-1.47 DAVIS-BACON AND WAGE COMPLIANCE. This Project is subject to the requirements of the Davis-Bacon Act, The Contract Work Hours and Safety Act, The Copeland Act, and Fair Labor Standards Act.

The Contractor (also referred to as the Principal Contractor, Prime Contractor or General Contractor) is responsible for full compliance of all employers (the Contractor, Subcontractor, any/all lower-tier Subcontractors) with the labor standards and provisions applicable to this Project.

All certified payrolls shall be channeled through the Contractor. It shall be the Contractor's responsibility to review all Subcontractor, and any/all lower-tier Subcontractor's certified payrolls for compliance with the labor standards provisions applicable to this Project. Each Subcontractor and any/all lower-tier Subcontractors payroll submission shall be reviewed and stamped by the Contractor as "reviewed and found to be in compliance" prior to submission to the Engineer/RPR.

Certified payrolls shall be submitted in a format as prescribe by the law.

If the Project requires a work classification and rate that is not contained within the decisions or classifications contained within the Specifications, it shall be the Contractor's responsibility to request an additional classification(s) from the Department of the Labor. Failure of the decision to include a classification or wage determination does not relieve the Contractor from the obligation to meet applicable classification and wage rates. If additional wage rate requests are requested by the Contractor, the Contractor shall provide a copy of all correspondence and wage requests to the Engineer/RPR and the Airport Operator.

The Contractor shall post the Project's wage rate classifications at the work site, in a location approved by the Engineer/RPR prior to starting work.

The Owner is required, through the Engineer/RPR, to conduct employee interviews for compliance with the Davis-Bacon Wage requirements. The Contractor shall make employees available for interviews.

If it is necessary to make payment restitution to employee(s) the restitution shall be made independently of standard payroll. Documentation shall be provided which details the restitution action.

Certified payrolls shall be submitted and accepted prior to the acceptance of any Periodic Cost Estimates (PCEs) for the work period covered in the PCEs. Retainage for the project will not be released until all project certified payrolls have been submitted to and accepted by the Engineer/RPR.

001-1.48 WORK FORCE UTILIZATION REPORTING. The Contractor shall submit monthly work force utilization reports. The reports shall include the work force of the Contractor, Subcontractors, and lower tiered Subcontractors. The reports shall include the following:

- A list of all workers (including classification) that worked on the Project for the reporting period. This shall include all workers in addition to those employed on the job site including, Principals, Project Managers, and other office staff
- Number of hours worked on the project by each person listed for the reporting period.
- Totals shall be provided separately for the Contractor, Subcontractor and lower tiered Subcontractors.
- Total number of hours, including, the Contractor, Subcontractor, and lower-tiered Subcontractors.

Monthly utilization reports will be required prior to the acceptance of any Periodic Cost Estimate (PCE). Retainage for the project will not be released until all project work force utilization reporting has been submitted to and approved by the Engineer/RPR.

001-1.49 MONTHLY DBE REPORTING. The Contractor shall submit monthly Disadvantaged Business Enterprise (DBE) reports. The Contractor shall use the report form as included within this Specification. The report shall be submitted regardless of if any DBE participation took place during the period indicated.

The Contractor shall continually monitor their DBE participation on the Project. If it appears that the actual DBE participation will be lower than indicated in the Contractor's DBE Letter of Intent, the Contractor shall provide written notification, and indicate just reason for the change. The Contractor shall further provide additional Good Faith Effort documentation that effort was made to replace this DBE participation as outlined in the Supplemental General Provisions.

Monthly DBE reports will be required prior to the acceptance of any Periodic Cost Estimate (PCE). Retainage for the Project will not be released until all Project monthly DBE reporting documentation has been submitted to and approved by the Engineer/RPR.

001-1.50 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) DOCUMENTATION. All employees to be employed at the job site shall have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration (OSHA) that is ten (10) hours in duration at the time the employee begins work.

The Contractor shall furnish documentation of successful completion of said course by either a copy of the OSHA card or a letter or certificate of completion from the person or company that administered the course. OSHA documentation shall be provided prior to any person beginning work on the site. It is recommended that Contractors and Subcontractors provide a copy of OSHA documentation for all employees prior to the start of work.

Periodic Cost Estimates will not be accepted for payment unless all OSHA documentation has been received. Retainage for the Project will not be released until all Project OSHA cards have been submitted to and approved by the Engineer/RPR.

001-1.51 CONTRACT CHANGE ORDERS. Any work to be included in this Project by Change Order must be approved by the **Auburn-Lewiston Municipal Airport** and reviewed by **FAA, MaineDOT**, and the Engineer/RPR. Any additional cost for change order work shall be at a fair and reasonable cost to the Owner. The Contractor shall provide a detailed breakdown of costs on all Change Order work. The breakdown shall use Contract unit prices, if available. If Contract unit prices are not available, the Contractor shall provide a detailed breakdown of costs, indicating labor, equipment, and materials as separate line items and then sum together for a subtotal. Material costs shall include copies of supplier's quotes. Administrative costs, including

but not limited to, office time and cost to increase the bonds or insurance will not be eligible for consideration in the change order. Labor costs for pricing Change Orders shall be actual rates including fringes without mark-up. Equipment costs shall be at standard industry rates, not to exceed rates as published by RS Means or other approved industry rate guideline.

Mark-up for overhead and profit shall be limited to ten (10) percent for the Contractor or Subcontractor performing the Change Order work. When a Subcontractor or lower-tiered Subcontractor is performing the Change Order work, each Subcontractor or Contractor above the firm performing the Change Order work shall be limited to a five (5) percent mark-up for overhead and profit. However, the total mark-up for any Change Order for the Contractor and Subcontractor(s) shall not exceed twenty (20) percent of the change order prior to the application of profit.

001-1.52 SUBSTANTIAL COMPLETION. Substantial Completion shall be achieved when work is complete, and the work areas can be occupied or utilized for their intended purpose by the Owner without interference or restrictions.

It shall be the Contractor's responsibility to inform the Engineer/RPR, in writing, when the Contractor believes the project is substantially completed. The Engineer/RPR and Owner maintain the sole right to accept the requested substantial completion date or reject it. If the date of substantial completion is accepted, the Owner will temporarily suspend Contract time effective at the end of the day on the date of substantial completion. On or after the date of substantial completion, the Engineer/RPR will submit to the Contractor, in writing, a punch list of deficiencies.

The Contractor shall complete all punch list work (both field work and administrative work) within thirty (30) calendar days of the receipt of the punch list from the Engineer/RPR. Within the thirty (30) calendar days, the Contractor can work on the site up to five (5) days. Should the field portions of the punch list work remain incomplete after five (5) days of work on the site, the Owner may restart the assessment of Contract time. If any of the punch list work, including administrative work, remains incomplete after thirty (30) calendar days, the Owner may restart the assessment of Contract time.

The resumption of contract time may result in the assessment of liquidated damages in accordance with Supplemental General Provisions.

If the Contractor feels that additional time is required for field work, administrative work, or both, they may submit a request for additional time in writing to the Engineer/RPR before the start of work on the punch list. The request must include supporting justification and a schedule to complete the work. The Engineer/RPR and Owner maintain the sole right to accept the request for additional time or reject it. If no request for additional time is received by the Engineer/RPR prior to the start of punch list work, it will be understood that the Contractor accepts the time frame outlined above.

The Owner reserves the right to add additional items to the punch list at any time. If the Contractor feels that additional time is required for the additional punch list item or items, they may submit a request for additional time in writing to the Engineer/RPR before the start of work on the additional punch list item or items. The request must include supporting justification and a schedule to complete the work. The Engineer/RPR and Owner maintain the sole right to accept the request for additional time or reject it. If no request for additional time is received by the Engineer/RPR prior to the start of punch list work, it will be understood that the Contractor accepts the time frame outlined above.

001-1.53 REQUIRED SUBMITTALS. The following items must be submitted to the Engineer/RPR as part of this Specification section (along with all other submittals specifically referenced in the Plans and Specifications):

- Insurance Certificates
- Pre-Construction Video DVD

- Project Schedules
- Safety Plan Compliance Document (SPCD)
- Waste Reduction and Recycling Plan
- Construction Plan (detailing means and methods)
- Runway Closure Markers and Barricade Submittals
- Material Submittals & Shop Drawings
- Project Photographs
- Aerial Photographs
- As-Built Plans
- Payroll Certifications
- Work Force Utilization Documentation
- Disadvantaged Business Enterprise Documentation
- OSHA Compliance Documentation
- Signed Contractor's Guarantee (after substantial completion)
- Lien Waiver

METHOD OF MEASUREMENT & BASIS OF PAYMENT

001-2.1 No separate measurement for payment, or individual payment, will be made for work under this item unless carried and outlined in other item specifications. The work outlined within this section shall be considered incidental to the overall project.

END OF SECTION M-001

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Item M-150 Field Survey and Stakeout**CONTRACT DOCUMENTS**

150-0.1 This section of these Specifications is a part of the Contract Documents as defined in the General Provisions. All applicable parts of the balance of the Contract Documents are equally as binding for this section as for all other sections.

Attention shall be directed to Paragraphs 001-1.38 Construction Layout and 001-1.42 "As-Built Drawings" (Record Drawings) and Final Survey of these Specifications entitled, Section M-001 "Special Work Requirements" for additional information.

DESCRIPTION

150-1.1 Under this item, the Contractor shall do all necessary surveying required to construct all elements of the Project as shown on the Contract Drawings and specified in the Proposal and Specifications. This shall include but not be limited to computations, checking existing baseline traverse, control points, stakeout, layout and elevations for pavements, structures, forms, pile layouts and appurtenances as shown and required, consistent with current practices and shall be performed by qualified personnel acceptable to the Engineer/RPR.

The stakeout survey shall proceed immediately following the award of the Contract and shall be expeditiously progressed to completion in a manner and at a rate satisfactory to the Engineer/Resident Project Representative (RPR). The Contractor shall keep the Engineer/RPR fully informed as to the progress of the stakeout survey. **All survey fieldwork and computations shall be performed under the direction of a Licensed Land Surveyor, licensed in the State in which the project is located.**

In addition, the surveyor shall be experienced in:

1. Survey projects utilizing Global Positioning System (GPS) collection methods.
2. National Geodetic Survey (NGS) specifications, standards, and software.
3. Knowledge of the National Spatial Reference System (NSRS), NGS Continuously Operating Reference Stations (CORS), horizontal and vertical controls, and the High Accuracy Reference Network (HARN).
4. Using CORS data to establish geodetic ties to NSRS.
5. Establishing aerial photography, photo control points, reading and annotating information on aerial photography.
6. Recovering marks, setting marks, and writing station descriptions of survey marks to NGS standards.

150-1.2 As part of the Final Survey and "As-Built" (Record) Drawings work, the Contractor (and their surveyor if a subcontractor) shall include the requirements for providing aeronautical data collection and conversion associated with work Tasks herein. This includes but is not limited to collection of airfield features within the project limits for GIS conversion in accordance with FAA criteria.

CONSTRUCTION METHODS AND MATERIALS

150-2.1 PROTECTION OF EXISTING SURVEY CONTROL POINTS. The Contractor shall protect all existing survey control points disturbance during construction. Any survey control point disturb by the Contractor, shall be replace with a control point of equal accuracy and value at no additional cost to the Owner.

150-2.2 SURVEY METHODS. Conventional TPS survey methods are required for vertical stakeout, quality assurance checks during construction and basis for acceptance of construction. GPS survey methods will be allowed for rough grading during construction and horizontal stakeout only.

150-2.3 SURVEY MATERIALS. All survey equipment shall be properly calibrated according to the manufacturer's guidelines. All GPS survey equipment shall be certified as achieving the minimum standards by comparison to conventional survey methods.

All instruments, equipment, stakes, and any other material necessary to perform the work satisfactorily shall be provided by the Contractor. All stakes used shall be of a type approved by the Engineer/RPR. It shall be the Contractor's responsibility to maintain these stakes in their proper position and location at all times.

150-2.4 SUBMITTALS.

Preconstruction: The Contractor shall provide to the Engineer/RPR a submittal containing the overseeing surveyor's license and experience information demonstrating qualifications for construction stakeout personnel. In addition, the submittal shall include a complete list of the survey equipment (mfg. make and model) proposed for use during the project, including the equipment calibration certification.

Construction: The Contractor shall provide survey computations in the form of surface elevations at the grid locations to the Engineer/RPR for approval before beginning the next construction operation. Construction of the next phase shall not commence until the submittal is approved by the Engineer/RPR. All construction submittals of grade information by the Contractor shall be signed and sealed by a licensed land surveyor.

Postconstruction: The Contractor submit all collected data (in AutoCAD format), and associated required deliverables specified in FAA AC 150/5300-18B, or latest revision. This includes, but is not limited to:

1. Survey Quality Control Plan (completed prior to the start of Final Survey work)
2. Final Project Report
3. Documentation required for each feature as defined by Chapter 5 of FAA AC 150/5300-18B
4. All final processing, adjustment, or reduction files used to produce the final data. This includes the results of independent software files produced during the reduction of the final data, and any other product necessary to recreate the data.

CONSTRUCTION DETAILS

150-3.1 GENERAL. The position of all work shall be established from control points, baseline traverse points or other points of similar nature which are shown on the Contract Drawings and/or modified by the Contractor. Prior to layout, the Contractor shall inverse between these points and satisfy to them self as to the accuracy of the control points provided. Any error, apparent discrepancy or absence in or of data shown or required for accurately accomplishing the stakeout survey shall be referred to the Engineer/RPR for interpretation or furnishing when such is observed or required. The Engineer/RPR shall be made aware of any discrepancies between the topographical information shown on the contract drawings and the Contractor survey before construction commences.

The Contractor shall place references marks at each baseline station and quarter stations and at such intermediate locations as the Engineer/RPR may direct. Offset marks shall be installed at a maximum of 50-foot intervals, unless otherwise noted, with 25-foot maximum intervals required for pavement areas. From computations and measurements made by the Contractor, these marks shall be clearly and legibly marked

with the correct centerline station number, offset and cut or fill so as to permit the establishment of the exact baseline location and elevation during construction. If markings become faded or blurred for any reason, the markings shall be restored by the Contractor. The Contractor shall locate and place all cut, fill, slope, fine grade, structures or other stakes and points, as the Engineer/RPR may direct, for the proper progress of the work. All control points shall be properly guarded and flagged for easy identification.

During the progress of the construction work, the Contractor will be required to furnish all of the surveying and stakeout incidental to establish the proper location by line and grade for each phase of the work. For paving and any other operation requiring extreme accuracy, the Contractor will re-stake with pins or other acceptable hubs located directly adjacent to the work at a spacing directed by the Engineer/RPR.

The Contractor shall be responsible for the accuracy of his work and shall maintain all reference points, stakes, etc., throughout the life of the Contract. Damaged or destroyed points, benchmarks, or stakes, or any reference points made inaccessible by the progress of the construction, shall be replaced or transferred by the Contractor. All control points shall be referenced by ties to acceptable objects and recorded. Any alterations or revisions in the ties shall be so noted and the information furnished to the Engineer/RPR immediately. All stakeout survey work shall be referenced to the baseline shown on the Contract Drawings. All computations necessary to establish the exact position of the work from control points shall be made and preserved by the Contractor. All computations, survey notes and other records necessary to accomplish the work, shall be neatly made. Such computations, survey notes and other records shall be made available to the Engineer/RPR and shall become the property of the Owner.

The Contractor shall perform complete construction survey, stakeout and cross sections of the proposed work area, prior to any excavation, after excavation or embankment placement, subbase placement, cold milling, and successive asphalt courses are completed. Construction survey shall be based upon a maximum 25-foot grid, unless otherwise noted, based upon the horizontal and vertical control lines provided on the plans.

The Engineer/RPR may check all, or any portion of the stakeout survey work or notes made by the Contractor. Any necessary correction to the work shall be made immediately by the Contractor. Such checking by the Engineer/RPR shall not relieve the Contractor of any responsibility for the accuracy or completeness of his work. The Contractor shall furnish assistance to the Engineer/RPR as requested to check the layout or otherwise control the work. Such assistance shall be understood to include the provision of suitable manpower to assist the Engineer/RPR in taping measurements, holding a survey rod for checking grades and the like. The Contractor's obligations for layout, final survey and furnishing assistance to the Engineer/RPR shall be deemed incidental to the completion of the various work items and no separate payment will be made for such layout, final survey and assistance.

150-3.2 DATA COLLECTION. The Contractor shall ensure that all relevant layers/features are collected and/or converted in accordance with FAA AC 150/5300-18B, or latest revision.

150-3.3 TOLERANCES. All surveys shall meet the following tolerances. Contractor shall provide verification that acceptable tolerances are obtained.

Pavement: All stakes, points or locations shall be set within 0.08 foot horizontally and 0.02 foot vertically of calculated position.

Drainage Structures: All stakes, points or locations shall be set within 0.08 foot horizontally and 0.05 foot vertically of calculated position.

Earthwork: All stakes, points or locations shall be set within 0.1 foot horizontally and 0.1 foot

vertically of calculated position

Permanent Runway End Survey Points shall be set within 0.05 foot horizontal and 0.01 foot vertical.

150-3.4 PERMANENT RUNWAY END BRASS CONTROL DISK. Not Used.

150-3.5 ACCEPTANCE. The Engineer/RPR reserves the right to perform an independent survey for the basis of acceptance and payment purposes.

METHOD OF MEASUREMENT

150-4.1 FIELD SURVEY AND STAKEOUT. Measurement will be made based on the percent progression of the work on a basis of project completion, at the discretion of the RPR, at the lump sum price amount for this item. Also, the final ten percent (10%) of the lump sum payment will not be released for final measurement until the As-Built Record Documents have been submitted and accepted by the Engineer and the RPR.

150-4.2 PROTECTION OF EXISTING SURVEY CONTROL POINTS. No separate measurement for payment will be made for the protection of existing survey control points. Rather this work shall be considered incidental to the project.

150-4.3 AS BUILT RECORD DOCUMENTS. No separate measurement for payment will be made for the preparation of As-Built Record Documents. Rather this work shall be considered incidental to the project as part of the survey item lump sum.

BASIS OF PAYMENT

150-5.1 FIELD SURVEY AND STAKEOUT. Payment for the lump sum price amount shall include the cost of furnishing all labor, equipment, instruments, and all other material necessary to satisfactorily complete the project surveying and stakeout, including the final submission of As-Built Record Documents.

As noted above under Method of Measurement, partial payments for the percent progression shall be made at the discretion of the RPR as the work progresses.

150-5.2 PROTECTION OF EXISTING SURVEY CONTROL POINTS. No separate payment will be made for the protection of existing survey control points. Rather this work shall be considered incidental to the project.

150-5.3 AS BUILT RECORD DOCUMENTS. No separate payment will be made for preparation of the As-Built Record Documents. Rather this work shall be considered incidental to the survey lump sum.

Payment will be made under:

Item M-150-1	Field Survey and Stakeout	Per Lump Sum
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REFERENCE DOCUMENTS

Federal Aviation Administration (FAA) Advisory Circulars (AC):

- 150/5300-16A General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submissions to the National Geodetic Survey
- 150/5300-17C Standards for Using Remote Sensing Technologies in Airport Surveys
- 150/5300-18B General Guidance and Specifications for Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards

END OF ITEM M-150

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Item M-200 Maintenance and Protection of Traffic**DESCRIPTION**

200-1.1 GENERAL. This work shall consist of maintaining aircraft and vehicular traffic and protecting the public from damage to person and property within the limits of and for the duration of the Contract.

The Contractor shall comply with all guidelines regarding construction safety set forth in FAA Advisory Circular 150/5370-2G, *Operational Safety on Airports during Construction*, or latest revision and Special Provisions.

The following items are specifically included without limiting the generality implied by these Specifications and the Contract Drawings.

- ✈ Preparation of the Safety Plan Compliance Document (SPCD) with submission to the Engineer/Resident Project Representative (RPR) and Airport for review and implementation.
- ✈ Procurement, installation, maintenance and removal of temporary work zone delineation markers, including the furnishing of stakes and cones. The Contractor shall provide the cones and stakes which shall remain as the Contractor's property at the completion of the project with proper disposal of broken and used stakes.
- ✈ Installation, maintenance, and removal/restoration of any temporary haul routes/roads and staging areas.
- ✈ Installation, maintenance and removal of temporary or permanent barricades, warning signs, hazard markings and runway closure markings. The Contractor shall provide the barricades and safety devices and shall remain the Contractor's property at the completion of the project.
- ✈ Procurement, placement, operation, maintenance and removal of two (2) lighted runway closure markers to be rented/purchased by the Contractor. All operation and maintenance costs (i.e. bulbs, fuel, etc.) shall be provided by the Contractor. If purchased, the lighted runway closure markers shall remain the Contractor's property at the completion of the project.
- ✈ Procurement, placement and resetting, maintenance, and removal of low-profile barricades with lights to be rented/purchased by the Contractor. If purchased, the low-profile barricades and lights shall remain the Contractor's property at the completion of the project.
- ✈ Procurement, placement, maintenance and removal of temporary signage and pavement markings.
- ✈ Staged or phased construction.
- ✈ Off-peak construction periods.
- ✈ Temporary alteration or decommissioning of any existing Runway or Taxiway lighting, signage, or NAVAID.
- ✈ Locating and marking of existing underground utilities, lighting or other airfield circuits within the project work areas. Including any underground surveys, as may be required, to locate the underground utilities and lighting circuit materials.
- ✈ Installation, maintenance, and removal of temporary lights and lighting circuits including lighted runway closure markings and "jumpers" for any circuit, as required.
- ✈ Installation, maintenance, and removal of temporary guidance sign coverings.

- ✈ Installation, maintenance, and removal of temporary lights and lighting.
- ✈ Testing and maintenance of existing, temporary, and new lighting circuitry Installation, maintenance, and removal/restoration of any temporary haul routes and staging areas.
- ✈ Installation, maintenance, and removal of any temporary pavement tapers, transitions or temporary accesses to any airport facilities.
- ✈ Installation, maintenance, and removal of any temporary drainage, including ditches, swales, piping and de-watering of work areas.
- ✈ Alteration, adjustment, maintenance of any drainage inlets, structures or systems necessary to maintain runway drainage during construction.
- ✈ Cleaning and maintenance of all areas within construction limits and haul routes or areas disturbed by the Contractor's operation via vacuum sweeper trucks.
- ✈ Restoration of all surfaces disturbed because of the Contractor's Operations, which are not otherwise paid for under a specific item, including but not limited to: haul roads, haul routes, staging areas, stockpile locations, and other areas outside of payment limits.

METHOD OF MEASUREMENT

200-2.1 MAINTENANCE AND PROTECTION OF TRAFFIC. Payment for maintenance and protection of traffic will be made on a lump sum basis. The lump sum shall include all items required to satisfy this Specification. The Contractor will be required to submit a Schedule of Values for the Maintenance and Protection of Traffic items and provide a copy of this Schedule as part of the bid package.

BASIS OF PAYMENT

200-3.1 MAINTENANCE AND PROTECTION OF TRAFFIC. The lump sum price bid for maintenance and protection of traffic shall include all equipment, materials, and labor necessary to adequately and safely maintain and protect traffic. Progress payments will be made for this item in proportion to the total amount of contract work completed, less any deductions for unsatisfactory maintenance and protection of traffic.

In the event the contract completion date is extended, no additional payment will be made for maintenance and protection of traffic.

No payment will be made under maintenance and protection of traffic for each calendar day during which there are substantial deficiencies in compliance with the Specification requirements of any subsection of this Section as determined by the Engineer/RPR. The amount of such calendar day non-payment will be determined by dividing the lump sum amount bid for maintenance and protection of traffic by the number of calendar days between the date the Contractor commences work and the date of completion as designated in this proposal, without regard to any extension of time.

If the Contractor fails to maintain and protect traffic adequately and safely for a period of four (4) hours, the Owner shall correct the adverse conditions by any means it deems appropriate and shall deduct the cost of the corrective work from any monies due the Contractor. The cost of this work shall be in addition to the liquidated damages and non-payment for maintenance and protection of traffic listed above.

However, where major non-conformance with the requirement of this Specification is noted by the Engineer/RPR and prompt Contractor compliance is deemed not to be obtainable, all contract work may be stopped by direct order of the Engineer/RPR regardless of whether corrections are made by the Owner as stated in the paragraph above.

Partial payments will be allowed as follows:

- a. With first pay request, 25%.
- b. When 25% or more of the original contract is earned, an additional 25%.
- c. When 50% or more of the original contract is earned, an additional 40%.
- d. After Final Inspection, Staging area clean-up and delivery of all project closeout materials, the final 10% may be paid.

Payment will be made under:

Item M-200-1 Maintenance and Protection of Traffic – Lump Sum

END OF ITEM M-200

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Item M-300 Grassed Soil Filter System**DESCRIPTION**

300-1.1 This item shall consist of the construction of an infiltration basin in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

MATERIALS

300-2.1 GENERAL. Materials shall meet the requirements shown on the plans, Maine Department of Environmental Protection's (DEP) Stormwater Management Manual requirements and as specified below.

300-2.2 COARSE GRAVEL. Material shall consist of well graded, clean, coarse gravel free from organic matter, frozen material, and meeting the requirements of Maine Department of Transportation (DOT) Standard Specifications Section 703.22 – Type B Underdrain Backfill Material. The material must contain less than 5% passing the No. 200 sieve.

Coarse Gravel Gradation

Sieve Size	% Passing by Weight
1"	95-100
½"	75-100
No. 4	50-100
No. 20	15-80
No. 50	0-15
No. 200 (clay size)	0-5

300-2.3 SOIL FILTER. The soil filter mixture shall be a loamy coarse sand which is loosely installed and meets the gradation listed below (per Maine DEP – Stormwater Management Manual – Volume III: BMP Technical Design Manual – Chapter 7.1 Grassed Underdrain Soil Filters – Table 7.1.3).

Soil Filter Gradation – Loamy Coarse Sand

Sieve Size	% Passing by Weight
No. 10	85-100
No. 20	70-100
No. 60	15-40
No. 200	8-15
No. 200 (clay size)	< 2.0

300-2.4 SUBMITTALS.

- A. Gradation sieve analysis for coarse gravel.
- B. Gradation sieve analysis for soil filter mixture.
- C. Standard Proctor Density (ASTM D698) for soil filter mixture.

- D. Soil filter mixture permeability testing data (with the mixture having a measured bulk dry density of 90 – 92% based on ASTM D698).

CONSTRUCTION METHODS

300-3.1 EQUIPMENT. All equipment necessary and required for the proper construction of the grassed soil filter shall be on the project, in first-class working condition, and approved by the Engineer/Resident Project Representative (RPR) before construction is permitted to start.

300-3.2 FILTER SYSTEM INSTALLATION. The Contractor shall reference Maine Department of Environmental Protection's Stormwater Management Manual – Volume III: BMP Technical Design Manual – Chapter 7.1 Grassed Underdrain Soil Filters for additional installation material requirements and construction installation requirements.

300-3.3 EXCAVATION. The width of the trench shall be sufficient to permit satisfactory installation of the grassed soil filter without compromising the integrity of the surrounding systems.

Where rock, hardpan, or other unyielding material is encountered, it shall be removed below the foundation grade for a depth of at least 4 inches (100 mm). The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 6 inches (150 mm) in uncompacted depth to form a uniform but yielding foundation.

Excavated material not required or acceptable for backfill shall be disposed of by the Contractor as directed by the Engineer/RPR. No additional payment shall be made for over excavation. In the event of over excavation, the Contractor shall backfill the area, at the Contractor's expense, with material approved by the Engineer/RPR and compacted to the density of the surrounding earth material.

The Contractor shall perform trench bracing, sheathing, or shoring necessary to perform and protect the excavation as required for safety and conformance to governing laws. The sheathing or shoring shall be pulled as the granular backfill is placed and compacted to avoid any unfilled spaces between the trench wall and the backfill material. The cost of bracing, sheathing, or shoring, and the removal of same, shall be included in the unit price.

300-3.4 BACKFILLING AND COMPACTION. The backfill material shall be Coarse Gravel and Soil Filter as specified in 300-2.2 and 300-2.3 respectively. The soil filter media shall not be installed until the tributary area has been permanently stabilized or the runoff is diverted around the filter. Special care shall be taken in placing the backfill.

The soil filter media shall be placed in loose layers not exceeding 6 inches in depth and loosely compacted (tamped lightly with a dozer or backhoe bucket). Backfilling shall be done in a manner to avoid injurious top or side pressures on the soil filter media. Soil filter shall be compacted to reach a bulk density of between 90% and 92% of the standard proctor.

In embankments and for other areas outside of the bottom of the swale, the backfill shall be compacted to the density required for embankments in unpaved areas under Item P-152.

300-3.5 CLEANING AND RESTORATION OF SITE. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankments, shoulders, or as ordered by the Engineer/RPR. Except for paved areas of the Airport, the Contractor shall restore all disturbed areas to their original condition.

METHOD OF MEASUREMENT

300-4.1 GRASSED SOIL FILTER SYSTEM. Measurement for payment will be made per a square foot (square-meter) for the in-place installation of soil filter system to the satisfaction of the Engineer/RPR including but not limited to: excavation, furnishing and installation of system component materials, furnishing, placement and compaction of soil materials, grading, seeding, maintenance, and testing to the satisfaction of the Engineer/RPR or Owner. No additional measurement for payment will be made for any corrective measures as required for a fully functional system to the satisfaction of the Engineer/RPR.

BASIS OF PAYMENT

300-5.1 GRASSED SOIL FILTER SYSTEM. Payment will be made at the percent complete of the Lump Sum contract bid price. The bid prices shall include the cost of all labor, all materials, the use of all equipment, and tools, and incidentals necessary required to complete the work.

M-300-1	Grassed Soil Filter System	per square foot (square meter)
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REFERENCES

Maine DEP	Stormwater Management Manual Volume III: BMP Technical Design Manual – Chapter 7 Filtration BMPs
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END OF ITEM M-300

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Item P-101 Preparation/Removal of Existing Pavements**DESCRIPTION**

101-1 This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable plans.

EQUIPMENT AND MATERIALS

101-2 All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

CONSTRUCTION**101-3.1 Removal of existing pavement.**

The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

a. Concrete pavement removal. Full depth saw cuts shall be made perpendicular to the slab surface. The Contractor shall saw through the full depth of the slab including any dowels at the joint, removing the pavement and installing new dowels as shown on the plans and per the specifications. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods which will not cause distress in the pavement which is to remain in place. If the material is to be wasted on the airport site, it shall be reduced to a maximum size of 3" or as designated by the RPR. Concrete slabs that are damaged by under breaking shall be repaired or removed and replaced as directed by the RPR.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Spall and underbreak repair shall be in accordance with the plans. Any underlying material that is to remain in place, shall be recompact and/or replaced as shown on the plans. Adjacent areas damaged during repair shall be repaired or replaced at the Contractor's expense.

b. Asphalt pavement removal. Asphalt pavement to be removed shall be cut to the full depth of the asphalt pavement around the perimeter of the area to be removed. If the material is to be wasted on the airport site, it shall be broken to a maximum size of 4 inches (mm).

c. Repair or removal of Base, Subbase, and/or Subgrade. All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the RPR. Materials and methods of construction shall comply with the applicable sections of these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense.

101-3.2 Preparation of joints and cracks prior to overlay/surface treatment. Remove all vegetation and debris from cracks to a minimum depth of 1 inch (25 mm). If extensive vegetation exists, treat the specific area with a concentrated solution of a water-based herbicide approved by the RPR. Fill all cracks greater than 1/4 inch (6 mm) wide) with a crack sealant per ASTM D6690. The crack sealant, preparation, and application shall be compatible with the surface treatment/overlay to be used. To

minimize contamination of the asphalt with the crack sealant, underfill the crack sealant a minimum of 1/8 inch (3 mm), not to exceed 1/4 inch (6 mm). Any excess joint or crack sealer shall be removed from the pavement surface.

101-3.3 Removal of Foreign Substances/contaminates prior to overlay, seal-coat, or remarking.

Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the RPR in the field during construction.

high-pressure water, cold milling, or rotary grinding may be used. If chemicals are used, they shall comply with the state's environmental protection regulations. Removal methods used shall not cause major damage to the pavement, or to any structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch (3 mm) deep. If it is deemed by the RPR that damage to the existing pavement is caused by operational error, such as permitting the application method to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the RPR.

Removal of foreign substances shall not proceed until approved by the RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement shoulders. All wastes shall be disposed of in areas indicated in this specification or shown on the plans.

101-3.4 Concrete spall or failed asphaltic concrete pavement repair.

a. Repair of concrete spalls in areas to be overlaid with asphalt. The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. The perimeter of the repair shall be saw cut a minimum of 2 inches (50 mm) outside the affected area and 2 inches (50 mm) deep. The deteriorated material shall be removed to a depth where the existing material is firm or cannot be easily removed with a geologist pick. The removed area shall be filled with asphalt mixture with aggregate sized appropriately for the depth of the patch. The material shall be compacted with equipment approved by the RPR until the material is dense and no movement or marks are visible. The material shall not be placed in lifts over 4 inches (100 mm) in depth. This method of repair applies only to pavement to be overlaid.

b. Asphalt pavement repair. The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. The failed areas shall be removed as specified in paragraph 101-3.1b. All failed material including surface, base course, subbase course, and subgrade shall be removed. Materials and methods of construction shall comply with the applicable sections of these specifications.

101-3.5 Cold milling. Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface. The milling machine or grinder shall operate without tearing or gouging the underlying surface. The milling machine or grinder shall be equipped with grade and slope controls, and a positive means of dust control. All millings shall be removed at the direction of the RPR. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense.

a. Patching. The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cut. The RPR shall layout the area to be milled with a straightedge in increments of 1-foot (30 cm) widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall be repaired by the Contractor at the Contractor's Expense.

b. Profiling, grade correction, or surface correction. The milling machine shall have a minimum width of 7 feet (2 m) and it shall be equipped with electronic grade control devices that will cut the surface to the grade specified. The tolerances shall be maintained within +0 inch and -1/4 inch (+0 mm and -6mm) of the specified grade. The machine must cut vertical edges and have a positive method of dust control. The machine must have the ability to remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed as directed by the RPR

c. Clean-up. The Contractor shall sweep the milled surface daily and immediately after the milling until all residual materials are removed from the pavement surface. Prior to paving, the Contractor shall wet down the milled pavement and thoroughly sweep and/or blow the surface to remove loose residual material. Waste materials shall be collected and removed from the pavement surface and adjacent areas by sweeping or vacuuming. Waste materials shall be removed and disposed as directed by the RPR.

101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment. Existing asphalt pavements to be treated with a surface treatment shall be prepared as follows:

a. Patch asphalt pavement surfaces that have been softened by petroleum derivatives or have failed due to any other cause. Remove damaged pavement to the full depth of the damage and replace with new asphalt pavement similar to that of the existing pavement in accordance with paragraph 101-3.4b.

b. Repair joints and cracks in accordance with paragraph 101-3.2.

c. Remove oil or grease that has not penetrated the asphalt pavement by scrubbing with a detergent and washing thoroughly with clean water. After cleaning, treat these areas with an oil spot primer.

d. Clean pavement surface immediately prior to placing the surface treatment so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film.

101-3.7 Maintenance. The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the RPR. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

101-3.8 Preparation of Joints in Rigid Pavement prior to resealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the joint and does not damage the joint.

101-3.8.1 Removal of Existing Joint Sealant. All existing joint sealants will be removed by plowing or use of hand tools. Any remaining sealant and or debris will be removed by use of wire brushes or other tools as necessary. Resaw joints removing no more than 1/16 inch (2 mm) from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry.

101-3.8.2 Cleaning prior to sealing. Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Allow sufficient time to dry out joints prior to sealing. Joint surfaces will be surface-dry prior to installation of sealant.

101-3.8.3 Joint sealant. Joint material and installation will be in accordance with Item P-605.

101-3.9 Preparation of Cracks in Flexible Pavement prior to sealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the cracks and does not damage the pavement.

101-3.9.1 Preparation of Crack. Widen crack with router or random crack saw by removing a minimum of 1/16 inch (2 mm) from each side of crack. Immediately before sealing, cracks will be blown out with a hot air lance combined with oil and water-free compressed air.

101-3.9.2 Removal of Existing Crack Sealant. Existing sealants will be removed by routing **or** random crack saw. Following routing or sawing any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

101-3.9.3 Crack Sealant. Crack sealant material and installation will be in accordance with Item P-605.

101-3.9.4 Removal of Pipe and other Buried Structures.

- a. **Removal of Existing Pipe Material.** Not used.
- b. **Removal of Inlets/Manholes.** Not used.

METHOD OF MEASUREMENT

101-4.1 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards (square meters) removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment. No direct measurement or payment shall be made for saw cutting. Saw cutting shall be incidental to pavement removal. Dowel bar installation shall be incidental to pavement removal.

101-4.6 Cold milling. The unit of measure for cold milling shall be 0-4" inches of milling per square yard (square meter). The location and average depth of the cold milling shall be as shown on the plans. If the initial cut does not correct the condition, the Contractor shall re-mill the area and will be paid for the total depth of milling.

101-4.7 Removal of Pipe and other Buried Structures. Not required .

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P 101-5.1 Pavement Removal - per square yard (square meter)

Item P-101-5.6 Cold Milling (0-4") – per square yard (square meter)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5380-6

Guidelines and Procedures for Maintenance of Airport Pavements.

ASTM International (ASTM)

ASTM D6690

Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

END OF ITEM P-101

Item P-151 Clearing and Grubbing**DESCRIPTION**

151-1.1 This item shall consist of clearing or clearing and grubbing, including the disposal of materials, for all areas within the limits designated on the plans or as required by the Resident Project Representative (RPR).

a. Clearing shall consist of the cutting and removal of all trees, stumps, brush, logs, hedges, the removal of fences and other loose or projecting material from the designated areas. The grubbing of stumps and roots will not be required.

b. Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of grass or weeds, fences, structures, debris, and rubbish of any nature, natural obstructions or such material which in the opinion of the RPR is unsuitable for the foundation of strips, pavements, or other required structures, including the grubbing of stumps, roots, matted roots, foundations, and the disposal from the project of all spoil materials resulting from clearing and grubbing.

c. Tree Removal. Tree Removal shall consist of the cutting and removal of isolated single trees or isolated groups of trees, and the grubbing of stumps and roots. The removal of all the trees of this classification shall be in accordance with the requirements for the particular area being cleared.

d. Environmental. Refer to drawings for time of year restrictions and pre-work environmental surveys.

CONSTRUCTION METHODS

151-2.1 General. The areas denoted on the plans to be cleared shall be staked on the ground by the contractor as indicated on the plans or as directed by the RPR .

The removal of existing structures and utilities required to permit orderly progress of work shall be accomplished by local agencies, unless otherwise shown on the plans. Whenever a telephone pole, pipeline, conduit, sewer, roadway, or other utility is encountered and must be removed or relocated, the Contractor shall advise the RPR who will notify the proper local authority or owner to secure prompt action.

151-2.1.1 Disposal. All materials removed by clearing or by clearing and grubbing shall be disposed of outside the Airport's limits at the Contractor's responsibility , except when otherwise directed by the RPR. As far as practicable, waste concrete and masonry shall be placed on slopes of embankments or channels. When embankments are constructed of such material, this material shall be placed in accordance with requirements for formation of embankments. Any broken concrete or masonry that cannot be used in construction and all other materials not considered suitable for use elsewhere, shall be disposed of by the Contractor. In no case, shall any discarded materials be left in windrows or piles adjacent to or within the airport limits. The manner and location of disposal of materials shall be subject to the approval of the RPR and shall not create an unsightly or objectionable view. When the Contractor is required to locate a disposal area outside the airport property limits, the Contractor shall obtain and file with the RPR permission in writing from the property owner for the use of private property for this purpose.

151-2.1.2 Blasting. Blasting shall not be allowed.

151-2.2 Clearing. The Contractor shall clear the staked or indicated area of all materials as indicated on the plans. Trees unavoidably falling outside the specified clearing limits must be cut up, removed, and disposed of in a satisfactory manner. To minimize damage to trees that are to be left standing, trees shall be felled toward the center of the area being cleared. The Contractor shall preserve and protect from injury all trees not to be removed. The trees, stumps, and brush shall be cut flush with the original ground surface. The grubbing of stumps and roots will not be required.

Fences shall be removed and disposed of as directed by the RPR. Fence wire shall be neatly rolled and the wire and posts stored on the airport if they are to be used again, or stored at a location designated by the RPR if the fence is to remain the property of a local owner or authority.

151-2.3 Clearing and grubbing. In areas designated to be cleared and grubbed, all stumps, roots, buried logs, brush, grass, and other unsatisfactory materials as indicated on the plans, shall be removed, except where embankments exceeding 3-1/2 feet (105 cm) in depth will be constructed outside of paved areas. For embankments constructed outside of paved areas, all unsatisfactory materials shall be removed, but sound trees, stumps, and brush can be cut off flush with the original ground and allowed to remain. Tap roots and other projections over 1-1/2 inches (38 mm) in diameter shall be grubbed out to a depth of at least 18 inches (0.5 m) below the finished subgrade or slope elevation.

Any buildings and miscellaneous structures that are shown on the plans to be removed shall be demolished or removed, and all materials shall be disposed of by removal from the site. The cost of removal is incidental to this item. The remaining or existing foundations, wells, cesspools, and like structures shall be destroyed by breaking down the materials of which the foundations, wells, cesspools, etc., are built to a depth at least 2 feet (60 cm) below the existing surrounding ground. Any broken concrete, blocks, or other objectionable material that cannot be used in backfill shall be removed and disposed of at the Contractor's expense. The holes or openings shall be backfilled with acceptable material and properly compacted.

All holes in embankment areas remaining after the grubbing operation shall have the sides of the holes flattened to facilitate filling with acceptable material and compacting as required in Item P-152. The same procedure shall be applied to all holes remaining after grubbing in areas where the depth of holes exceeds the depth of the proposed excavation.

METHOD OF MEASUREMENT

151-3.1 The quantities of clearing as shown by the limits on the plans shall be the number of acres (square meters) or fractions thereof, of land specifically cleared.

151-3.2 The quantities of utility pole removal as shown on the plans shall be the number of poles removed.

BASIS OF PAYMENT

151-4.1 Payment shall be made at the contract unit price per acre (square meter) or fractions thereof for clearing. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

151-4.2 Payment shall be made at the contract unit price per each for Utility pole removal. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to successfully remove the utility poles, cables, and site restoration.

Payment will be made under:

Item P-151-4.1	Clearing – per acre (square meter) or fractions thereof
Item P-151-4.2	Remove Utility Poles – per each

END OF ITEM P-151

Item P-151 Clearing and Grubbing**DESCRIPTION**

151-1.1 This item shall consist of clearing or clearing and grubbing, including the disposal of materials, for all areas within the limits designated on the plans or as required by the Resident Project Representative (RPR).

a. Clearing shall consist of the cutting and removal of all trees, stumps, brush, logs, hedges, the removal of fences and other loose or projecting material from the designated areas. The grubbing of stumps and roots will not be required.

b. Clearing and grubbing shall consist of clearing the surface of the ground of the designated areas of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of grass or weeds, fences, structures, debris, and rubbish of any nature, natural obstructions or such material which in the opinion of the RPR is unsuitable for the foundation of strips, pavements, or other required structures, including the grubbing of stumps, roots, matted roots, foundations, and the disposal from the project of all spoil materials resulting from clearing and grubbing.

c. Tree Removal. Tree Removal shall consist of the cutting and removal of isolated single trees or isolated groups of trees, and the grubbing of stumps and roots. The removal of all the trees of this classification shall be in accordance with the requirements for the particular area being cleared.

d. Environmental. Refer to drawings for time of year restrictions and pre-work environmental surveys.

CONSTRUCTION METHODS

151-2.1 General. The areas denoted on the plans to be cleared shall be staked on the ground by the contractor as indicated on the plans or as directed by the RPR .

The removal of existing structures and utilities required to permit orderly progress of work shall be accomplished by local agencies, unless otherwise shown on the plans. Whenever a telephone pole, pipeline, conduit, sewer, roadway, or other utility is encountered and must be removed or relocated, the Contractor shall advise the RPR who will notify the proper local authority or owner to secure prompt action.

151-2.1.1 Disposal. All materials removed by clearing or by clearing and grubbing shall be disposed of outside the Airport's limits at the Contractor's responsibility , except when otherwise directed by the RPR. As far as practicable, waste concrete and masonry shall be placed on slopes of embankments or channels. When embankments are constructed of such material, this material shall be placed in accordance with requirements for formation of embankments. Any broken concrete or masonry that cannot be used in construction and all other materials not considered suitable for use elsewhere, shall be disposed of by the Contractor. In no case, shall any discarded materials be left in windrows or piles adjacent to or within the airport limits. The manner and location of disposal of materials shall be subject to the approval of the RPR and shall not create an unsightly or objectionable view. When the Contractor is required to locate a disposal area outside the airport property limits, the Contractor shall obtain and file with the RPR permission in writing from the property owner for the use of private property for this purpose.

151-2.1.2 Blasting. Blasting shall not be allowed.

151-2.2 Clearing. The Contractor shall clear the staked or indicated area of all materials as indicated on the plans. Trees unavoidably falling outside the specified clearing limits must be cut up, removed, and disposed of in a satisfactory manner. To minimize damage to trees that are to be left standing, trees shall be felled toward the center of the area being cleared. The Contractor shall preserve and protect from injury all trees not to be removed. The trees, stumps, and brush shall be cut flush with the original ground surface. The grubbing of stumps and roots will not be required.

Fences shall be removed and disposed of as directed by the RPR. Fence wire shall be neatly rolled and the wire and posts stored on the airport if they are to be used again, or stored at a location designated by the RPR if the fence is to remain the property of a local owner or authority.

151-2.3 Clearing and grubbing. In areas designated to be cleared and grubbed, all stumps, roots, buried logs, brush, grass, and other unsatisfactory materials as indicated on the plans, shall be removed, except where embankments exceeding 3-1/2 feet (105 cm) in depth will be constructed outside of paved areas. For embankments constructed outside of paved areas, all unsatisfactory materials shall be removed, but sound trees, stumps, and brush can be cut off flush with the original ground and allowed to remain. Tap roots and other projections over 1-1/2 inches (38 mm) in diameter shall be grubbed out to a depth of at least 18 inches (0.5 m) below the finished subgrade or slope elevation.

Any buildings and miscellaneous structures that are shown on the plans to be removed shall be demolished or removed, and all materials shall be disposed of by removal from the site. The cost of removal is incidental to this item. The remaining or existing foundations, wells, cesspools, and like structures shall be destroyed by breaking down the materials of which the foundations, wells, cesspools, etc., are built to a depth at least 2 feet (60 cm) below the existing surrounding ground. Any broken concrete, blocks, or other objectionable material that cannot be used in backfill shall be removed and disposed of at the Contractor's expense. The holes or openings shall be backfilled with acceptable material and properly compacted.

All holes in embankment areas remaining after the grubbing operation shall have the sides of the holes flattened to facilitate filling with acceptable material and compacting as required in Item P-152. The same procedure shall be applied to all holes remaining after grubbing in areas where the depth of holes exceeds the depth of the proposed excavation.

METHOD OF MEASUREMENT

151-3.1 The quantities of clearing as shown by the limits on the plans shall be the number of acres (square meters) or fractions thereof, of land specifically cleared.

151-3.2 The quantities of utility pole removal as shown on the plans shall be the number of poles removed.

BASIS OF PAYMENT

151-4.1 Payment shall be made at the contract unit price per acre (square meter) or fractions thereof for clearing. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

151-4.2 Payment shall be made at the contract unit price per each for Utility pole removal. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-151-4.1	Clearing – per acre (square meter) or fractions thereof
Item P-151-4.2	Remove Utility Poles – per each

END OF ITEM P-151

Item P-152 Excavation, Subgrade, and Embankment**DESCRIPTION**

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature

152-1.3 Unsuitable excavation. Unsuitable material shall be disposed in designated waste areas as shown on the plans. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

CONSTRUCTION METHODS

152-2.1 General. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of

the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate, or agree to any adjustments made to the original ground lines.

Volumetric quantities were calculated using design cross sections which were created for this project using the DTM files of the applicable design surfaces and generating End Area Volume Reports. Paper copies of design cross sections and a paper copy of the original topographic map will be issued to the successful bidder.

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.1 foot (30 mm) of the stated elevations for ground surfaces, or within 0.04 foot (12 mm) for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes as shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective grading. When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches (300 mm) below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed off the airport. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard (per cubic meter) for unclassified excavation. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will

constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as unclassified excavation.

c. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

d. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 Borrow excavation. Borrow areas are not required.

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of cut areas or areas where existing pavement has been removed. In those areas on which a subbase or base course is to be placed, the top 12 inches (300 mm) of subgrade shall be compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

152-2.6 Preparation of embankment area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

152-2.8 Formation of embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within $\pm 2\%$ of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The contractor will take samples of excavated materials which will be used in embankment for testing and develop a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D698. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the [RPR][contractor] for every 3,000 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 100% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. Under all areas to be paved, the embankments shall be compacted to a depth of 12 inches and to a density of not less than 100% percent of the maximum density as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches (100 mm) which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory

shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.9 Proof rolling. The purpose of proof rolling the subgrade is to identify any weak areas in the subgrade and not for compaction of the subgrade. Before start of embankment, and after compaction is completed, the subgrade area shall be proof rolled with a 20 ton (18.1 metric ton) Tandem axle Dual Wheel Dump Truck loaded to the legal limit with tires inflated to 80/100/150 psi (0.551 MPa/0.689 MPa/1.034 MPa) in the presence of the RPR. Apply a minimum of 50% coverage, or as specified by the RPR, under pavement areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications. Removal and replacement of soft areas is incidental to this item.

152-2.10 Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of 12 inches (300 mm) and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D698. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches (300 mm) and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within $\pm 2\%$ of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the $\frac{3}{4}$ inch (19.0 mm) sieve, follow the methods in ASTM D698 procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized

particles. Tests for moisture content and compaction will be taken at a minimum of 1000 S.Y. of subgrade. All quality assurance testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR for acceptance determination.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

152-2.11 Finishing and protection of subgrade. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

152-2.12 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.13 Surface Tolerances. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

- a. Smoothness.** The finished surface shall not vary more than $\pm 1/2$ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

- b. Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to be placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.

METHOD OF MEASUREMENT

152-3.1 Measurement for payment specified by the cubic yard (cubic meter) shall be computed by the average end areas of design cross sections. The end area is that bound by the original ground line established by field cross-sections and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR.

152-3.1 The quantity of unclassified excavation to be paid for shall be the number of cubic yards (cubic meters) measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

152-3.2 The quantity of embankment in place shall be the number of cubic yards (cubic meters) measured in its final position.

BASIS OF PAYMENT

152-4.1 Unclassified excavation payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.2 For embankment in place, payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-152-4.1	Unclassified Excavation - per cubic yard (cubic meter)
Item P-152-4.2	Embankment in place - per cubic yard (cubic meter)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180 Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³))

ASTM D1556 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2700 kN-m/m³))

ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

AC 150/5370-2 Operational Safety on Airports During Construction Software

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66 Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

Item P-154 Subbase Course**DESCRIPTION**

154-1.1 This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course in accordance with these specifications, and in conformity with the dimensions and typical cross-section shown on the plans.

MATERIALS

154-2.1 Materials. The subbase material shall consist of hard durable particles or fragments of granular aggregates, recycled asphalt pavement (RAP), and/or recycled concrete pavement (RCO). The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The material shall be free from vegetative matter, excessive amounts of clay, and other objectionable substances; uniformly blended; and be capable of being compacted into a dense, stable subbase.

The subbase material shall exhibit a California Bearing Ratio (CBR) value of at least 20 when tested in accordance with ASTM D1883. The subbase material shall meet the gradation specified in the table below.

Subbase Gradation Requirements

Sieve designation	Percentage by weight passing sieves		Contractor's Final Gradation	Job Control Grading Band Tolerances ¹ (Percent)
	Subbase Aggregate	Recycled pavement (RAP or RCO)		
3 inch (75 mm)	100			0
1 1/2 inch (37.5 mm)		100		0
3/4 inch (19.0 mm)	70-100	70-100		±10
No. 10 (2.00 mm)	20-100	20-100		±10
No. 40 (425 µm)	5-60	5-60		±5
No. 200 (75 µm)	0-10	0-10		±5

¹The "Job Control Grading Band Tolerances" shall be applied to "Contractor's Final Gradation" to establish the job control grading band.

The portion of the material passing the No. 40 (425 μ m) sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than six (6) when tested in accordance with ASTM D4318.

154-2.2 Sampling and testing.

a. Aggregate base materials. Samples shall be taken by the Contractor per ASTM D75 for initial aggregate subbase requirements and gradation. Material shall meet the requirements in paragraphs 154-2.1. The Contractor shall submit to the Resident Project Representative (RPR) certified test results showing that the aggregate meets the Material requirements of this section. Tests shall be representative of the material to be used for the project.

b. Gradation requirements. The Contractor shall take at least one aggregate subbase sample per day in the presence of the RPR to check the final gradation. Samples shall be taken from the in-place, un-compacted material at sampling locations determined by the RPR on a random basis per ASTM D3665. Sampling shall be per ASTM D75 and tested per ASTM C136 and ASTM C117. Results shall be furnished to the RPR by the Contractor each day during construction. Material shall meet the requirements in paragraph 154-2.1.

154-2.3 Separation Geotextile. Not used.

154-2.4 Geogrid. Not used.

CONSTRUCTION METHODS

154-3.1 General. The subbase course shall be placed where designated on the plans or as directed by the RPR. The material shall be shaped and thoroughly compacted within the tolerances specified.

Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the construction equipment without movement, shall be mechanically modified to the depth necessary to provide stability as directed by the RPR. The mechanical modification shall include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so the course will not deform under construction equipment traffic.

154-3.2 Preparing underlying course. Prior to constructing the subbase course, clean the underlying course or subgrade of all foreign substances. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances in accordance with Item P-152. Correct ruts, soft yielding spots in the underlying courses, and subgrade areas having inadequate compaction and/or deviations of the surface from the specified requirements, by loosening and removing soft or unsatisfactory material, adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses or subgrades containing sands or gravels, as defined in ASTM D2487, the surface shall be stabilized prior to placement of the overlying course by mixing the overlying course material into the underlying course, and compacting by approved methods. The stabilized material shall be considered as part of the underlying course and shall meet all requirements for the underlying course. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until the overlying course is placed. The underlying course shall be checked and accepted by the RPR before placing and spreading operations are started.

To protect the subgrade and to ensure proper drainage, spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

154-3.3 Control Strip. The first half-day of subbase construction shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration

that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

154-3.4 Placement. The material shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material.

Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted. The material shall not be placed when the underlying course is soft or yielding.

The material shall meet gradation and moisture requirements prior to compaction. Material may be free-draining and the minimum moisture content shall be established for placement and compaction of the material.

The material shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

154-3.5 Compaction. The subbase material shall be compacted, adjusting moisture as necessary, to be within $\pm 2\%$ of optimum moisture. The field density of the compacted material shall be at least 100% of the maximum density as specified in paragraph 154-3.9a. If the specified density is not attained, the area of the lift represented by the test shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

154-3.6 Weather limitation. Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on subbase course shall not be conducted when the subgrade is wet or frozen or the subbase material contains frozen material.

154-3.7 Maintenance. No base or surface course shall be placed on the subbase until the subbase has been accepted by the RPR. The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, the Contractor shall verify that materials still meet all specification requirements before placement of additional material. Equipment may be routed over completed sections of subbase course, provided the equipment does not damage the subbase course and the equipment is routed over the full width of the completed subbase course. Any damage to the subbase course from routing equipment over the subbase course shall be repaired by the Contractor at their expense.

154-3.8 Surface tolerance. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

a. Smoothness. The finished surface shall not vary more than $\pm 1/2$ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Grade. The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within ± 0.05 feet (15 mm) of the specified grade.

154-3.9 Acceptance sampling and testing. The aggregate base course shall be accepted for density and thickness on an area basis. Two test shall be made for density and thickness for each 1200 square yards (1000 square meters). Sampling locations will be determined on a random basis per ASTM D3665.

a. Density. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance.

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D1556 or ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test shall be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

When the material has greater than 30 percent retained on the $3/4$ inch (19.0 mm) sieve, use methods in ASTM D698 and the procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles.

b. Thickness. The thickness of the base course shall be within $+0$ and $-1/2$ inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than $1/2$ -inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

METHOD OF MEASUREMENT

154-4.1 Subbase course shall be measured by the number of cubic yards (cubic meters) of subbase course material placed and compacted to specified density and plan thickness requirements in the completed course. The quantity of subbase course material shall be measured in final position based upon depth tests or cores taken as directed by the RPR, at the rate of two test per each 1200 square yards (1000 square meters) of subbase course or survey of the completed work computed from elevations to the nearest 0.01 foot (3 mm). On individual depth measurements, thicknesses more than $1/2$ inch (12 mm) in excess of that shown on the plans shall be considered as the specified thickness plus $1/2$ inch (12 mm) in computing the yardage for payment. Subbase materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

154-5.1 Payment shall be made at the contract unit price per cubic yard (cubic meter) for subbase course. This price shall be full compensation for furnishing all materials; for all preparation, hauling, and placing of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-154-5.1 Subbase Course - per cubic yard (cubic meter)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C117	Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³ (600 kN-m/m ³))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ³ (2,700 kN-m/m ³))
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4759	Practice for Determining the Specification Conformance of Geosynthetics
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

American Association of State Highway and Transportation Officials (AASHTO)

M 288	Geotextile Specification for Highway Applications
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END OF ITEM P-154

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Item P-209 Crushed Aggregate Base Course**DESCRIPTION**

209-1.1 This item consists of a base course composed of crushed aggregate base constructed on a prepared course in accordance with these specifications and in conformity to the dimensions and typical cross-sections shown on the plans.

MATERIALS

209-2.1 Crushed aggregate base. Crushed aggregate shall consist of clean, sound, durable particles of crushed stone, crushed gravel, and shall be free from coatings of clay, silt, organic material, clay lumps or balls or other deleterious materials or coatings. The method used to produce the crushed gravel shall result in the fractured particles in the finished product as consistent and uniform as practicable. Fine aggregate portion, defined as the portion passing the No. 4 (4.75 mm) sieve shall consist of fines from the coarse aggregate crushing operation. The fine aggregate shall be produced by crushing stone, gravel, that meet the coarse aggregate requirements for wear and soundness. Aggregate base material requirements are listed in the following table.

Crushed Aggregate Base Material Requirements

Material Test	Requirement	Standard
Coarse Aggregate		
Resistance to Degradation	Loss: 45% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Percentage of Fractured Particles	Minimum 90% by weight of particles with at least two fractured faces and 98% with at least one fractured face ¹	ASTM D5821
Flat Particles, Elongated Particles, or Flat and Elongated Particles	10% maximum, by weight, of flat, elongated, or flat and elongated particles ²	ASTM D4791
Fine Aggregate		
Liquid limit	Less than or equal to 25	ASTM D4318
Plasticity Index	Not more than five (5)	ASTM D4318

¹ The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

² A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

209-2.2 Gradation requirements. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation shall be well graded from coarse to fine and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa.

Gradation of Aggregate Base

Sieve Size	Design Range Percentage by Weight passing	Contractor's Final Gradation	Job Control Grading Band Tolerances¹ (Percent)
2 inch (50 mm)	100		0
1-1/2 inch (37.5 mm)	95-100		±5
1 inch (25.0 mm)	70-95		±8
3/4 inch (19.0 mm)	55-85		±8
No. 4 (4.75 mm)	30-60		±8
No. 40 ² (425 µm)	10-30		±5
No. 200 ² (75 µm)	0-5		±3

¹ The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.

² The fraction of material passing the No 200 (75 µm) sieve shall not exceed two-thirds the fraction passing the No 40 (425 µm) sieve.

209-2.3 Sampling and Testing.

a. Aggregate base materials. The Contractor shall take samples of the aggregate base in accordance with ASTM D75 to verify initial aggregate base requirements and gradation. Material shall meet the requirements in paragraph 209-2.1. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

b. Gradation requirements. The Contractor shall take at least two aggregate base samples per day in the presence of the Resident Project Representative (RPR) to check the final gradation. Sampling shall be per ASTM D75. Material shall meet the requirements in paragraph 209-2.2. The samples shall be taken from the in-place, un-compacted material at sampling points and intervals designated by the RPR.

209-2.4 Separation Geotextile. Not used.

CONSTRUCTION METHODS

209-3.1 Control strip. The first half-day of construction shall be considered the control strip. The Contractor shall demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of the specification. The sequence and manner of rolling necessary to

obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted or removed and replaced at the Contractor's expense. Full operations shall not continue until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved by the RPR.

209-3.2 Preparing underlying subgrade and/or subbase. The underlying subgrade and/or subbase shall be checked and accepted by the RPR before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase in accordance with Item P-152, at the Contractor's expense, may be required by the RPR if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

209-3.3 Production. The aggregate shall be uniformly blended and, when at a satisfactory moisture content per paragraph 209-3.5, the approved material may be transported directly to the placement.

209-3.4 Placement. The aggregate shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

The aggregate shall meet gradation and moisture requirements prior to compaction. The base course shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications at the Contractor's expense.

209-3.5 Compaction. Immediately after completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade.

The field density of each compacted lift of material shall be at least 100% of the maximum density of laboratory specimens prepared from samples of the base material delivered to the jobsite. The laboratory specimens shall be compacted and tested in accordance with ASTM D698. The moisture content of the material during placing operations shall be within ± 2 percentage points of the optimum moisture content as determined by ASTM D698. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

209-3.6 Weather limitations. Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on base course shall not be conducted when the subgrade or subbase is wet or frozen or the base material contains frozen material.

209-3.7 Maintenance. The base course shall be maintained in a condition that will meet all specification requirements. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, prior

to placement of additional material, the Contractor shall verify that materials still meet all specification requirements. Equipment may be routed over completed sections of base course, provided that no damage results and the equipment is routed over the full width of the completed base course. Any damage resulting to the base course from routing equipment over the base course shall be repaired by the Contractor at the Contractor's expense.

209-3.8 Surface tolerances. After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and recompact to grade until the required smoothness and accuracy are obtained and approved by the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

a. Smoothness. The finished surface shall not vary more than 3/8-inch (9 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Grade. The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +0 and -1/2 inch (12 mm) of the specified grade.

209-3.9 Acceptance sampling and testing. Crushed aggregate base course shall be accepted for density and thickness on an area basis. Two tests shall be made for density and thickness for each 1200 square yds (1000 m²). Sampling locations will be determined on a random basis per ASTM D3665

a. Density. Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance

Each area shall be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D1556 or ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test must be reworked and/or recompact and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

b. Thickness. Depth tests shall be made by test holes at least 3 inches (75 mm) in diameter that extend through the base. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompact to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

METHOD OF MEASUREMENT

209-4.1 The quantity of crushed aggregate base course will be determined by measurement of the number of cubic yards (cubic meters) of material actually constructed and accepted by the RPR as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

209-5.1 Payment shall be made at the contract unit price per cubic yard (cubic meter) for crushed aggregate base course. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-209-5.1	Crushed Aggregate Base Course – 6” depth per cubic yard (cubic meter)
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REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ³ (600 kN-m/m ³))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ³ (2700 kN-m/m ³))
ASTM D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity

ASTM D4643	Standard Test Method for Determination of Water Content of Soil and Rock by Microwave Oven Heating
ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D7928	Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis
American Association of State Highway and Transportation Officials (AASHTO)	
M288	Standard Specification for Geosynthetic Specification for Highway Applications

END OF ITEM P-209

Item P-403 Asphalt Mix Pavement Surface Course**DESCRIPTION**

403-1.1 This item shall consist of pavement courses composed of mineral aggregate and asphalt binder mixed in a central mixing plant and placed on a prepared course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross-sections shown on the plans. Each course shall be constructed to the depth, typical section, and elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course.

MATERIALS

403-2.1 Aggregate. Aggregates shall consist of crushed stone, crushed gravel, crushed slag, screenings, natural sand and mineral filler, as required. The aggregates should have no known history of detrimental pavement staining due to ferrous sulfides, such as pyrite. Coarse aggregate is the material retained on the No. 4 (4.75 mm) sieve. Fine aggregate is the material passing the No. 4 (4.75 mm) sieve.

a. Coarse aggregate. Coarse aggregate shall consist of sound, tough, durable particles, free from films of matter that would prevent thorough coating and bonding with the asphalt material and free from organic matter and other deleterious substances. Coarse aggregate material requirements are given in the table below.

Coarse Aggregate Material Requirements

Material Test	Requirement	Standard
Resistance to Degradation	Loss: 40% maximum for surface, asphalt binder, and leveling course Loss: 50% maximum for base course	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Clay lumps and friable particles	1.0 % maximum	ASTM C142
Percentage of Fractured Particles	For pavements designed for aircraft gross weights of 60,000 pounds (27200 kg) or more: Minimum 75% by weight of particles with at least two fractured faces and 85% with at least one fractured face ¹ For pavements designed for aircraft gross weights less than 60,000 pounds (27200 kg): Minimum 50% by weight of particles with at least two fractured faces and 65% with at least one fractured face ¹	ASTM D5821
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, of flat, elongated, or flat and elongated particles with a value of 5:1 ²	ASTM D4791
Bulk density of slag ³	Weigh not less than 70 pounds per cubic foot (1.12 Mg/cubic meter)	ASTM C29.

¹ The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

² A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

³ Only required if slag is specified.

b. Fine aggregate. Fine aggregate shall consist of clean, sound, tough, durable, angular shaped particles produced by crushing stone, slag, or gravel and shall be free from coatings of clay, silt, or other objectionable matter. Natural (non-manufactured) sand may be used to obtain the gradation of the aggregate blend or to improve the workability of the mix. Fine aggregate material requirements are listed in the table below.

Fine Aggregate Material Requirements

Material Test	Requirement	Standard
Liquid limit	25 maximum	ASTM D4318
Plasticity Index	4 maximum	ASTM D4318
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88
Clay lumps and friable particles	1.0 % maximum	ASTM C142
Sand equivalent	45 minimum	ASTM D2419
Natural Sand	0 to 15% maximum by weight of total aggregate	ASTM D1073

c. Sampling. ASTM D75 shall be used in sampling coarse and fine aggregate, and ASTM C183 shall be used in sampling mineral filler.

403-2.2 Mineral filler. Mineral filler (baghouse fines) may be added in addition to material naturally present in the aggregate. Mineral filler shall meet the requirements of ASTM D242.

Mineral filler Requirements

Material Test	Requirement	Standard
Plasticity Index	4 maximum	ASTM D4318

403-2.3 Asphalt binder. Asphalt binder shall conform to ASTM D6373 Performance Grade (PG) 70-28

Asphalt Binder PG Plus Test Requirements

Material Test	Requirement	Standard
Elastic Recovery	[75%] minimum	ASTM D6084 ¹

¹ Follow procedure B on RTFO aged binder.]

403-2.4 Anti-stripping agent. Any anti-stripping agent or additive (anti-strip) shall be heat stable and shall not change the asphalt binder grade beyond specifications. Anti-strip shall be an approved material of the Department of Transportation of the State in which the project is located.

COMPOSITION

403-3.1 Composition of mixture. The asphalt plant mix shall be composed of a mixture of well-graded aggregate, filler and anti-strip agent if required, and asphalt binder. The several aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF).

403-3.2 Job mix formula (JMF) laboratory. The laboratory used to develop the JMF shall possess a current certificate of accreditation, listing D3666 from a national accrediting authority and all test methods required for developing the JMF, and listed on the accrediting authority's website. A copy of the

laboratory's current accreditation and accredited test methods shall be submitted to the RPR prior to start of construction.

403-3.3 Job mix formula (JMF). No asphalt mixture shall be placed until an acceptable mix design has been submitted to the RPR for review and accepted in writing. The RPR's review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

When the project requires asphalt mixtures of differing aggregate gradations and/or binders, a separate JMF shall be submitted for each mix. Add anti-stripping agent to meet tensile strength requirements.

The JMF shall be prepared by an accredited laboratory that meets the requirements of paragraph 403-3.2. The asphalt mixture shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design Manual, 7th Edition. Samples shall be prepared and compacted using the gyratory compactor in accordance with ASTM D6925.

Should a change in sources of materials be made, a new JMF must be submitted to the RPR for review and accepted in writing before the new material is used. After the initial production JMF has been approved by the RPR and a new or modified JMF is required for whatever reason, the subsequent cost of the new or modified JMF, including a new control strip when required by the RPR, will be borne by the Contractor.

The RPR may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

The JMF shall be submitted in writing by the Contractor at least 30 days prior to the start of paving operations. The JMF shall be developed within the same construction season using aggregates proposed for project use.

The submitted JMF shall be dated, and stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

- Manufacturer's Certificate of Analysis (COA) for the asphalt binder used in the JMF in accordance with paragraph 403-2.3. Certificate of asphalt performance grade is with modifier already added, if used and must indicate compliance with ASTM D6373. For plant modified asphalt binder, certified test report indicating grade certification of modified asphalt binder.
- Manufacturer's Certificate of Analysis (COA) for the anti-stripping agent if used in the JMF in accordance with paragraph 403-2.4.
- Certified material test reports for the course and fine aggregate and mineral filler in accordance with paragraphs 403-2.1 and 403-2.2.
- Percent passing each sieve size for individual gradation of each aggregate cold feed and/or hot bin; percent by weight of each cold feed and/or hot bin used; and the total combined gradation in the JMF.
- Specific Gravity and absorption of each course and fine aggregate.
- Percent natural sand.
- Percent fractured faces.
- Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).
- Percent of asphalt.
- Number of blows or gyrations.

- Laboratory mixing and compaction temperatures.
- Supplier recommended mixing and compaction temperatures.
- Plot of the combined gradation on the 0.45 power gradation curve.
- Graphical plots of air voids, voids in the mineral aggregate (VMA), and unit weight versus asphalt content. To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.
- Tensile Strength Ratio (TSR).
- Type and amount of Anti-strip agent when used.
- Asphalt Pavement Analyzer (APA) results.
- Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.

Table 1. Asphalt Design Criteria

Test Property	Value	Test Method
Number of blows/gyrations	50	
Air voids (%)	3.5	ASTM D3203
Percent voids in mineral aggregate (VMA), minimum	See Table 2	ASTM D6995
TSR ¹	not less than 80 at a saturation of 70-80%	ASTM D4867
Asphalt Pavement Analyzer (APA) ^{2,3}	Less than 10 mm @ 4000 passes	AASHTO T340 at 250 psi hose pressure at 64°C test temperature

¹ Test specimens for TSR shall be compacted at 7 ± 1.0 % air voids. In areas subject to freeze-thaw, use freeze-thaw conditioning in lieu of moisture conditioning per ASTM D4867.

² AASHTO T340 at 100 psi hose pressure at 64°C test temperature may be used in the interim. If this method is used the required Value shall be less than 5 mm @ 8000 passes

³ Where APA not available, use Hamburg wheel test (AASHTO T 324) 10 mm@ 20,000 passes at 50°C.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation or gradations specified in Table 2 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 2 represent the limits that shall determine the suitability of aggregate for use from the sources of supply, be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa.

Table 2. Aggregate - Asphalt Pavements

Sieve Size	Percentage by Weight Passing Sieve
1 inch (25.0 mm)	--
3/4 inch (19.0 mm)	100
1/2 inch (12.5 mm)	90-100
3/8 inch (9.5 mm)	72-88
No. 4 (4.75 mm)	53-73
No. 8 (2.36 mm)	38-60
No. 16 (1.18 mm)	26-48
No. 30 (600 µm)	18-38
No. 50 (300 µm)	11-27
No. 100 (150 µm)	6-18
No. 200 (75 µm)	3-6
Voids in Mineral Aggregate (VMA)¹	15
Asphalt Percent:	
Stone or gravel	5.0-7.5
Slag	6.5-9.5
Recommended Minimum Construction Lift Thickness	2 inch

¹To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute MS-2 Mix Design Manual, 7th Edition.

403-3.4 Reclaimed Asphalt Pavement (RAP). RAP shall not be used.

403-3.5 Control strip. A control strip is not required.

CONSTRUCTION METHODS

403-4.1 Weather limitations. The asphalt shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in Table 4. The temperature requirements may be waived by the RPR, if requested; however, all other requirements including compaction shall be met.

Table 4. Surface Temperature Limitations of Underlying Course

Mat Thickness	Base Temperature (Minimum)	
	Degrees F	Degrees C
3 inches (7.5 cm) or greater	40	4
Greater than 2 inches (50 mm) but less than 3 inches (7.5 cm)	45	7

403-4.2 Asphalt plant. Plants used for the preparation of asphalt shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M156 including the following items:

a. Inspection of plant. The RPR, or RPR's authorized representative, shall have access, at all times, to all areas of the plant for checking adequacy of equipment; inspecting operation of the plant: verifying weights, proportions, and material properties; and checking the temperatures maintained in the preparation of the mixtures.

b. Storage bins and surge bins. The asphalt mixture stored in storage and/or surge bins shall meet the same requirements as asphalt mixture loaded directly into trucks. Asphalt mixture shall not be stored in storage and/or surge bins for a period greater than twelve (12) hours. If the RPR determines there is an excessive heat loss, segregation or oxidation of the asphalt mixture due to temporary storage, temporary storage shall not be allowed.

403-4.3 Aggregate stockpile management. Aggregate stockpiles shall be constructed in such a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the concrete batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used.

A continuous supply of materials shall be provided to the work to ensure continuous placement.

403-4.4 Hauling equipment. Trucks used for hauling asphalt shall have tight, clean, and smooth metal beds. To prevent the asphalt from sticking to the truck beds, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other material approved by the RPR. Petroleum products shall not be used for coating truck beds. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened.

403-4.4.1 Material transfer vehicle (MTV). A material transfer vehicle is not required.

403-4.5 Asphalt pavers. Asphalt pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of asphalt that will meet the specified thickness, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface. The asphalt paver shall be equipped with a control system capable of automatically maintaining the specified screed grade and elevation.

If the spreading and finishing equipment in use leaves tracks or indented areas, or produces other blemishes in the pavement that are not satisfactorily corrected by the scheduled operations, the use of such equipment shall be discontinued.

The paver shall be capable of paving to a minimum width specified in paragraph 401-4.11.

403-4.6 Rollers. The number, type, and weight of rollers shall be sufficient to compact the asphalt to the required density while it is still in a workable condition without crushing of the aggregate, depressions or other damage to the pavement surface. Rollers shall be in good condition, capable of operating at slow

speeds to avoid displacement of the asphalt. All rollers shall be specifically designed and suitable for compacting asphalt concrete and shall be properly used. Rollers that impair the stability of any layer of a pavement structure or underlying soils shall not be used.

403-4.6.1 Density device. The Contractor shall have on site a density gauge during all paving operations in order to assist in the determination of the optimum rolling pattern, type of roller and frequencies, as well as to monitor the effect of the rolling operations during production paving. The Contractor shall also supply a qualified technician during all paving operations to calibrate the density gauge and obtain accurate density readings for all new asphalt. These densities shall be supplied to the RPR upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

403-4.7 Preparation of asphalt binder. The asphalt binder shall be heated in a manner that will avoid local overheating and provide a continuous supply of the asphalt material to the mixer at a uniform temperature. The temperature of the unmodified asphalt binder delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed 325°F (160°C) when added to the aggregate. The temperature of modified asphalt binder shall be no more than 350°F (175°C) when added to the aggregate.

403-4.8 Preparation of mineral aggregate. The aggregate for the asphalt shall be heated and dried. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler shall not exceed 350°F (175°C) when the asphalt binder is added. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

403-4.9 Preparation of asphalt mixture. The aggregates and the asphalt binder shall be weighed or metered and introduced into the mixer in the amount specified by the JMF. The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D2489, for each individual plant and for each type of aggregate used. The wet mixing time will be set to achieve 95% of coated particles. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the mixer. The moisture content of all asphalt upon discharge shall not exceed 0.5%.

403-4.10 Application of Prime and Tack Coat. Immediately before placing the asphalt mixture, the underlying course shall be cleaned of all dust and debris.

A prime coat in accordance with Item P-602 shall be applied to aggregate base prior to placing the asphalt mixture.

A tack coat shall be applied in accordance with Item P-603 to all vertical and horizontal asphalt and concrete surfaces prior to placement of the first and each subsequent lift of asphalt mixture.

403-4.11 Laydown plan, transporting, placing, and finishing. Prior to the placement of the asphalt, the Contractor shall prepare a laydown plan with the sequence of paving lanes and width to minimize the number of cold joints; the location of any temporary ramps; laydown temperature; and estimated time of completion for each portion of the work (milling, paving, rolling, cooling, etc.). The laydown plan and any modifications shall be approved by the RPR.

Deliveries shall be scheduled so that placing and compacting of asphalt is uniform with minimum stopping and starting of the paver. Hauling over freshly placed material shall not be permitted until the

material has been compacted, as specified, and allowed to cool to approximately ambient temperature. The Contractor, at their expense, shall be responsible for repair of any damage to the pavement caused by hauling operations.

Contractor shall survey each lift of asphalt surface course and certify to RPR that every lot of each lift meets the grade tolerances of paragraph 401-6.2e before the next lift can be placed.

Edges of existing asphalt pavement abutting the new work shall be saw cut and the cut off material and laitance removed. Apply a tack coat in accordance with P-603 before new asphalt material is placed against it.

The speed of the paver shall be regulated to eliminate pulling and tearing of the asphalt mat. Placement of the asphalt mix shall begin along the centerline of a crowned section or on the high side of areas with a one way slope unless shown otherwise on the laydown plan as accepted by the RPR. The asphalt mix shall be placed in consecutive adjacent lanes having a minimum width of 13.25 feet (m) except where edge lanes require less width to complete the area. Additional screed sections attached to widen the paver to meet the minimum lane width requirements must include additional auger sections to move the asphalt mixture uniformly along the screed extension.

The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least 1 foot (30 cm); however, the joint in the surface top course shall be at the centerline of crowned pavements. Transverse joints in one course shall be offset by at least 10 feet (3 m) from transverse joints in the previous course. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet (3 m). On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the asphalt may be spread and luted by hand tools.

The RPR may at any time, reject any batch of asphalt, on the truck or placed in the mat, which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or overheated asphalt mixture. Such rejection may be based on only visual inspection or temperature measurements. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

Areas of segregation in the surface course, as determined by the RPR, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of the construction lift thickness as specified in paragraph 401-3.3, Table 2 for the approved mix design. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet (3 m) long.

403-4.12 Compaction of asphalt mixture. After placing, the asphalt mixture shall be thoroughly and uniformly compacted by self-propelled rollers. The surface shall be compacted as soon as possible when the asphalt has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any surface defects and/or displacement occurring as a result of the roller, or from any other cause, shall be corrected at the Contractor's expense.

Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross-section, and the required field density is obtained. To prevent adhesion of the asphalt to the roller, the wheels shall be equipped with a scraper and kept moistened with water as necessary.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with approved power tampers.

Any asphalt that becomes loose and broken, mixed with dirt, contains check-cracking, or in any way defective shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

403-4.13 Joints. The formation of all joints shall be made in such a manner as to ensure a continuous bond between the courses and obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade.

The roller shall not pass over the unprotected end of the freshly laid asphalt except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. In both methods, all contact surfaces shall be coated with an asphalt tack coat before placing any fresh asphalt against the joint.

Longitudinal joints which have been left exposed for more than four (4) hours; the surface temperature has cooled to less than 175°F (80°C); or are irregular, damaged, uncompacted or otherwise defective shall be cut back with a cutting wheel or pavement saw a maximum of 3 inches (75 mm) to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material and any laitance produced from cutting joints shall be removed from the project. An asphalt tack coat or other product approved by the RPR shall be applied to the clean, dry joint prior to placing any additional fresh asphalt against the joint. The cost of this work shall be considered incidental to the cost of the asphalt.

403-4.14 Saw-cut grooving. Saw-cut grooving is not required.

403-4.15 Diamond grinding. Diamond grinding shall be completed prior to pavement grooving. Diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive.

Diamond grinding shall be performed with a machine designed specifically for diamond grinding capable of cutting a path at least 3 feet (0.9 m) wide. The saw blades shall be 1/8-inch (3-mm) wide with a minimum of 55 to 60 blades per 12 inches (300 mm) of cutting head width; grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide; and peaks and ridges approximately 1/32 inch (1 mm) higher than the bottom of the grinding cut. The actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Equipment or grinding procedures that causes ravels, aggregate fractures, spalls or disturbance to the pavement will not be permitted.

Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the grinding operation shall be continuously removed and the pavement left in a clean condition. The Contractor shall apply a surface treatment per P-608 to all areas that have been subject to grinding.

403-4.16 Nighttime Paving Requirements. The Contractor shall provide adequate lighting during any nighttime construction. A lighting plan shall be submitted by the Contractor and approved by the RPR prior to the start of any nighttime work. All work shall be in accordance with the approved CSPP and lighting plan.

CONTRACTOR QUALITY CONTROL (CQC)

403-5.1 General. The Contractor shall develop a CQCP in accordance with Item C-100. No partial payment will be made for materials that are subject to specific QC requirements without an approved CQCP.

403-5.2 Contractor quality control (QC) facilities. The Contractor shall provide or contract for testing facilities in accordance with Item C-100. The RPR shall be permitted unrestricted access to inspect the

Contractor's QC facilities and witness QC activities. The RPR will advise the Contractor in writing of any noted deficiencies concerning the QC facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting the test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

403-5.3 Quality Control (QC) testing. The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to these specifications and as set forth in the approved CQCP. The testing program shall include, but not necessarily be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, field compaction, and surface smoothness. A QC Testing Plan shall be developed as part of the CQCP.

a. Asphalt content. A minimum of two tests shall be performed per day in accordance with ASTM D6307 or ASTM D2172 for determination of asphalt content. When using ASTM D6307, the correction factor shall be determined as part of the first test performed at the beginning of plant production; and as part of every tenth test performed thereafter. The asphalt content for the day will be determined by averaging the test results.

b. Gradation. Aggregate gradations shall be determined a minimum of twice per lot from mechanical analysis of extracted aggregate in accordance with ASTM D5444 and ASTM C136, and ASTM C117.

c. Moisture content of aggregate. The moisture content of aggregate used for production shall be determined a minimum of once per lot in accordance with ASTM C566.

d. Moisture content of asphalt. The moisture content of the asphalt shall be determined once per lot in accordance with AASHTO T329 or ASTM D1461.

e. Temperatures. Temperatures shall be checked, at least four times per lot, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the asphalt at the plant, and the asphalt at the job site.

f. In-place density monitoring. The Contractor shall conduct any necessary testing to ensure that the specified density is being achieved. A nuclear gauge may be used to monitor the pavement density in accordance with ASTM D2950.

g. Smoothness for Contractor Quality Control.

The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than 1/4 inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria is not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues

The Contractor may use a 12-foot (3.7 m) "straightedge, a rolling inclinometer meeting the requirements of ASTM E2133 or rolling external reference device that can simulate a 12-foot (3.7m) straightedge approved by the RPR. Straight-edge testing shall start with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. Testing shall be continuous across all joints. The surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between the two high points. If the rolling inclinometer or external reference device is used, the data may be evaluated using the FAA profile program, ProFAA, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement and between the start and stop of lanes place shall be evaluated separately for conformance with the plans.

(1) Transverse measurements. Transverse measurements shall be taken for each day's production placed. Transverse measurements will be taken perpendicular to the pavement centerline each 50 feet (15 m) or more often as determined by the RPR. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

(2) Longitudinal measurements. Longitudinal measurements shall be taken for each day's production placed. Longitudinal tests will be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6 m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6 m) or greater. When placement abuts previously placed material the first measurement shall start with one half the length of the straight edge on the previously placed material.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch (6 mm) shall be corrected with diamond grinding per paragraph 403-4.15 or by removing and replacing the surface course to full depth. Grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 401-6.1d(3). Areas that have been ground shall be sealed with a surface treatment in accordance with Item P-608. To avoid the surface treatment creating any conflict with runway or taxiway markings, it may be necessary to seal a larger area.

Control charts shall be kept to show area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

h. Grade. Grade shall be evaluated daily to allow adjustments to paving operations when grade measurements do not meet specifications. As a minimum, grade shall be evaluated prior to the placement of the first lift and then prior to and after placement of the surface lift.

Measurements will be taken at appropriate gradelines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically and 0.1 feet (30 mm) laterally. The documentation will be provided by the Contractor to the RPR by the end of the following working day.

Areas with humps or depressions that exceed grade or smoothness criteria and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch (12 mm) less than the thickness specified on the plans. Grinding shall be in accordance with paragraph 403-4.15.

The Contractor shall repair low areas or areas that cannot be corrected by grinding by removal of deficient areas to the depth of the final course plus 1/2 inch and replacing with new material. Skin patching is not allowed.

403-5.4 Sampling. When directed by the RPR, the Contractor shall sample and test any material that appears inconsistent with similar material being sampled, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

403-5.5 Control charts. The Contractor shall maintain linear control charts both for individual measurements and range (i.e., difference between highest and lowest measurements) for aggregate

gradation, asphalt content, and VMA. The VMA for each day shall be calculated and monitored by the QC laboratory.

Control charts shall be posted in a location satisfactory to the RPR and kept current. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and Suspension Limits applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a problem and the Contractor is not taking satisfactory corrective action, the RPR may suspend production or acceptance of the material.

a. Individual measurements. Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation, asphalt content, and VMA. The control charts shall use the JMF target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

Control Chart Limits for Individual Measurements

Sieve	Action Limit	Suspension Limit
3/4 inch (19.0 mm)	±6%	±9%
1/2 inch (12.5 mm)	±6%	±9%
3/8 inch (9.5 mm)	±6%	±9%
No. 4 (4.75 mm)	±6%	±9%
No. 16 (1.18 mm)	±5%	±7.5%
No. 50 (300 µm)	±3%	±4.5%
No. 200 (75 µm)	±2%	±3%
Asphalt Content	±0.45%	±0.70%
Minimum VMA	-0.5%	-1.0%

b. Range. Control charts for range shall be established to control process variability for the test parameters and Suspension Limits listed below. The range shall be computed for each lot as the difference between the two test results for each control parameter. The Suspension Limits specified below are based on a sample size of $n = 2$. Should the Contractor elect to perform more than two tests per lot, the Suspension Limits shall be adjusted by multiplying the Suspension Limit by 1.18 for $n = 3$ and by 1.27 for $n = 4$.

**Control Chart Limits Based on Range
($n = 2$)**

Sieve	Suspension Limit
1/2 inch (12.5 mm)	11%
3/8 inch (9.5 mm)	11%
No. 4 (4.75 mm)	11%
No. 16 (1.18 mm)	9%
No. 50 (300 µm)	6%
No. 200 (75 µm)	3.5%
Asphalt Content	0.8%

c. Corrective action. The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain sets of rules to gauge when a process is out of control and detail what action will be taken to bring the process into control. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

- (1) One point falls outside the Suspension Limit line for individual measurements or range; or
- (2) Two points in a row fall outside the Action Limit line for individual measurements.

403-5.6 Quality control (QC) reports. The Contractor shall maintain records and shall submit reports of QC activities daily, in accordance with the CQCP described in Item C-100.

MATERIAL ACCEPTANCE

403-6.1. Quality Assurance Acceptance sampling and testing. Unless otherwise specified, all acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be performed by the RPR at no cost to the Contractor except that coring as required in this section shall be completed and paid for by the Contractor.

a. Quality Assurance (QA) testing laboratory. The QA testing laboratory performing these acceptance tests will be accredited in accordance with ASTM D3666. The QA laboratory accreditation will be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing will be listed on the lab accreditation.

b. Lot Size. A standard lot will be equal to one day's production divided into approximately equal sublots of between 400 to 600 tons. When only one or two sublots are produced in a day's production, the sublots will be combined with the production lot from the previous or next day.

Where more than one plant is simultaneously producing asphalt for the job, the lot sizes will apply separately for each plant.

c. Asphalt air voids. Plant-produced asphalt will be tested for air voids on a subplot basis.

(1) Sampling. Material from each subplot shall be sampled in accordance with ASTM D3665. Samples shall be taken from material deposited into trucks at the plant or at the job site in accordance with ASTM D979. The sample of asphalt may be put in a covered metal tin and placed in an oven for not less than 30 minutes nor more than 60 minutes to maintain the material at or above the compaction temperature as specified in the JMF.

(2) Testing. Air voids will be determined for each subplot in accordance with ASTM D3203 for a set of three compacted specimens prepared in accordance with ASTM D6925.

d. In-place asphalt mat and joint density. Each subplot will be tested for in-place mat and joint density as a percentage of the theoretical maximum density (TMD).

(1) Sampling. The Contractor will cut minimum 5 inches (125 mm) diameter samples in accordance with ASTM D5361. The Contractor shall furnish all tools, labor, and materials for cleaning, and filling the cored pavement. Laitance produced by the coring operation shall be removed immediately after coring, and core holes shall be filled within one day after sampling in a manner acceptable to the RPR.

(2) Bond. Each lift of asphalt shall be bonded to the underlying layer. If cores reveal that the surface is not bonded, additional cores shall be taken as directed by the RPR to determine the extent of unbonded areas. Unbonded areas shall be removed by milling and replaced at no additional cost as directed by the RPR.

(3) Thickness. Thickness of each lift of surface course will be evaluated by the RPR for compliance to the requirements shown on the plans after any necessary corrections for grade.

Measurements of thickness will be made using the cores extracted for each subplot for density measurement. The maximum allowable deficiency at any point will not be more than 1/4 inch (6 mm) less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, will not be less than the indicated thickness. Where the thickness tolerances are not met, the lot or subplot shall be corrected by the Contractor at his expense by removing the deficient area and replacing with new pavement. The Contractor, at his expense, may take additional cores as approved by the RPR to circumscribe the deficient area.

(4) Mat density. One core shall be taken from each subplot. Core locations will be determined by the RPR in accordance with ASTM D3665. Cores for mat density shall not be taken closer than one foot (30 cm) from a transverse or longitudinal joint. The bulk specific gravity of each cored sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each subplot sample by the TMD for that subplot.

(5) Joint density. One core centered over the longitudinal joint shall be taken for each subplot which contains a longitudinal joint. Core locations will be determined by the RPR in accordance with ASTM D3665. The bulk specific gravity of each core sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each joint density sample by the average TMD for the lot. The TMD used to determine the joint density at joints formed between lots will be the lower of the average TMD values from the adjacent lots.

403-6.2 Acceptance criteria.

a. General. Acceptance will be based on the implementation of the Contractor Quality Control Program (CQCP) and the following characteristics of the asphalt and completed pavements: air voids, mat density, joint density, grade.

b. Air voids. Acceptance of each lot of plant produced material for air voids will be based upon the average air void from the sublots. If the average air voids of the lot are equal to or greater than 2% and equal to or less than 5%, then the lot will be acceptable. If the average is below 2% or greater than 5%, the lot shall be removed and replaced at the Contractor's expense.

c. Mat density. Acceptance of each lot of plant produced material for mat density will be based on the average of all of the densities taken from the sublots. If the average mat density of the lot so established equals or exceeds 94%, the lot will be acceptable. If the average mat density of the lot is below 94%, the lot shall be removed and replaced at the Contractor's expense.

d. Joint density. Acceptance of each lot of plant produced asphalt for joint density will be based on the average of all of the joint densities taken from the sublots. If the average joint density of the lot so established equals or exceeds 92%, the lot will be acceptable. If the average joint density of the lot is less than 92%, the Contractor shall stop production and evaluate the method of compacting joints. Production may resume once the reason for poor compaction has been determined and appropriate measures have been taken to ensure proper compaction.

e. Grade. The final finished surface of the pavement of the completed project shall be surveyed to verify that the grade elevations and cross-sections shown on the plans do not deviate more than 1/2 inch (12 mm) vertically or 0.1 feet (30 mm) laterally .

Cross-sections of the pavement shall be taken at a minimum 50-foot (15-m) longitudinal spacing and at all longitudinal grade breaks. Minimum cross-section grade points shall include grade at centerline, ± 10 feet of centerline, and edge of taxiway pavement.

The survey and documentation shall be stamped and signed by a licensed surveyor. Payment for sublots that do not meet grade for over 25% of the subplot shall not be more than 95%.

403-6.3 Resampling Pavement for Mat Density.

a. General. Resampling of a lot of pavement will only be allowed for mat density and then, only if the Contractor requests same in writing, within 48 hours after receiving the written test results from the RPR. A retest will consist of all the sampling and testing procedures contained in paragraphs 403-6.1. Only one resampling per lot will be permitted.

(1) A redefined mat density will be calculated for the resampled lot. The number of tests used to calculate the redefined mat density will include the initial tests made for that lot plus the retests.

(2) The cost for resampling and retesting shall be borne by the Contractor.

b. Payment for resampled lots. The redefined mat density for a resampled lot will be used to evaluate the acceptance of that lot in accordance with paragraph 403-6.2.

c. Outliers. Check for outliers in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded and density determined using the remaining test values.

METHOD OF MEASUREMENT

403-7.1 Measurement. Plant mix asphalt mix pavement shall be measured by the number of tons (kg) of asphalt pavement used in the accepted work. Recorded batch weights or truck scale weights will be used to determine the basis for the tonnage.

BASIS OF PAYMENT

403-8.1 Payment. Payment for a lot of asphalt mixture meeting all acceptance criteria as specified in paragraph 403-6.2 shall be made at the contract unit price per ton (kg) for asphalt. The price shall be compensation for furnishing all materials, for all preparation, mixing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-403-8.1 Asphalt Mixture Surface Course – per ton (kg)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C29	Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C127	Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates

ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C183	Standard Practice for Sampling and the Amount of Testing of Hydraulic Cement
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D242	Standard Specification for Mineral Filler for Bituminous Paving Mixtures
ASTM D946	Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction
ASTM D979	Standard Practice for Sampling Bituminous Paving Mixtures
ASTM D1073	Standard Specification for Fine Aggregate for Bituminous Paving Mixtures
ASTM D1074	Standard Test Method for Compressive Strength of Bituminous Mixtures
ASTM D1461	Standard Test Method for Moisture or Volatile Distillates in Bituminous Paving Mixtures
ASTM D2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D2172	Standard Test Method for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2489	Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures
ASTM D2726	Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
ASTM D2950	Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
ASTM D3203	Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D3381	Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
ASTM D4125	Standard Test Methods for Asphalt Content of Bituminous mixtures by the Nuclear Method
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

ASTM D4552	Standard Practice for Classifying Hot-Mix Recycling Agents
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D4867	Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
ASTM D5581	Standard Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus (6 inch-Diameter Specimen)
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6307	Standard Test Method for Asphalt Content of Hot-Mix Asphalt by Ignition Method
ASTM D6373	Standard Specification for Performance Graded Asphalt Binder
ASTM D6752	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method
ASTM D6925	Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the SuperPave Gyratory Compactor
ASTM D6926	Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus
ASTM D6927	Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures
ASTM D6995	Standard Test Method for Determining Field VMA based on the Maximum Specific Gravity of the Mix (Gmm)
ASTM E11	Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
ASTM E178	Standard Practice for Dealing with Outlying Observations
ASTM E2133	Standard Test Method for Using a Rolling Inclinator to Measure Longitudinal and Transverse Profiles of a Traveled Surface
American Association of State Highway and Transportation Officials (AASHTO)	
AASHTO M156	Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures
AASHTO T329	Standard Method of Test for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method
AASHTO T 340	Standard Method of Test for Determining the Rutting Susceptibility of Hot Mix Asphalt (APA) Using the Asphalt Pavement Analyzer (APA)
Asphalt Institute (AI)	
MS-2	Mix Design Manual, 7th Edition

MS-26 Asphalt Binder Handbook
 AI State Binder Specification Database

FAA Orders

5300.1 Modifications to Agency Airport Design, Construction, and Equipment
 Standards

Federal Highway Administration (FHWA)

Long Term Pavement Performance Binder program

Software

FAARFIELD

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Item P-602 Emulsified Asphalt Prime Coat**DESCRIPTION**

602-1.1 This item shall consist of an application of emulsified asphalt material on the prepared base course in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

602-2.1 Emulsified Asphalt material. The emulsified asphalt material shall be as specified in ASTM D3628 for use as a prime coat appropriate to local conditions. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the emulsified asphalt material. The COA shall be provided to and approved by the Resident Project Representative (RPR) before the emulsified asphalt material is applied. The furnishing of the COA for the emulsified asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

CONSTRUCTION METHODS

602-3.1 Weather limitations. The emulsified asphalt prime coat shall be applied only when the existing surface is dry; the atmospheric temperature is 50°F (10°C) or above, and the temperature has not been below 35°F (2°C) for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the RPR.

602-3.2 Equipment. The equipment shall include a self-powered pressure asphalt material distributor and equipment for heating asphalt material.

Provide a distributor with pneumatic tires of such size and number that the load produced on the base surface does not exceed 65.0 psi (4.5 kg/sq cm) of tire width to prevent rutting, shoving or otherwise damaging the base, surface or other layers in the pavement structure. Design and equip the distributor to spray the asphalt material in a uniform coverage at the specified temperature, at readily determined and controlled rates from 0.05 to 1.0 gallons per square yard (0.23 to 4.5 L/square meter), with a pressure range of 25 to 75 psi (172.4 to 517.1 kPa) and with an allowable variation from the specified rate of not more than $\pm 5\%$, and at variable widths. Include with the distributor equipment a separate power unit for the bitumen pump, full-circulation spray bars, tachometer, pressure gauges, volume-measuring devices, adequate heaters for heating of materials to the proper application temperature, a thermometer for reading the temperature of tank contents, and a hand hose attachment suitable for applying asphalt material manually to areas inaccessible to the distributor. Equip the distributor to circulate and agitate the asphalt material during the heating process. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

A power broom and power blower suitable for cleaning the surfaces to which the asphalt coat is to be applied shall be provided.

Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

602-3.3 Application of emulsified asphalt material. Immediately before applying the prime coat, the full width of the surface to be primed shall be swept with a power broom to remove all loose dirt and other objectionable material.

The asphalt emulsion material shall be uniformly applied with an asphalt distributor at the rate of 0.15 to 0.30 gallons per square yard (0.68 to 1.36 liters per square meter) depending on the base course surface texture. The type of asphalt material and application rate shall be approved by the RPR prior to application.

Following application of the emulsified asphalt material and prior to application of the succeeding layer of pavement, allow the asphalt coat to cure and to obtain evaporation of any volatiles or moisture. Maintain the coated surface until the succeeding layer of pavement is placed, by protecting the surface against damage and by repairing and recoating deficient areas. Allow the prime coat to cure without being disturbed for a period of at least 48 hours or longer, as may be necessary to attain penetration into the treated course. Furnish and spread sand to effectively blot up and cure excess asphalt material. The Contractor shall remove blotting sand prior to asphalt concrete lay down operations at no additional expense to the Owner. Keep traffic off surfaces freshly treated with asphalt material. Provide sufficient warning signs and barricades so that traffic will not travel over freshly treated surfaces.

602-3.4 Trial application rates. The Contractor shall apply a minimum of three lengths of at least 100 feet (30 m) for the full width of the distributor bar to evaluate the amount of emulsified asphalt material that can be satisfactorily applied with the equipment. Apply three different application rates of emulsified asphalt materials within the application range specified in paragraph 602-3.3. Other trial applications can be made using various amounts of material as directed by the RPR. The trial application is to demonstrate the equipment can uniformly apply the emulsified asphalt material within the rates specified and determine the application rate for the project.

602-3.5 Freight and waybills. The Contractor shall submit waybills and delivery tickets during the progress of the work. Before the final estimate is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

METHOD OF MEASUREMENT

602-4.1 The emulsified asphalt material for prime coat shall be measured by the gallon (liter). Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D4311. The emulsified asphalt material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of emulsified asphalt material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the emulsified asphalt material is necessary. Water added to emulsified asphalt will not be measured for payment.

BASIS OF PAYMENT

602-5.1 Payment shall be made at the contract unit price per gallon (liter) for emulsified asphalt prime coat. This price shall be full compensation for furnishing all materials and for all preparation, delivering, and applying the materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item P-602-5.1 Emulsified Asphalt Prime Coat - per gallon (liter)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D2995 Standard Practice for Estimating Application Rate and Residual
Application Rate of Bituminous Distributors

ASTM D3628 Standard Practice for Selection and Use of Emulsified Asphalts

END OF ITEM P-602

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Item P-603 Emulsified Asphalt Tack Coat**DESCRIPTION**

603-1.1 This item shall consist of preparing and treating an asphalt or concrete surface with asphalt material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

603-2.1 Asphalt materials. The asphalt material shall be an emulsified asphalt as specified in ASTM D3628 as an asphalt application for tack coat appropriate to local conditions. The emulsified asphalt shall not be diluted. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the asphalt material to the Resident Project Representative (RPR) before the asphalt material is applied for review and acceptance. The furnishing of COA for the asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

CONSTRUCTION METHODS

603-3.1 Weather limitations. The tack coat shall be applied only when the existing surface is dry and the atmospheric temperature is 50°F (10°C) or above; the temperature has not been below 35°F (2°C) for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the RPR.

603-3.2 Equipment. The Contractor shall provide equipment for heating and applying the emulsified asphalt material. The emulsion shall be applied with a manufacturer-approved computer rate-controlled asphalt distributor. The equipment shall be in good working order and contain no contaminants or diluents in the tank. Spray bar tips must be clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type of tip or pressure source is suitable that will maintain predetermined flow rates and constant pressure during the application process with application speeds under eight (8) miles per hour (13 km per hour) or seven (700) feet per minute (213 m per minute).

The equipment will be tested under pressure for leaks and to ensure proper set-up before use to verify truck set-up (via a test-shot area), including but not limited to, nozzle tip size appropriate for application, spray-bar height and pressure and pump speed, evidence of triple-overlap spray pattern, lack of leaks, and any other factors relevant to ensure the truck is in good working order before use.

The distributor truck shall be equipped with a minimum 12-foot (3.7-m) spreader spray bar with individual nozzle control with computer-controlled application rates. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion, and have an operable mechanical tank gauge that can be used to cross-check the computer accuracy. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

The distributor truck shall be equipped to effectively heat and mix the material to the required temperature prior to application as required. Heating and mixing shall be done in accordance with the manufacturer's recommendations. Do not overheat or over mix the material.

The distributor shall be equipped with a hand sprayer.

Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

A power broom and/or power blower suitable for cleaning the surfaces to which the asphalt tack coat is to be applied shall be provided.

603-3.3 Application of emulsified asphalt material. The emulsified asphalt shall not be diluted. Immediately before applying the emulsified asphalt tack coat, the full width of surface to be treated shall be swept with a power broom and/or power blower to remove all loose dirt and other objectionable material.

The emulsified asphalt material shall be uniformly applied with an asphalt distributor at the rates appropriate for the conditions and surface specified in the table below. The type of asphalt material and application rate shall be approved by the RPR prior to application.

Emulsified Asphalt

Surface Type	Residual Rate, gal/SY (L/square meter)	Emulsion Application Bar Rate, gal/SY (L/square meter)
New asphalt	0.02-0.05 (0.09-0.23)	0.03-0.07 (0.13-0.32)
Existing asphalt	0.04-0.07 (0.18-0.32)	0.06-0.11 (0.27-0.50)
Milled Surface	0.04-0.08 (0.18-0.36)	.06-0.12 (0.27-0.54)
Concrete	0.03-0.05 (0.13-0.23)	0.05-0.08 (0.23-0.36)

After application of the tack coat, the surface shall be allowed to cure without being disturbed for the period of time necessary to permit drying and setting of the tack coat. This period shall be determined by the RPR. The Contractor shall protect the tack coat and maintain the surface until the next course has been placed. When the tack coat has been disturbed by the Contractor, tack coat shall be reapplied at the Contractor's expense.

603-3.4 Freight and waybills The Contractor shall submit waybills and delivery tickets, during progress of the work. Before the final statement is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

METHOD OF MEASUREMENT

603-4.1 The emulsified asphalt material for tack coat shall be measured by the gallon (liter). Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D1250. The emulsified asphalt material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of emulsified asphalt material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the emulsified asphalt material is necessary. Water added to emulsified asphalt will not be measured for payment.

BASIS OF PAYMENT

603.5-1 Payment shall be made at the contract unit price per gallon (liter) of emulsified asphalt material. This price shall be full compensation for furnishing all materials, for all preparation, delivery, and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-603-5.1	Emulsified Asphalt Tack Coat – per gallon (liter)
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REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D1250	Standard Guide for Use of the Petroleum Measurement Tables
ASTM D2995	Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors
ASTM D3628	Standard Practice for Selection and Use of Emulsified Asphalts

END ITEM P-603

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Item P-605 Joint Sealants for Pavements**DESCRIPTION**

605-1.1 This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints in pavement; joints between different types of pavements; and cracks in existing pavement.

MATERIALS

605-2.1 Joint sealants. Joint sealant materials shall meet the requirements of ASTM D6690.

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

605-2.2 Backer rod. The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant in accordance with ASTM D5249. The backer-rod material shall be $25\% \pm 5\%$ larger in diameter than the nominal width of the joint.

605-2.3 Bond breaking tapes. Provide a bond breaking tape or separating material that is a flexible, non-shrinkable, non-absorbing, non-staining, and non-reacting adhesive-backed tape. The material shall have a melting point at least 5°F (3°C) greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately 1/8 inch (3 mm) wider than the nominal width of the joint and shall not bond to the joint sealant.

CONSTRUCTION METHODS

605-3.1 Time of application. Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F (10°C) and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

605-3.2 Equipment. Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, 30 days prior to use on the project.

a. Tractor-mounted routing tool. Provide a routing tool, used for removing old sealant from the joints, of such shape and dimensions and so mounted on the tractor that it will not damage the sides of the joints. The tool shall be designed so that it can be adjusted to remove the old material to varying depths as required. The use of V-shaped tools or rotary impact routing devices will not be permitted. Hand-operated spindle routing devices may be used to clean and enlarge random cracks.

b. Concrete saw. Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified.

c. Waterblasting equipment. The Contractor must demonstrate waterblasting equipment including the pumps, hose, guide and nozzle size, under job conditions, before approval in accordance with

paragraph 605-3.3. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

d. Hand tools. Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces. Hand tools should be carefully evaluated for potential spalling effects prior to approval for use.

e. Hot-poured sealing equipment. The unit applicators used for heating and installing ASTM D6690 joint sealant materials shall be mobile and shall be equipped with a double-boiler, agitator-type kettle with an oil medium in the outer space for heat transfer; a direct-connected pressure-type extruding device with a nozzle shaped for inserting in the joint to be filled; positive temperature devices for controlling the temperature of the transfer oil and sealant; and a recording type thermometer for indicating the temperature of the sealant. The applicator unit shall be designed so that the sealant will circulate through the delivery hose and return to the inner kettle when not in use.

f. Cold-applied, single-component sealing equipment. The equipment for installing ASTM D5893 single component joint sealants shall consist of an extrusion pump, air compressor, following plate, hoses, and nozzle for transferring the sealant from the storage container into the joint opening. The dimension of the nozzle shall be such that the tip of the nozzle will extend into the joint to allow sealing from the bottom of the joint to the top. Maintain the initially approved equipment in good working condition, serviced in accordance with the supplier's instructions, and unaltered in any way without obtaining prior approval. Small hand-held air-powered equipment (i.e., caulking guns) may be used for small applications.

605-3.3 Preparation of joints. Pavement joints for application of material in this specification must be dry, clean of all scale, dirt, dust, curing compound, and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

a. Sawing. All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

b. Sealing. Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by tractor-mounted routing equipment, concrete saw, or waterblaster as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of 1/2 inch (12 mm) from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches (75 mm) from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

c. Backer Rod. When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a backer rod in accordance with paragraph 605-2.2 to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backer rod is placed at the specified depth and is not stretched or twisted during installation.

d. Bond-breaking tape. Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-separating tape breaker in accordance with paragraph 605-2.3 to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

605-3.4 Installation of sealants. Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the RPR before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet (15 m) ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 1/8 inch (3 mm) \pm 1/16 inch (2 mm) below the top of pavement surface; or bottom of groove for grooved pavement. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until authorized by the RPR. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

605-3.5 Inspection. The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

605-3.6 Clean-up. Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

METHOD OF MEASUREMENT

605-4.1 Joint sealing material shall be measured by the linear foot (meter) of sealant in place, completed, and accepted.

BASIS OF PAYMENT

605-5.1 Payment for joint sealing material shall be made at the contract unit price per linear foot (meter). The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-605-5.1 Joint Sealing Filler - per linear foot (meter)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5249	Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt

Advisory Circulars (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
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END ITEM P-605

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Item P-610 Concrete for Miscellaneous Structures**DESCRIPTION**

610-1.1 This item shall consist of concrete and reinforcement, as shown on the plans, prepared and constructed in accordance with these specifications. This specification shall be used for all concrete other than airfield pavement which are cast-in-place.

MATERIALS

610-2.1 General. Only approved materials, conforming to the requirements of these specifications, shall be used in the work. Materials may be subject to inspection and tests at any time during their preparation or use. The source of all materials shall be approved by the Resident Project Representative (RPR) before delivery or use in the work. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be stored and handled to ensure preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed in them.

The use of pit-run aggregates shall not be permitted unless the pit-run aggregate has been screened and washed, and all fine and coarse aggregates stored separately and kept clean. The mixing of different aggregates from different sources in one storage stockpile or alternating batches of different aggregates shall not be permitted.

a. Reactivity. Fine aggregate and coarse aggregates to be used in all concrete shall have been tested separately within six months of the project in accordance with ASTM C1260. Test results shall be submitted to the RPR. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.08% at 14 days (16 days from casting). If the expansion either or both test specimen is greater than 0.08% at 14 days, but less than 0.20%, a minimum of 25% of Type F fly ash, or between 40% and 55% of slag cement shall be used in the concrete mix.

If the expansion is greater than 0.20%, the aggregates shall not be used, and test results for other aggregates must be submitted for evaluation; or aggregates that meet P-501 reactivity test requirements may be utilized.

610-2.2 Coarse aggregate. The coarse aggregate for concrete shall meet the requirements of ASTM C33 and the requirements of Table 4, Class Designation 5S; and the grading requirements shown below, as required for the project.

Coarse Aggregate Grading Requirements

Maximum Aggregate Size	ASTM C33, Table 3 Grading Requirements (Size No.)
1 1/2 inch (37.5 mm)	467 or 4 and 67
1 inch (25 mm)	57
3/4 inch (19 mm)	67
1/2 inch (12.5 mm)	7

610-2.2.1 Coarse Aggregate susceptibility to durability (D) cracking. Not used.

610-2.3 Fine aggregate. The fine aggregate for concrete shall meet all fine aggregate requirements of ASTM C33.

610-2.4 Cement. Cement shall conform to the requirements of ASTM C150 Type I or II.

610-2.5 Cementitious materials.

a. Fly ash. Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash shall have a Calcium Oxide (CaO) content of less than 15% and a total available alkali content less than 3% per ASTM C311. Fly ash produced in furnace operations using liming materials or soda ash (sodium carbonate) as an additive shall not be acceptable. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the concrete mix, and shall furnish each additional report as they become available during the project. The reports can be used for acceptance or the material may be tested independently by the RPR.

b. Slag cement (ground granulated blast furnace (GGBF)). Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

610-2.6 Water. Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

610-2.7 Admixtures. The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the RPR may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the RPR from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

a. Air-entraining admixtures. Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entrainment agent and any water reducer admixture shall be compatible.

b. Water-reducing admixtures. Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

c. Other chemical admixtures. The use of set retarding, and set-accelerating admixtures shall be approved by the RPR. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and set-

accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

610-2.8 Premolded joint material. Premolded joint material for expansion joints shall meet the requirements of ASTM D1751.

610-2.9 Joint filler. The filler for joints shall meet the requirements of Item P-605, unless otherwise specified.

610-2.10 Steel reinforcement. Reinforcing shall consist of Reinforcing Steel conforming to the requirements of ASTM A615, ASTM A706, ASTM A775, ASTM A934 or Welded Steel Wire Fabric conforming to the requirements of ASTM A1034 or A884

610-2.11 Materials for curing concrete. Curing materials shall conform to one of the following.

Materials for Curing

Waterproof paper	ASTM C171
Clear or white Polyethylene Sheeting	ASTM C171
White-pigmented Liquid Membrane-Forming Compound, Type 2, Class B	ASTM C309

CONSTRUCTION METHODS

610-3.1 General. The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified here. All machinery and equipment used by the Contractor on the work, shall be of sufficient size to meet the requirements of the work. All work shall be subject to the inspection and approval of the RPR.

610-3.2 Concrete Mixture. The concrete shall develop a compressive strength of 4000 psi in 28 days as determined by test cylinders made in accordance with ASTM C31 and tested in accordance with ASTM C39. The concrete shall contain not less than 470 pounds of cementitious material per cubic yard (280 kg per cubic meter). The water cementitious ratio shall not exceed 0.45 by weight. The air content of the concrete shall be 5% +/- 1.2% as determined by ASTM C231 and shall have a slump of not more than 4 inches (100 mm) as determined by ASTM C143.

610-3.3 Mixing. Concrete may be mixed at the construction site, at a central point, or wholly or in part in truck mixers. The concrete shall be mixed and delivered in accordance with the requirements of ASTM C94 or ASTM C685.

The concrete shall be mixed only in quantities required for immediate use. Concrete shall not be mixed while the air temperature is below 40°F (4°C) without the RPRs approval. If approval is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50°F (10°C) nor more than 100°F (38°C). The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at his expense.

Retempering of concrete by adding water or any other material is not permitted.

The rate of delivery of concrete to the job shall be sufficient to allow uninterrupted placement of the concrete.

610-3.4 Forms. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the RPR. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy.

The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms shall be constructed so they can be removed without injuring the concrete or concrete surface.

610-3.5 Placing reinforcement. All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concrete placement. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

610-3.6 Embedded items. Before placing concrete, all embedded items shall be firmly and securely fastened in place as indicated. All embedded items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The concrete shall be spaded and consolidated around and against embedded items. The embedding of wood shall not be allowed.

610-3.7 Concrete Consistency. The Contractor shall monitor the consistency of the concrete delivered to the project site; collect each batch ticket; check temperature; and perform slump tests on each truck at the project site in accordance with ASTM C143.

610-3.8 Placing concrete. All concrete shall be placed during daylight hours, unless otherwise approved. The concrete shall not be placed until the depth and condition of foundations, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved by the RPR. Concrete shall be placed as soon as practical after mixing, but in no case later than one (1) hour after water has been added to the mix. The method and manner of placing shall avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. The concrete shall not be dropped from a height of more than 5 feet (1.5 m). Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to procedures which cause segregation. Concrete shall be placed on clean, damp surfaces, free from running water, or on a properly consolidated soil foundation.

610-3.9 Vibration. Vibration shall follow the guidelines in American Concrete Institute (ACI) Committee 309R, Guide for Consolidation of Concrete.

610-3.10 Joints. Joints shall be constructed as indicated on the plans.

610-3.11 Finishing. All exposed concrete surfaces shall be true, smooth, and free from open or rough areas, depressions, or projections. All concrete horizontal plane surfaces shall be brought flush to the proper elevation with the finished top surface struck-off with a straightedge and floated.

610-3.12 Curing and protection. All concrete shall be properly cured in accordance with the recommendations in American Concrete Institute (ACI) 308R, Guide to External Curing of Concrete. The concrete shall be protected from damage until project acceptance.

610-3.13 Cold weather placing. When concrete is placed at temperatures below 40°F (4°C), follow the cold weather concreting recommendations found in ACI 306R, Cold Weather Concreting.

610-3.14 Hot weather placing. When concrete is placed in hot weather greater than 85°F (30 °C), follow the hot weather concreting recommendations found in ACI 305R, Hot Weather Concreting.

QUALITY ASSURANCE (QA)

610-4.1 Quality Assurance sampling and testing. Concrete for each day's placement will be accepted on the basis of the compressive strength specified in paragraph 610-3.2. The RPR will sample the concrete in accordance with ASTM C172; test the slump in accordance with ASTM C143; make and cure compressive strength specimens in accordance with ASTM C31; and test in accordance with ASTM C39. The QA testing agency will meet the requirements of ASTM C1077.

The Contractor shall provide adequate facilities for the initial curing of cylinders.

610-4.2 Defective work. Any defective work that cannot be satisfactorily repaired as determined by the RPR, shall be removed and replaced at the Contractor's expense. Defective work includes, but is not limited to, uneven dimensions, honeycombing and other voids on the surface or edges of the concrete.

METHOD OF MEASUREMENT

610-5.1 Concrete shall be considered incidental and no separate measurement shall be made of concrete complete in place and accepted.

BASIS OF PAYMENT

610-6.1 Concrete shall be considered incidental and no separate payment shall be made. This price shall be full compensation for furnishing all materials including reinforcement and embedded items and for all preparation, delivery, installation, and curing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-610-6.1	Concrete, incidental to other work items
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REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM A184	Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A704	Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
ASTM A706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A775	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A934	Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars

ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C114	Standard Test Methods for Chemical Analysis of Hydraulic Cement
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C685	Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1017	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1157	Standard Performance Specification for Hydraulic Cement
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)

<u>ASTM C1365</u>	<u>Standard Test Method for Determination of the Proportion of Phases in Portland Cement and Portland-Cement Clinker Using X-Ray Powder Diffraction Analysis</u>
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

American Concrete Institute (ACI)

ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 308R	Guide to External Curing of Concrete
ACI 309R	Guide for Consolidation of Concrete

END OF ITEM P-610

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Item P-620 Runway and Taxiway Marking**DESCRIPTION**

620-1.1 This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Resident Project Representative (RPR). The terms “paint” and “marking material” as well as “painting” and “application of markings” are interchangeable throughout this specification.

MATERIALS

620-2.1 Materials acceptance. The Contractor shall furnish manufacturer’s certified test reports, for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. This certification along with a copy of the paint manufacturer’s surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive; and application requirements must be submitted and approved by the Resident Project Representative (RPR) prior to the initial application of markings. The reports can be used for material acceptance or the RPR may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the RPR upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the RPR.

620-2.2 Marking materials.**Table 1. Marking Materials**

Paint¹				Glass Beads²	
Type	Color	Fed Std. 595 Number	Application Rate Maximum	Type	Application Rate Minimum
Waterborne, Type II	White	37925	115 ft ² /gal	Type IA	7 lb/gal
Waterborne, Type II	Yellow	33538 or 33655	115 ft ² /gal	Type IA	7 lb/gal
Waterborne, Type II	Black	37038	115 ft ² /gal	None	None
Temporary Marking Waterborne, Type II	ALL	See above	230 ft ² /gal	None	None

¹ See paragraph 620-2.2a² See paragraph 620-2.2b

a. Paint. Paint shall be waterborne in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595.

Waterborne. Paint shall meet the requirements of Federal Specification TT-P-1952F, Type II. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

b. Reflective media. Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D Type I, Gradation A.

Glass beads for red and pink paint shall meet the requirements for Type I, Gradation A

Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Glass beads shall not be used in black and green paint.

Type III glass beads shall not be used in red and pink paint.

CONSTRUCTION METHODS

620-3.1 Weather limitations. Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures does not meet the manufacturer's recommendations. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Markings shall not be applied when weather conditions are forecasts to not be within the manufacturers' recommendations for application and dry time.

620-3.2 Equipment. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing machine, and such auxiliary hand-painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type or airless type marking machine with automatic glass bead dispensers suitable for application of traffic paint. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray. The marking equipment for both paint and beads shall be calibrated daily.

620-3.3 Preparation of surfaces. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminants that would reduce the bond between the paint and the pavement. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the RPR. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

a. Preparation of new pavement surfaces. The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the RPR to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface.

b. Preparation of pavement to remove existing markings. Existing pavement markings shall be removed by rotary grinding, water blasting, or by other methods approved by the RPR minimizing damage to the pavement surface. The removal area may need to be larger than the area of the markings to eliminate ghost markings. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings.

c. Preparation of pavement markings prior to remarking. Prior to remarking existing markings, loose existing markings must be removed minimizing damage to the pavement surface, with a method approved by the RPR. After removal, the surface shall be cleaned of all residue or debris.

Prior to the application of markings, the Contractor shall certify in writing that the surface is dry and free from dirt, grease, oil, laitance, or other foreign material that would prevent the bond of the paint to the pavement or existing markings. This certification along with a copy of the paint manufacturers application and surface preparation requirements must be submitted to the RPR prior to the initial application of markings.

620-3.4 Layout of markings. The proposed markings shall be laid out in advance of the paint application. The locations of markings to receive glass beads shall be shown on the plans.

620-3.5 Application. A period of 30 days shall elapse between placement of surface course or seal coat and application of the permanent paint markings. Paint shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface has been approved by the RPR.

The edges of the markings shall not vary from a straight line more than 1/2 inch (12 mm) in 50 feet (15 m), and marking dimensions and spacing shall be within the following tolerances:

Marking Dimensions and Spacing Tolerance

Dimension and Spacing	Tolerance
36 inch (910 mm) or less	±1/2 inch (12 mm)
greater than 36 inch to 6 feet (910 mm to 1.85 m)	±1 inch (25 mm)
greater than 6 feet to 60 feet (1.85 m to 18.3 m)	±2 inch (50 mm)
greater than 60 feet (18.3 m)	±3 inch (76 mm)

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted.

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment and distribution should be performed.

620-3.6 Application--preformed thermoplastic airport pavement markings.

Preformed thermoplastic pavement markings not used.

620-3.7 Control strip. Prior to the full application of airfield markings, the Contractor shall prepare a control strip in the presence of the RPR. The Contractor shall demonstrate the surface preparation method and all striping equipment to be used on the project. The marking equipment must achieve the prescribed application rate of paint and population of glass beads (per Table 1) that are properly embedded and evenly distributed across the full width of the marking. Prior to acceptance of the control strip, markings must be evaluated during darkness to ensure a uniform appearance.

620-3.8 Retro-reflectance.

not used.

620-3.9 Protection and cleanup. After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the RPR. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and federal environmental statutes and regulations.

METHOD OF MEASUREMENT

620-4.1a The quantity of markings shall be paid for shall be measured by the number of square feet (square meters) of painting .

620-4.1b The quantity of reflective media shall be paid for by the number of pounds of reflective media.

BASIS OF PAYMENT

620-5.1 This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item complete in place and accepted by the RPR in accordance with these specifications.

620-5.2a Payment for markings shall be made at the contract price for the number of square feet (square meters) of painting and the number of pounds (km) of reflective media by the number of square feet (square meters) of painting.

620-5.3b Payment for reflective media shall be made at the contract unit price for the number of pounds (km) of reflective media.

Payment will be made under:

Item P-620-5.1	Markings per square foot (square meter)
Item P-620-5.2	Reflective Media (Taxilane) per pound (kg)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D476	Standard Classification for Dry Pigmentary Titanium Dioxide Products
ASTM D968	Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
ASTM D1652	Standard Test Method for Epoxy Content of Epoxy Resins
ASTM D2074	Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D7585	Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments

ASTM E303	Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester
ASTM E1710	Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
ASTM E2302	Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

Code of Federal Regulations (CFR)

40 CFR Part 60, Appendix A-7, Method 24

Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings

29 CFR Part 1910.1200 Hazard Communication

Federal Specifications (FED SPEC)

FED SPEC TT-B-1325D	Beads (Glass Spheres) Retro-Reflective
FED SPEC TT-P-1952F	Paint, Traffic and Airfield Marking, Waterborne
FED STD 595	Colors used in Government Procurement

Commercial Item Description

A-A-2886B	Paint, Traffic, Solvent Based
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Advisory Circulars (AC)

AC 150/5340-1	Standards for Airport Markings
AC 150/5320-12	<u>Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces</u>

END OF ITEM P-620

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Item D-701 Pipe for Storm Drains and Culverts**DESCRIPTION**

701-1.1 This item shall consist of the construction of pipe culverts and storm drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

MATERIALS

701-2.1 Materials shall meet the requirements shown on the plans and specified below. Underground piping and components used in drainage systems for terminal and aircraft fueling ramp drainage shall be noncombustible and inert to fuel in accordance with National Fire Protection Association (NFPA) 415.

701-2.2 Pipe. The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements:

ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C506	Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
ASTM C507	Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
ASTM C655	Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe
ASTM C1433	Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
ASTM D3034	Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings

701-2.3 Concrete. Concrete for pipe cradles shall have a minimum compressive strength of 2000 psi (13.8 MPa) at 28 days and conform to the requirements of ASTM C94.

701-2.4 Rubber gaskets. Rubber gaskets for rigid pipe shall conform to the requirements of ASTM C443. Rubber gaskets for PVC pipe, polyethylene, and polypropylene pipe shall conform to the requirements of ASTM F477. Rubber gaskets for zinc-coated steel pipe and precoated galvanized pipe shall conform to the requirements of ASTM D1056, for the "RE" closed cell grades. Rubber gaskets for steel reinforced thermoplastic ribbed pipe shall conform to the requirements of ASTM F477.

701-2.5 Joint mortar. Pipe joint mortar shall consist of one part Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

701-2.6 Joint fillers. Not used.

701-2.7 Plastic gaskets. Plastic gaskets shall conform to the requirements of ASTM C990.

701-2.8. Controlled low-strength material (CLSM). Not used.

701-2.9 Precast box culverts. Manufactured in accordance with and conforming to ASTM C1433.

701-2.10 Precast concrete pipe. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or American Concrete Pipe Association QCast Plant Certification program.

CONSTRUCTION METHODS

701-3.1 Excavation. The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but it shall not be less than the external diameter of the pipe plus 12 inches (300 mm) on each side. The trench walls shall be approximately vertical.

The Contractor shall comply with all current federal, state and local rules and regulations governing the safety of men and materials during the excavation, installation and backfilling operations. Specifically, the Contractor shall observe that all requirements of the Occupational Safety and Health Administration (OSHA) relating to excavations, trenching and shoring are strictly adhered to. The width of the trench shall be sufficient to permit satisfactorily jointing of the pipe and thorough compaction of the bedding material under the pipe and backfill material around the pipe, but it shall not be greater than the widths shown on the plans trench detail.

Where rock, hardpan, or other unyielding material is encountered, the Contractor shall remove it from below the foundation grade for a depth of at least 8 inch (200 mm) or 1/2 inch (12 mm) for each foot of fill over the top of the pipe (whichever is greater) but for no more than three-quarters of the nominal diameter of the pipe. The excavation below grade should be filled with granular material to form a uniform foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full trench width. The RPR shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

The excavation for pipes placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the pipe as shown on the plans.

701-3.2 Bedding. The bedding surface for the pipe shall provide a foundation of uniform density to support the pipe throughout its entire length.

a. Rigid pipe. The pipe bedding shall be constructed uniformly for the full length of the pipe barrel, as required on the plans. The maximum aggregate size shall be 1 in when the bedding thickness is less than 6 inches, and 1-1/2 in when the bedding thickness is greater than 6 inches. Bedding shall be loosely placed uncompacted material under the middle third of the pipe prior to placement of the pipe.

b. Flexible pipe. For flexible pipe, the bed shall be roughly shaped to fit the pipe, and a bedding blanket of sand or fine granular material shall be provided as follows:

Flexible Pipe Bedding

Pipe Corrugation Depth		Minimum Bedding Depth	
inch	mm	inch	mm
1/2	12	1	25
1	25	2	50
2	50	3	75
2-1/2	60	3-1/2	90

c. Other pipe materials. For PVC, polyethylene, polypropylene, or fiberglass pipe, the bedding material shall consist of coarse sands and gravels with a maximum particle size of 3/4 inches (19 mm). For pipes installed under paved areas, no more than 12% of the material shall pass the No. 200 (0.075 mm) sieve. For all other areas, no more than 50% of the material shall pass the No. 200 (0.075 mm) sieve. The bedding shall have a thickness of at least 6 inches (150 mm) below the bottom of the pipe and extend up around the pipe for a depth of not less than 50% of the pipe's vertical outside diameter.

701-3.3 Laying pipe. The pipe laying shall begin at the lowest point of the trench and proceed upgrade. The lower segment of the pipe shall be in contact with the bedding throughout its full length. Bell or groove ends of rigid pipes and outside circumferential laps of flexible pipes shall be placed facing upgrade.

Paved or partially lined pipe shall be placed so that the longitudinal center line of the paved segment coincides with the flow line.

Elliptical and elliptically reinforced concrete pipes shall be placed with the manufacturer's reference lines designating the top of the pipe within five degrees of a vertical plane through the longitudinal axis of the pipe.

701-3.4 Joining pipe. Joints shall be made with (1) cement mortar, (2) cement grout, (3) rubber gaskets, (4) plastic gaskets, (5) or coupling bands as recommended by the manufacturer

Mortar joints shall be made with an excess of mortar to form a continuous bead around the outside of the pipe and shall be finished smooth on the inside. Molds or runners shall be used for grouted joints to retain the poured grout. Rubber ring gaskets shall be installed to form a flexible watertight seal.

a. Concrete pipe. Concrete pipe may be either bell and spigot or tongue and groove. Pipe sections at joints shall be fully seated and the inner surfaces flush and even. Concrete pipe joints shall be sealed with rubber gaskets meeting ASTM C443 when leak resistant joints are required.

b. Metal pipe. Metal pipe shall be firmly joined by form-fitting bands conforming to the requirements of ASTM A760 for steel pipe and AASHTO M196 for aluminum pipe.

c. PVC, Polyethylene, or Polypropylene pipe. Joints for PVC, Polyethylene, or Polypropylene pipe shall conform to the requirements of ASTM D3212 when leak resistant joints are required. Joints for PVC and Polyethylene pipe shall conform to the requirements of AASHTO M304 when soil tight joints are required. Fittings for polyethylene pipe shall conform to the requirements of AASHTO M252 or ASTM M294. Fittings for polypropylene pipe shall conform to ASTM F2881, ASTM F2736, or ASTM F2764.

d. Fiberglass pipe. Joints and fittings shall be as detailed on the plans and in accordance with the manufacturers recommendations.

701-3.5 Embedment and Overfill. Pipes shall be inspected before any fill material is placed; any pipes found to be out of alignment, unduly settled, or damaged shall be removed and re-laid or replaced at the Contractor's expense.

701-3.5-1 Embedment Material Requirements

a. Concrete Pipe. Embedment material and compaction requirements shall be in accordance with the applicable Type of Standard Installation (Types 1, 2, 3, or 4) per ASTM C1479. If a concrete cradle or CLSM embedment material is used, it shall conform to the plan details.

b. Plastic and fiberglass Pipe. Embedment material shall meet the requirements of ASTM D3282, A-1, A-2-4, A-2-5, or A-3. Embedment material shall be free of organic material, stones larger than 1.5 inches in the greatest dimension, or frozen lumps. Embedment material shall extend to 12 inches above the top of the pipe.

c. Metal Pipe. Embedment material shall be granular as specified in the contract document and specifications, and shall be free of organic material, rock fragments larger than 1.5 inches in the greatest dimension and frozen lumps. As a minimum, backfill materials shall meet the requirements of ASTM D3282, A-1, A-2, or A-3. Embedment material shall extend to 12 inches above the top of the pipe.

701-3.5-2 Placement of Embedment Material

The embedment material shall be compacted in layers not exceeding 6 inches (150 mm) on each side of the pipe and shall be brought up one foot (30 cm) above the top of the pipe or to natural ground level, whichever is greater. Thoroughly compact the embedment material under the haunches of the pipe without displacing the pipe. Material shall be brought up evenly on each side of the pipe for the full length of the pipe.

When the top of the pipe is above the top of the trench, the embedment material shall be compacted in layers not exceeding 6 inches (150 mm) and shall be brought up evenly on each side of the pipe to one foot (30 cm) above the top of the pipe. All embedment material shall be compacted to a density required under Item P-152.

Concrete cradles and flowable fills, such as controlled low strength material (CLSM) or controlled density fill (CDF), may be used for embedment provided adequate flotation resistance can be achieved by restraints, weighing, or placement technique.

It shall be the Contractor's responsibility to protect installed pipes and culverts from damage due to construction equipment operations. The Contractor shall be responsible for installation of any extra strutting or backfill required to protect pipes from the construction equipment.

701-3.6 Overfill

Pipes shall be inspected before any overfill is in place. Any pipes found to be out of alignment, unduly settled, or damaged shall be removed and relaid or replaced at the Contractor's expense. Evaluation of any damage to RCP shall be evaluated based on AASHTO R73.

Overfill material shall be placed and compacted in layers as required to achieve compaction to at least 95 percent standard proctor per ASTM D698. The soil shall contain no debris, organic matter, frozen material, or stones with a diameter greater than one half the thickness of the compacted layers being placed.

701-3.7 Inspection Requirements

An initial post installation inspection shall be performed by the RPR no sooner than 30 days after completion of installation and final backfill. Clean or flush all lines prior to inspection.

Reinforced concrete pipe shall be inspected, evaluated, and reported on in accordance with ASTM C1840, "Standard Practice for Inspection and Acceptance of Installed Reinforced Concrete Culvert, Storm Drain, and Storm Sewer Pipe." Any issues reported shall include still photo and video documentation. The zoom ratio shall be provided for all still or video images that document any issues of concern by the inspection firm.

METHOD OF MEASUREMENT

701-4.1 The length of pipe shall be measured in linear feet (m) of pipe in place, completed, and accepted. It shall be measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. The types and sizes of pipe shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipe being measured.

701-4.2. Not used.

701-4.3 Not used.

701-4.4 Not used.

BASIS OF PAYMENT

701-5.0 These prices shall fully compensate the Contractor for furnishing all materials and for all preparation, excavation, and installation of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

701-5.1a Payment will be made at the contract unit price per linear foot (meter) for 6 inch PVC pipe

701-5.1b Payment will be made at the contract unit price per linear foot (meter) for 12 inch Reinforced Concrete pipe

701-5.2 Not used.

701-5.3 Not used.

701-5.4 Not used.

Payment will be made under:

Item 701-5.1a	6 inch PVC pipe – per linear foot (meter)
Item 701-5.1b	12 inch Reinforced Concrete Pipe– per linear foot (meter)
Item 701-5.2	Not used.
Item 701-5.3	Not used.
Item 701-5.4	Not used.

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M167	Standard Specification for Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M190	Standard Specification for Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches

AASHTO M196	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
AASHTO M219	Standard Specification for Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M243	Standard Specification for Field Applied Coating of Corrugated Metal Structural Plate for Pipe, Pipe-Arches, and Arches
AASHTO M252	Standard Specification for Corrugated Polyethylene Drainage Pipe
AASHTO M294	Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
AASHTO M304	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter
AASHTO MP20	Standard Specification for Steel Reinforced Polyethylene (PE) Ribbed Pipe, 300- to 900-mm (12- to 36-in.) Diameter
ASTM International (ASTM)	
ASTM A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A761	Standard Specification for Corrugated Steel Structural Plate, Zinc Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
ASTM A762	Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains
ASTM A849	Standard Specification for Post-Applied Coatings, Pavings, and Linings for Corrugated Steel Sewer and Drainage Pipe
ASTM B745	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
ASTM C14	Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C94	Standard Specification for Ready Mixed Concrete
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C443	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
ASTM C506	Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
ASTM C507	Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe
ASTM C655	Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe

ASTM C990	Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
ASTM C1433	Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
ASTM D1056	Standard Specification for Flexible Cellular Materials Sponge or Expanded Rubber
ASTM D3034	Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D3212	Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM D3262	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Sewer Pipe
ASTM D3282	Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
ASTM D4161	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Pipe Joints Using Flexible Elastomeric Seals
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F667	Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings
ASTM F714	Standard Specification for Polyethylene (PE) Plastic Pipe (DR PR) Based on Outside Diameter
ASTM F794	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter
ASTM F894	Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe
ASTM F949	Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
ASTM F2435	Standard Specification for Steel Reinforced Polyethylene (PE) Corrugated Pipe
ASTM F2562	Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage
ASTM F2736	Standard Specification for 6 to 30 in. (152 to 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe
ASTM F2764	Standard Specification for 30 to 60 in. (750 to 1500 mm) Polypropylene (PP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications
ASTM F2881	Standard Specification for 12 to 60 in. (300 to 1500 mm) Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications

National Fire Protection Association (NFPA)

NFPA 415

Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and
Loading Walkways

END ITEM D-701

Item D-705 Pipe Underdrains for Airports**DESCRIPTION**

705-1.1 This item shall consist of the construction of pipe drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

MATERIALS

705-2.1 General. Materials shall meet the requirements shown on the plans and specified below.

705-2.2 Pipe. The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements.

AASHTO M252 Standard Specification for Corrugated Polyethylene Drainage Pipe

AASHTO M294 Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-
mm (12- to 60-in.) Diameter

705-2.3 Joint mortar. Pipe joint mortar shall consist of one part by volume of Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

705-2.4 Elastomeric seals. Elastomeric seals shall conform to the requirements of ASTM F477.

705-2.5 Porous backfill. Porous backfill shall be free of clay, humus, or other objectionable matter, and shall conform to the gradation in Table 1 when tested in accordance with ASTM C136.

Table 1. Gradation of Porous Backfill

Sieve Designation (square openings)	Percentage by Weight Passing Sieves
	Porous Material No.
1-1/2 inch (37.5 mm)	100
1 inch (25.0 mm)	90 - 100
3/8 inch (9.5 mm)	25 - 60
No. 4 (4.75 mm)	5 - 40
No. 8 (2.36 mm)	0 - 20
No. 16 (1.18 mm)	-
No. 50 (300 µm)	-
No. 100 (150 µm)	-

When two courses of porous backfill are specified in the plans, the finer of the materials shall conform to particle size tabulated herein for porous material No. 1. The coarser granular material shall meet the gradation given in the tabulation for porous material No. 2.

705-2.6 Granular material. Granular material used for backfilling shall conform to the requirements of ASTM D2321 for Class IA, IB, or II materials.

705-2.7 Filter fabric. The filter fabric shall conform to the requirements of AASHTO M288 Class 2 or equivalent.

Table 2. Fabric Properties

Fabric Property	Test Method	Test Requirement
Grab Tensile Strength, lbs	ASTM D4632	125 min
Grab Tensile Elongation %	ASTM D4632	50 min
Burst Strength, psi	ASTM D3785	125 min
Trapezoid Tear Strength, lbs	ASTM D4533	55 min
Puncture Strength, lbs	ASTM D4833	40 min
Abrasion, lbs	ASTM D4886	15 max loss
Equivalent Opening Size	ASTM D4751	70-100
Permittivity sec⁻¹	ASTM D4491	0.80
Accelerated Weathering (UV Stability) (Strength Retained - %)	ASTM D4355 *(500 hrs exposure)	70

705-2.8 Controlled low-strength material (CLSM). CLSM is not used.

CONSTRUCTION METHODS

705-3.1 Equipment. All equipment required for the construction of pipe underdrains shall be on the project, in good working condition, and approved by the RPR before construction is permitted to start.

705-3.2 Excavation. The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but shall not be less than the external diameter of the pipe plus 6 inches (150 mm) on each side of the pipe. The trench walls shall be approximately vertical.

Where rock, hardpan, or other unyielding material is encountered, it shall be removed below the foundation grade for a depth of at least 4 inches (100 mm). The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 6 inches (150 mm) in uncompacted depth to form a uniform but yielding foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full trench width. The RPR shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

Excavated material not required or acceptable for backfill shall be disposed of by the Contractor as directed by the RPR. The excavation shall not be carried below the required depth; if this occurs, the trench shall be backfilled at the Contractor's expense with material approved by the RPR and compacted to the density of the surrounding material.

The pipe bedding shall be constructed uniformly over the full length of the pipe barrel, as required on the plans. The maximum aggregate size shall be 1 inch when the bedding thickness is less than 6 inches, and 1-1/2 inch when the bedding thickness is greater than 6 inches. Bedding shall be loosely placed, uncompacted material under the middle third of the pipe prior to placement of the pipe.

The Contractor shall do trench bracing, sheathing, or shoring necessary to perform and protect the excavation as required for safety and conformance to federal, state and local laws. Unless otherwise provided, the bracing, sheathing, or shoring shall be removed by the Contractor after the backfill has reached at least 12 inches (300 mm) over the top of the pipe. The sheathing or shoring shall be pulled as the granular backfill is placed and compacted to avoid any unfilled spaces between the trench wall and the backfill material. The cost of bracing, sheathing, or shoring, and the removal of same, shall be included in the unit price bid per foot (meter) for the pipe.

705-3.3 Laying and installing pipe.

a. Concrete pipe. The laying of the pipe in the finished trench shall be started at the lowest point and proceed upgrade. When bell and spigot pipe is used, the bells shall be laid upgrade. If tongue and groove pipe is used, the groove end shall be laid upgrade. Holes in perforated pipe shall be placed down, unless otherwise shown on the plans. The pipe shall be firmly and accurately set to line and grade so that the invert will be smooth and uniform. Pipe shall not be laid on frozen ground.

Pipe which is not true in alignment, or which shows any settlement after laying, shall be taken up and re-laid by the Contractor at no additional expense. Making adjustments in grade by exerting force on the barrel of the pipe with excavating equipment, by lifting and dropping the pipe, or by lifting the pipe and packing bedding material under it shall be prohibited. If the installed pipe section is not to grade, the pipe section shall be completely removed, the grade corrected, and the pipe rejoined."

b. Metal pipe. The metal pipe shall be laid with the separate sections joined firmly together with bands, with outside laps of circumferential joints pointing upgrade, and with longitudinal laps on the sides. Any metal in the pipe or bands that is not protected thoroughly by galvanizing shall be coated with a suitable asphaltum paint.

During installation, the asphalt-protected pipe shall be handled without damaging the asphalt coating. Any breaks in the bitumen or treatment of the pipe shall be refilled with the type and kind of bitumen used in coating the pipe originally.

c. PVC, fiberglass, or polyethylene pipe. PVC or polyethylene pipe shall be installed in accordance with the requirements of ASTM D2321. Perforations shall meet the requirements of AASHTO M252 or AASHTO M294 Class 2, unless otherwise indicated on the plans. The pipe shall be laid accurately to line and grade. Fiberglass per ASTM D3839 Standard Guide for Underground Installation of "Fiberglass" (Glass-Fiber Reinforced Thermosetting-Resin) Pipe.

d. All types of pipe. The upgrade end of pipelines, not terminating in a structure, shall be plugged or capped as approved by the RPR.

Unless otherwise shown on the plans, a 4-inch (100 mm) bed of granular backfill material shall be spread in the bottom of the trench throughout the entire length under all perforated pipe underdrains.

Pipe outlets for the underdrains shall be constructed when required or shown on the plans. The pipe shall be laid with tight-fitting joints. Porous backfill is not required around or over pipe outlets for underdrains. All connections to other drainage pipes or structures shall be made as required and in a satisfactory manner. If connections are not made to other pipes or structures, the outlets shall be protected and constructed as shown on the plans.

e. Filter fabric. The filter fabric shall be installed in accordance with the manufacturer's recommendations, or in accordance with the AASHTO M288 Appendix, unless otherwise shown on the plans.

705-3.4 Mortar. The mortar shall be of the desired consistency for caulking and filling the joints of the pipe and for making connections to other pipes or to structures. Mortar that is not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted.

705-3.5 Joints in concrete pipe. When open or partly open joints are required or specified, they shall be constructed as indicated on the plans. The pipe shall be laid with the ends fitted together as designed. If bell and spigot pipe is used, mortar shall be placed along the inside bottom quarter of the bell to center the following section of pipe.

The open or partly open joints shall be surrounded with granular material meeting requirements of porous backfill No. 2 in Table 1 or as indicated on the plans. This backfill shall be placed so its thickness will be not less than 3 inches (75 mm) nor more than 6 inches (150 mm), unless otherwise shown on the plans.

When the original material excavated from the trench is impervious, commercial concrete sand or granular material meeting requirements of porous backfill No. 1 shall surround porous backfill No. 2 (Table 1), as shown on the plans or as directed by the RPR.

When the original material excavated from the trench is pervious and suitable, it may be used as backfill in lieu of porous backfill No. 1, when indicated on the plans or as directed by the RPR.

705-3.6 Embedment and Backfill

a. Earth. All trenches and excavations shall be backfilled soon after the pipes are installed, unless additional protection of the pipe is directed. The embedment material shall be select material from excavation or borrow and shall be approved by the RPR. The select material shall be placed on each side of the pipe out to a distance of the nominal pipe diameter and one foot (30 cm) over the top of the pipe and shall be readily compacted. It shall not contain stones 3 inches (75 mm) or larger in size, frozen lumps, chunks of highly plastic clay, or any other material that is objectionable to the RPR. The material shall be moistened or dried, as required to aid compaction. Placement of the embedment material shall not cause displacement of the pipe. Thorough compaction under the haunches and along the sides to the top of the pipe shall be obtained.

The embedment material shall be placed in loose layers not exceeding 6 inches (150 mm) in depth under and around the pipe. Backfill material over the pipe shall be placed in lifts not exceeding 8 inches (200 mm). Successive layers shall be added and thoroughly compacted by hand and pneumatic tampers, approved by the RPR, until the trench is completely filled and brought to the planned elevation. Embedment and backfilling shall be done to avoid damaging top or side of the pipe.

In embankments and other unpaved areas, the backfill shall be compacted per Item P-152 to the density required for embankments in unpaved areas. Under paved areas, the subgrade and any backfill shall be compacted per Item P-152 to the density required for embankments for paved areas.

b. Granular backfill. When granular backfill is required, placement in the trench and about the pipe shall be as shown on the plans. The granular backfill shall not contain an excessive amount of foreign matter, nor shall soil from the sides of the trench or from the soil excavated from the trench be allowed to filter into the granular backfill. When required by the RPR, a template shall be used to properly place and separate the two sizes of backfill. The backfill shall be placed in loose layers not exceeding 6 inches (150 mm) in depth. The granular backfill shall be compacted by hand and pneumatic tampers to the requirements as given for embankment. Backfilling shall be done to avoid damaging top or side pressure on the pipe. The granular backfill shall extend to the elevation of the trench or as shown on the plans.

When perforated pipe is specified, granular backfill material shall be placed along the full length of the pipe. The position of the granular material shall be as shown on the plans. If the original material excavated from the trench is pervious and suitable, it shall be used in lieu of porous backfill No. 1.

If porous backfill is placed in paved or adjacent to paved areas before grading or subgrade operations is completed, the backfill material shall be placed immediately after laying the pipe. The depth of the granular backfill shall be not less than 12 inches (300 mm), measured from the top of the underdrain. During subsequent construction operations, a minimum depth of 12 inches (300 mm) of backfill shall be maintained over the underdrains. When the underdrains are to be completed, any unsuitable material shall

be removed exposing the porous backfill. Porous backfill containing objectionable material shall be removed and replaced with suitable material. The cost of removing and replacing any unsuitable material shall be at the Contractor's expense.

If a granular subbase blanket course is used which extends several feet beyond the edge of paving to the outside edge of the underdrain trench, the granular backfill material over the underdrains shall be placed in the trench up to an elevation of 2 inches (50 mm) above the bottom surface of the granular subbase blanket course. Immediately prior to the placing of the granular subbase blanket course, the Contractor shall blade this excess trench backfill from the top of the trench onto the adjacent subgrade where it can be incorporated into the granular subbase blanket course. Any unsuitable material that remains over the underdrain trench shall be removed and replaced. The subbase material shall be placed to provide clean contact between the subbase material and the underdrain granular backfill material for the full width of the underdrain trench.

c. Controlled low-strength material (CLSM). CLSM is not used.

705-3.7 Flexible Pipe Ring Deflection. Not used.

705-3.8 Connections. When the plans call for connections to existing or proposed pipe or structures, these connections shall be watertight and made to obtain a smooth uniform flow line throughout the drainage system.

705-3.9 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, soil, and rubbish from the site. Surplus soil may be deposited in embankments, shoulders, or as directed by the RPR. Except for paved areas of the airport, the Contractor shall restore all disturbed areas to their original condition.

METHOD OF MEASUREMENT

705-4.1 The length of pipe shall be considered incidental and no separate measurement shall be made.

705-4.2 Not used.

705-4.3 Not used.

705-4.4. Not used

BASIS OF PAYMENT

705-5.1 Underdrain pipe shall be considered incidental and no separate payment shall be made.

705-5.2 Porous backfill. Not used

705-5.3. Filter fabric. Not used

705-5.4 Pipe underdrains Not used

These prices shall be full compensation for furnishing all materials and for all preparation, excavation, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item D-705-5.2	Cut and Cap underdrain Cleanout - Each
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REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A762	Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C444	Standard Specification for Perforated Concrete Pipe
ASTM C654	Standard Specification for Porous Concrete Pipe
ASTM D2321	Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D3262	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Sewer Pipe
ASTM D4161	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Pipe Joints Using Flexible Elastomeric Seals
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F758	Standard Specification for Smooth Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage
ASTM F794	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter
ASTM F949	Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
ASTM F2562	Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M190	Standard Specification for Bituminous - Coated Corrugated Metal Culvert Pipe and Pipe Arches
AASHTO M196	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
AASHTO M252	Standard Specification for Corrugated Polyethylene Drainage Pipe
AASHTO M288	Standard Specification for Geotextile Specification for Highway Applications

AASHTO M294	Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
AASHTO M304	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter
AASHTO MP20	Standard Specification for Steel-Reinforced Polyethylene (PE) Ribbed Pipe, 300- to 900-mm (12- to 36-in.) diameter
AASHTO	Standard Specifications for Highway Bridges

END OF ITEM D-705

Item D-752 Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures**DESCRIPTION**

752-1.1 This item shall consist of reinforced concrete culverts, headwalls, and miscellaneous drainage structures constructed in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

MATERIALS

752-2.1 Concrete. Reinforced concrete shall meet the requirements of Item P-610.

CONSTRUCTION METHODS**752-3.1 Unclassified excavation.**

a. Trenches and foundation pits for structures or structure footings shall be excavated to the lines and grades and elevations shown on the plans. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only; and the RPR may approve, in writing, changes in dimensions or elevations of footings necessary to secure a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing steel is placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to perform and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for excavation.

d. All bracing, sheathing, or shoring shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage the finished concrete. The cost of removal shall be included in the unit price bid for excavation.

e. After each excavation is completed, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

752-3.2 Backfilling.

a. After a structure has been completed, backfilling with approved material shall be accomplished by applying the fill in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted. The field density of the compacted material shall be at least 90% of the maximum density for cohesive soils and 95% of the maximum density for noncohesive soils. The maximum density shall be determined in accordance with ASTM D698. The field density shall be determined in accordance with ASTM D1556.

b. No backfilling shall be placed against any structure until approved by the RPR. For concrete, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that

the concrete has attained sufficient strength to withstand any pressure created by the backfill or the placement methods.

c. Fill placed around concrete culverts shall be deposited on each side at the same time and to approximately the same elevation. All slopes bounding or within the areas to be backfilled shall be stepped or serrated to prevent wedge action against the structure.

d. Backfill will not be measured for direct payment. Performance of this work shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for “unclassified excavation for structures.”

752-3.3 Weep holes. Weep holes shall be constructed as shown on the plans.

752-3.4 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankment, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

752-4.1 The quantity of drainage structures will be measured per each drainage structure constructed and accepted in place.

BASIS OF PAYMENT

752-5.1 Payment will be made at the contract unit price per each drainage structure.

These prices shall be full compensation for furnishing all materials and for all preparation, excavation, and placing the materials, and for all labor, equipment, tools, and incidentals necessary to complete the structure.

Payment will be made under:

Item D-752-5.1	Headwall – per each
Item D-752-5.2	Flared end section – per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft ³ (600 kN-m/m ³))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

END OF ITEM D-752

Item F-162 Chain-Link Fence and Gate**DESCRIPTION**

162-1.1 This item shall consist of furnishing and erecting a chain-link fence in accordance with these specifications, the details shown on the plans, and in conformity with the lines and grades shown on the plans or established by the RPR.

Reference Section 32 3113 Automatic Gate Operator for related requirements.

MATERIALS

162-2.1 Fabric. The fabric shall be woven with a 9-gauge galvanized steel wire in a 2-inch (50 mm) mesh and shall meet the requirements of ASTM A392.

162-2.2 Barbed wire. Barbed wire shall be 2-strand 12-1/2 gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of ASTM A121, Class 3.

162-2.3 Posts, rails, and braces. Line posts, rails, and braces shall conform to the requirements of ASTM F1043 or ASTM F1083 as follows:

- Galvanized tubular steel pipe shall conform to the requirements of Group IA, (Schedule 40) coatings conforming to Type A, or Group IC (High Strength Pipe), External coating Type B, and internal coating Type B or D.

Posts, rails, and braces, with the exception of galvanized steel conforming to ASTM F1043 or ASTM F1083, Group 1A, Type A, or aluminum alloy, shall demonstrate the ability to withstand testing in salt spray in accordance with ASTM B117 as follows:

External: 1,000 hours with a maximum of 5% red rust.

Internal: 650 hours with a maximum of 5% red rust.

The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Federal Specification RR-F-191/3.

162-2.4 Gates. Gate frames shall consist of galvanized steel pipe and shall conform to the specifications for the same material under paragraph 162-2.3. The fabric shall be of the same type material as used in the fence.

162-2.5 Wire ties and tension wires. Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. Tension wire shall be 7-gauge marcelled steel wire with the same coating as the fabric type and shall conform to ASTM A824.

All material shall conform to Federal Specification RR-F-191/4.

162-2.6 Miscellaneous fittings and hardware. Miscellaneous steel fittings and hardware for use with zinc-coated steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the article, and sufficient in strength to provide a balanced design when used in conjunction with fabric posts, and wires of the quality specified herein. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A153. Barbed wire support arms shall withstand a load of 250 pounds (113 kg) applied vertically to the outermost end of the arm.

162-2.7 Concrete. Concrete shall have a minimum 28-day compressive strength of 3000 psi (2670 kPa).

162-2.8 Marking. Each roll of fabric shall carry a tag showing the kind of base metal (steel, aluminum, or aluminum alloy number), kind of coating, the gauge of the wire, the length of fencing in the roll, and the name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel, aluminum, or aluminum alloy number), and kind of coating.

CONSTRUCTION METHODS

162-3.1 General. The fence shall be constructed in accordance with the details on the plans and as specified here using new materials. All work shall be performed in a workmanlike manner satisfactory to the RPR. The Contractor shall layout the fence line based on the plans. The Contractor shall span the opening below the fence with barbed wire at all locations where it is not practical to conform the fence to the general contour of the ground surface because of natural or manmade features such as drainage ditches. The new fence shall be permanently tied to the terminals of existing fences as shown on the plans. The Contractor shall stake down the woven wire fence at several points between posts as shown on the plans.

The Contractor shall arrange the work so that construction of the new fence will immediately follow the removal of existing fences. The length of unfenced section at any time shall not exceed 300 feet (90 m). The work shall progress in this manner and at the close of the working day the newly constructed fence shall be tied to the existing fence.

162-3.2 Clearing fence line. Clearing shall consist of the removal of all stumps, brush, rocks, trees, or other obstructions that will interfere with proper construction of the fence. Stumps within the cleared area of the fence shall be grubbed or excavated. The bottom of the fence shall be placed a uniform distance above ground, as specified in the plans. When shown on the plans or as directed by the RPR, the existing fences which interfere with the new fence location shall be removed by the Contractor as a part of the construction work unless such removal is listed as a separate item in the bid schedule. All holes remaining after post and stump removal shall be refilled with suitable soil, gravel, or other suitable material and compacted with tampers.

The cost of removing and disposing of the material shall not constitute a pay item and shall be considered incidental to fence construction.

162-3.3 Installing posts. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans.

The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within seven (7) days after the individual post footing is completed.

Should rock be encountered at a depth less than the planned footing depth, a hole 2 inches (50 mm) larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches (300 mm). After the posts are set, the remainder of the drilled hole shall be filled with grout, composed of one part Portland cement and two parts mortar sand. Any remaining space above the rock shall be filled with concrete in the manner described above.

In lieu of drilling, the rock may be excavated to the required footing depth. No extra compensation shall be made for rock excavation.

162-3.4 Installing top rails. The top rail shall be continuous and shall pass through the post tops. The coupling used to join the top rail lengths shall allow for expansion.

162-3.5 Installing braces. Horizontal brace rails, with diagonal truss rods and turnbuckles, shall be installed at all terminal posts.

162-3.6 Installing fabric. The wire fabric shall be firmly attached to the posts and braced as shown on the plans. All wire shall be stretched taut and shall be installed to the required elevations. The fence shall generally follow the contour of the ground, with the bottom of the fence fabric no less than one inch (25 mm) or more than 4 inches (100 mm) from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

At locations of small natural swales or drainage ditches and where it is not practical to have the fence conform to the general contour of the ground surface, longer posts may be used and multiple strands of barbed wire stretched to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches (150 mm) or less.

162-3.7 Electrical grounds. Electrical grounds shall be constructed at 500 feet (150 m) intervals. The ground shall be accomplished with a copper clad rod 8 feet (2.4 m) long and a minimum of 5/8 inches (16 mm) in diameter driven vertically until the top is 6 inches (150 mm) below the ground surface. A No. 6 solid copper conductor shall be clamped to the rod and to the fence in such a manner that each element of the fence is grounded. Installation of ground rods shall not constitute a pay item and shall be considered incidental to fence construction. The Contractor shall comply with FAA-STD-019, Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment, paragraph 4.2.3.8, Lightning Protection for Fences and Gates, when fencing is adjacent to FAA facilities.

162-3.8 Cleaning up. The Contractor shall remove from the vicinity of the completed work all tools, buildings, equipment, etc., used during construction. All disturbed areas shall be seeded per T-901.

METHOD OF MEASUREMENT

162-4.1 Chain-link fence, removal and new installation, will be measured for payment by the linear foot (meter). Measurement will be along the top of the fence from center to center of end posts, excluding the length occupied by gate openings.

162-4.2 Gates will be measured as complete units.

BASIS OF PAYMENT

162-5.1 Payment for chain-link fence, removal and new installation, will be made at the contract unit price per linear foot (meter).

162-5.2 Payment for gates will be made at the contract unit price for each gate, gate operator and related accessories as specified and included on the drawings.

The price shall be full compensation for furnishing all materials, and for all preparation, erection, and installation of these materials, and for all labor equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item F-162-5.1	Remove Chain-Link Fence - per linear foot (meter)
Item F-162-5.2	Chain link fence - per linear foot
Item F-162-5.3	Vehicle Gate - per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM A121	Standard Specification for Metallic-Coated Carbon Steel Barbed Wire
ASTM A153	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A392	Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A491	Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric
ASTM A824	Standard Specification for Metallic-Coated Steel Marcellled Tension Wire for Use with Chain Link Fence
ASTM B117	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM F668	Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and other Organic Polymer Coated Steel Chain-Link Fence Fabric
ASTM F1043	Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework
ASTM F1083	Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F1183	Standard Specification for Aluminum Alloy Chain Link Fence Fabric
ASTM F1345	Standard Specification for Zinc 5% Aluminum-Mischmetal Alloy Coated Steel Chain-Link Fence Fabric
ASTM G152	Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G153	Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials
ASTM G155	Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials

Federal Specifications (FED SPEC)

FED SPEC RR-F-191/3 Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)

FED SPEC RR-F-191/4 Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)

FAA Standard

FAA-STD-019 Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment

FAA Orders

5300.38 AIP Handbook

END OF ITEM F-162

Item T-901 Seeding**DESCRIPTION**

901-1.1 This item shall consist of soil preparation, fertilizing, liming, and seeding the areas shown on the plans or as directed by the RPR in accordance with these specifications.

MATERIALS

901-2.1 Seed. The species and application rates of grass, legume, and cover-crop seed furnished shall be those stipulated herein. Seed shall conform to the requirements of Federal Specification JJJ-S-181, Federal Specification, Seeds, Agricultural.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the RPR duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six (6) months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed. Wet, moldy, or otherwise damaged seed will be rejected.

Seeds shall be applied as follows:

Seed Properties and Rate of Application

Seed	Minimum Seed Purity (Percent)	Minimum Germination (Percent)	Rate of Application lb/acre (or lb/1,000 S.F.)
Creeping Red Fescue	85%	80%	1.8 (45% \pm 4%)
Kentucky Blue Grass	85%	80%	1.0 (25% \pm 4%)
Chewings Fescue	85%	80%	0.6 (15% \pm 4%)
Perennial Ryegrass	85%	80%	0.4 (10% \pm 2%)
Annual Ryegrass	85%	80%	0.2 (5% \pm 2%)
TOTAL			4 lbs/1000 SF

Seeding shall be performed during the period between April 1 to June 1 and August 15 to October 14 inclusive, unless otherwise approved by the RPR.

901-2.2 Lime. Lime shall be ground limestone containing not less than 85% of total carbonates, and shall be ground to such fineness that 90% will pass through a No. 20 (850 μ m) mesh sieve and 50% will pass through a No. 100 (150 μ m) mesh sieve. Coarser material will be acceptable, providing the rates of application are increased to provide not less than the minimum quantities and depth specified in the special provisions on the basis of the to sieve requirements above. Dolomitic lime or a high magnesium lime shall

contain at least 10% of magnesium oxide. Lime shall be applied at the rates shown in Table 1. All liming materials shall conform to the requirements of ASTM C602.

Table 1 – Supplemental Lime

Existing Soil pH	Limestone to be Added	
	Tons/Acre	Pounds/1000 SF
4.0 – 4.4	3	138
4.5 – 4.9	2	92
5.0 – 5.4	1	46

901-2.3 Fertilizer. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified, and shall meet the requirements of applicable state laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

- A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or
- A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be commercial fertilizer and shall be spread at the rate of as shown in Table 2.

Table 2 – Fertilizer Application Information

Percent of Nutrients		Minimum Application Rate (Lbs per 1000 Sq. Ft.)	Measurement Factor
Initial	Refertilization		
10-10-10		20.0	1.0
15-15-15		13.4	1.5
19-19-19		10.5	1.9
	10-3-6	20.0	1.0
	12-2-8	16.7	1.2
	12-4-8	16.7	1.2

901-2.4 Soil for repairs. The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the RPR before being placed.

CONSTRUCTION METHODS

901-3.1 Advance preparation and cleanup. After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application

of fertilizer and ground limestone, the Contractor shall repair such damage include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

When the area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, any grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

901-3.2 Dry application method.

a. Liming. Lime shall be applied separately and prior to the application of any fertilizer or seed and only on seedbeds that have previously been prepared as described above. The lime shall then be worked into the top 3 inches (75 mm) of soil after which the seedbed shall again be properly graded and dressed to a smooth finish.

b. Fertilizing. Following advance preparations and cleanup fertilizer shall be uniformly spread at the rate that will provide not less than the minimum quantity stated in paragraph 901-2.3.

c. Seeding. Grass seed shall be sown at the rate specified in paragraph 901-2.1 immediately after fertilizing. The fertilizer and seed shall be raked within the depth range stated in the special provisions. Seeds of legumes, either alone or in mixtures, shall be inoculated before mixing or sowing, in accordance with the instructions of the manufacturer of the inoculant. When seeding is required at other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

d. Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted by means of an approved lawn roller, weighing 40 to 65 pounds per foot (60 to 97 kg per meter) of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot (223 to 298 kg per meter) of width for sandy or light soils.

901-3.3 Wet application method.

a. General. The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

b. Spraying equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 lb / sq inches (690 kPa). The pump shall be mounted in a line that will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8 inch (16 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For ease of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. The Contractor shall identify to the RPR all sources of water at least two (2) weeks prior to use. The RPR may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the RPR following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within two (2) hours from the time they were mixed or they shall be wasted and disposed of at approved locations.

d. Spraying. Lime, if required, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (75 mm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.

Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the RPR, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

901-3.4 Maintenance of seeded areas. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the RPR. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the RPR. A grass stand shall be considered adequate when bare spots are one square foot (0.01 sq m) or less, randomly dispersed, and do not exceed 3% of the area seeded.

METHOD OF MEASUREMENT

901-4.1 The quantity of seeding to be paid for shall be the number of units 1,000 square feet (sq m) measured on the ground surface, completed and accepted.

BASIS OF PAYMENT

901-5.1 Payment shall be made at the contract unit price per 1,000 square feet (sq m) or fraction thereof, which price and payment shall be full compensation for furnishing and placing all material and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Item 901-5.1	Seeding – per 1,000 square feet (sq m)
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REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C602	Standard Specification for Agricultural Liming Materials
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Federal Specifications (FED SPEC)

FED SPEC	JJJ-S-181, Federal Specification, Seeds, Agricultural
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Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports
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FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel
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END OF ITEM T-901

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Item T-905 Topsoil

DESCRIPTION

905-1.1 This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the RPR.

MATERIALS

905-2.1 Topsoil. Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches (50 mm) or more in diameter), and clay lumps or similar objects. Brush and other vegetation that will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sod and herbaceous growth such as grass and weeds are not to be removed, but shall be thoroughly broken up and intermixed with the soil during handling operations. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means, shall be removed. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh (75 μ m) sieve as determined by the wash test in accordance with ASTM C117.

Natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

905-2.2 Inspection and tests. Within 10 days following acceptance of the bid, the RPR shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements specified and to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths, for testing purposes as specified in paragraph 905-2.1.

CONSTRUCTION METHODS

905-3.1 General. Areas to be topsoiled shall be shown on the plans. If topsoil is available on the site, the location of the stockpiles or areas to be stripped of topsoil and the stripping depths shall be shown on the plans.

Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the RPR before the various operations are started.

905-3.2 Preparing the ground surface. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other means approved by the RPR, to a minimum depth of 2 inches (50 mm) to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area to be topsoiled shall be cleared of all stones larger than 2 inches (50 mm) in

any diameter and all litter or other material which may be detrimental to proper bonding, the rise of capillary moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive special scarification.

Grades on the area to be topsoiled, which have been established by others as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and compacted condition to prevent the formation of low places or pockets where water will stand.

905-3.3 Obtaining topsoil. Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, shall be removed using methods approved by the RPR. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the RPR. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the RPR. Any topsoil stockpiled by the Contractor shall be rehandled and placed without additional compensation. Any topsoil that has been stockpiled on the site by others, and is required for topsoil purposes, shall be removed and placed by the Contractor. The sites of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required and put into a condition acceptable for seeding.

When suitable topsoil is secured off the airport site, the Contractor shall locate and obtain the supply, subject to the approval of the RPR. The Contractor shall notify the RPR sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading, or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

905-3.4 Placing topsoil. The topsoil shall be evenly spread on the prepared areas to a uniform depth of 4 inches (100 mm) after compaction, unless otherwise shown on the plans or stated in the special provisions. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.

After spreading, any large, stiff clods and hard lumps shall be broken with a pulverizer or by other effective means, and all stones or rocks (2 inches (50 mm) or more in diameter), roots, litter, or any foreign matter shall be raked up and disposed of by the Contractor. After spreading is completed, the topsoil shall be satisfactorily compacted by rolling with a cultipacker or by other means approved by the RPR. The compacted topsoil surface shall conform to the required lines, grades, and cross-sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

METHOD OF MEASUREMENT

905-4.1 Topsoil obtained on the site shall be measured by the number of cubic yards (cubic meters) of topsoil measured in its original position and stripped or excavated. Topsoil stockpiled by others and removed for topsoil by the Contractor shall be measured by the number of cubic yards (cubic meters) of topsoil measured in the stockpile. Topsoil shall be measured by volume in cubic yards (cubic meters) computed by the method of end areas.

905-4.2 Topsoil obtained off the site shall be measured by the number of cubic yards (cubic meters) of topsoil measured in its original position and stripped or excavated. Topsoil shall be measured by volume in cubic yards (meters) computed by the method of end areas.

BASIS OF PAYMENT

905-5.1 Payment will be made at the contract unit price per cubic yard (cubic meter) for topsoil (obtained on the site). This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

905-5.2 Payment will be made at the contract unit price per cubic yard (cubic meter) for topsoil (obtained off the site). This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-905-5.1	Topsoil (Obtained on Site or Removed from Stockpile) - per cubic yard (cubic meter)
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REFERENC ES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C117	Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing
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Advisory Circulars (AC)

AC 150/5200-33	Hazardous Wildlife Attractants on or Near Airports
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FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

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Item T-908 Mulching**DESCRIPTION**

908-1.1 This item shall consist of furnishing, hauling, placing, and securing mulch on surfaces indicated on the plans or designated by the RPR.

MATERIALS

908-2.1 Mulch material. Acceptable mulch shall be the materials listed below or any approved locally available material that is similar to those specified. Mulch shall be free from noxious weeds, mold, and other deleterious materials. Mulch materials, which contain matured seed of species that would volunteer and be detrimental to the proposed overseeding, or to surrounding farm land, will not be acceptable. Straw or other mulch material which is fresh and/or excessively brittle, or which is in such an advanced stage of decomposition as to smother or retard the planted grass, will not be acceptable.

a. Hay. Hay shall be native hay in an air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Hay shall be sterile, containing no fertile seed.

b. Straw. Straw shall be the stalks from threshed plant residue of oats, wheat, barley, rye, or rice from which grain has been removed. Furnish in air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Straw shall contain no fertile seed.

c. Hay mulch containing seed. Hay mulch shall be mature hay containing viable seed of native grasses or other desirable species stated in the special provisions or as approved by the RPR. The hay shall be cut and handled so as to preserve the maximum quantity of viable seed. Hay mulch that cannot be hauled and spread immediately after cutting shall be placed in weather-resistant stacks or baled and stored in a dry location until used.

d. Manufactured mulch. Cellulose-fiber or wood-pulp mulch shall be products commercially available for use in spray applications.

e. Asphalt binder. Asphalt binder material shall conform to the requirements of ASTM D977, Type SS-1 or RS-1.

908-2.2 Inspection. The RPR shall be notified of sources and quantities of mulch materials available and the Contractor shall furnish him with representative samples of the materials to be used 30 days before delivery to the project. These samples may be used as standards with the approval of the RPR and any materials brought on the site that do not meet these standards shall be rejected.

CONSTRUCTION METHODS

908-3.1 Mulching. Before spreading mulch, all large clods, stumps, stones, brush, roots, and other foreign material shall be removed from the area to be mulched. Mulch shall be applied immediately after seeding. The spreading of the mulch may be by hand methods, blower, or other mechanical methods, provided a uniform covering is obtained.

Mulch material shall be furnished, hauled, and evenly applied on the area shown on the plans or designated by the RPR. Straw or hay shall be spread over the surface to a uniform thickness at the rate of 2 to 3 tons per acre (1800 - 2700 kg per acre) to provide a loose depth of not less than 1-1/2 inches (38

cm) nor more than 3 inches (75 mm). Other organic material shall be spread at the rate directed by the RPR. Mulch may be blown on the slopes and the use of cutters in the equipment for this purpose will be permitted to the extent that at least 95% of the mulch in place on the slope shall be 6 inches (150 mm) or more in length. When mulches applied by the blowing method are cut, the loose depth in place shall be not less than one inch (25 mm) nor more than 2 inches (50 mm).

908-3.2 Securing mulch. The mulch shall be held in place by light discing, a very thin covering of topsoil, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the RPR. Where mulches have been secured by either of the asphalt binder methods, it will not be permissible to walk on the slopes after the binder has been applied. When an application of asphalt binder material is used to secure the mulch, the Contractor must take every precaution to guard against damaging or disfiguring structures or property on or adjacent to the areas worked and will be held responsible for any such damage resulting from the operation.

If the “peg and string” method is used, the mulch shall be secured by the use of stakes or wire pins driven into the ground on 5-foot (1.5-m) centers or less. Binder twine shall be strung between adjacent stakes in straight lines and crisscrossed diagonally over the mulch, after which the stakes shall be firmly driven nearly flush to the ground to draw the twine down tight onto the mulch.

908-3.3 Care and repair.

a. The Contractor shall care for the mulched areas until final acceptance of the project. Care shall consist of providing protection against traffic or other use by placing warning signs, as approved by the RPR, and erecting any barricades that may be shown on the plans before or immediately after mulching has been completed on the designated areas.

b. The Contractor shall be required to repair or replace any mulch that is defective or becomes damaged until the project is finally accepted. When, in the judgment of the RPR, such defects or damages are the result of poor workmanship or failure to meet the requirements of the specifications, the cost of the necessary repairs or replacement shall be borne by the Contractor.

c. If the “asphalt spray” method is used, all mulched surfaces shall be sprayed with asphalt binder material so that the surface has a uniform appearance. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m), or as directed by the RPR, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it. Asphalt binder material may be sprayed on the mulched slope areas from either the top or the bottom of the slope. An approved spray nozzle shall be used. The nozzle shall be operated at a distance of not less than 4 feet (1.2 m) from the surface of the mulch and uniform distribution of the asphalt material shall be required. A pump or an air compressor of adequate capacity shall be used to ensure uniform distribution of the asphalt material.

d. If the “asphalt mix” method is used, the mulch shall be applied by blowing, and the asphalt binder material shall be sprayed into the mulch as it leaves the blower. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m) or as directed by the RPR, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it.

METHOD OF MEASUREMENT

908-4.1 Mulching shall be measured in square yards (square meters) on the basis of the actual surface area acceptably mulched.

BASIS OF PAYMENT

908-5.1 Payment will be made at the contract unit price per square yard (square meter) for mulching. The price shall be full compensation for furnishing all materials and for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item T-908-5.1 Mulching - per square yard (square meter)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D977 Standard Specification for Emulsified Asphalt

Advisory Circulars (AC)

AC 150/5200-33 Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-908

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Item L-108 Underground Power Cable for Airports**DESCRIPTION**

108-1.1 This item shall consist of furnishing and installing power cables that are direct buried and furnishing and/or installing power cables within conduit or duct banks per these specifications at the locations shown on the plans. It includes excavation and backfill of trench for direct-buried cables only. Also included are the installation of counterpoise wires, ground wires, ground rods and connections, cable splicing, cable marking, cable testing, and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the RPR. This item shall not include the installation of duct banks or conduit, trenching and backfilling for duct banks or conduit, or furnishing or installation of cable for FAA owned/operated facilities.

EQUIPMENT AND MATERIALS**108-2.1 General.**

a. Airport lighting equipment and materials covered by advisory circulars (AC) shall be approved under the Airport Lighting Equipment Certification Program per AC 150/5345-53, current version.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification, when requested by the RPR.

c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

d. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

e. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be electronically submitted in pdf format. The RPR reserves the right to reject any and all equipment, materials, or procedures that do not meet the system design and the standards and codes, specified in this document.

f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall maintain a minimum insulation

resistance in accordance with paragraph 108-3.10e with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period when tested in accordance with AC 150/5340-26, *Maintenance Airport Visual Aid Facilities*, paragraph 5.1.3.1, Insulation Resistance Test.

108-2.2 Cable. Underground cable for airfield lighting facilities (runway and taxiway lights and signs) shall conform to the requirements of AC 150/5345-7, Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits latest edition. Conductors for use on 6.6 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #8 American wire gauge (AWG), L-824 Type C, 5,000 volts, non-shielded, with cross-linked polyethylene insulation. Conductors for use on 20 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #6 AWG, L-824 Type C, 5,000 volts, non-shielded, with cross-linked polyethylene insulation. L-824 conductors for use on the L-830 secondary of airfield lighting series circuits shall be sized in accordance with the manufacturer's recommendations. All other conductors shall comply with FAA and National Electric Code (NEC) requirements. Conductor sizes noted above shall not apply to leads furnished by manufacturers on airfield lighting transformers and fixtures.

Wire for electrical circuits up to 600 volts shall comply with Specification L-824 and/or Commercial Item Description A-A-59544A and shall be type THWN-2, 75°C for installation in conduit and RHW-2, 75°C for direct burial installations. Conductors for parallel (voltage) circuits shall be type and size and installed in accordance with NFPA-70, National Electrical Code.

Unless noted otherwise, all 600-volt and less non-airfield lighting conductor sizes are based on a 75°C, THWN-2, 600-volt insulation, copper conductors, not more than three single insulated conductors, in raceway, in free air. The conduit/duct sizes are based on the use of THWN-2, 600-volt insulated conductors. The Contractor shall make the necessary increase in conduit/duct sizes for other types of wire insulation. In no case shall the conduit/duct size be reduced. The minimum power circuit wire size shall be #12 AWG.

Conductor sizes may have been adjusted due to voltage drop or other engineering considerations. Equipment provided by the Contractor shall be capable of accepting the quantity and sizes of conductors shown in the Contract Documents. All conductors, pigtails, cable step-down adapters, cable step-up adapters, terminal blocks and splicing materials necessary to complete the cable termination/splice shall be considered incidental to the respective pay items provided.

Cable type, size, number of conductors, strand and service voltage shall be as specified in the Contract Document.

108-2.3 Bare copper wire (counterpoise, bare copper wire ground and ground rods). Wire for counterpoise or ground installations for airfield lighting systems shall be No. 6 AWG bare solid copper wire for counterpoise and/or No. 6 AWG insulated stranded for grounding bond wire per ASTM B3 and ASTM B8, and shall be bare copper wire. For voltage powered circuits, the equipment grounding conductor shall comply with NEC Article 250.

Ground rods shall be copper-clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case be less than 10 feet (2.54 m) long and 3/4 inch (19 mm) in diameter.

108-2.4 Cable connections. In-line connections or splices of underground primary cables shall be of the type called for on the plans, and shall be one of the types listed below. No separate payment will be made for cable connections.

a. The cast splice. A cast splice, employing a plastic mold and using epoxy resin equivalent to that manufactured by 3M™ Company, "Scotchcast" Kit No. 82-B, or an approved equivalent, used for potting the splice is acceptable.

b. The field-attached plug-in splice. Field attached plug-in splices shall be installed as shown on the plans. The Contractor shall determine the outside diameter of the cable to be spliced and furnish appropriately sized connector kits and/or adapters. Tape or heat shrink tubing with integral sealant shall be in accordance with the manufacturer's requirements. Primary Connector Kits manufactured by Amerace, "Super Kit", Integro "Complete Kit", or approved equal is acceptable.

c. The factory-molded plug-in splice. Specification for L-823 Connectors, Factory-Molded to Individual Conductors, is acceptable.

d. The taped or heat-shrink splice. Taped splices employing field-applied rubber, or synthetic rubber tape covered with plastic tape is acceptable. The rubber tape should meet the requirements of ASTM D4388 and the plastic tape should comply with Military Specification MIL-I-24391 or Commercial Item Description A-A-55809. Heat shrinkable tubing shall be heavy-wall, self-sealing tubing rated for the voltage of the wire being spliced and suitable for direct-buried installations. The tubing shall be factory coated with a thermoplastic adhesive-sealant that will adhere to the insulation of the wire being spliced forming a moisture- and dirt-proof seal. Additionally, heat shrinkable tubing for multi-conductor cables, shielded cables, and armored cables shall be factory kits that are designed for the application. Heat shrinkable tubing and tubing kits shall be manufactured by Tyco Electronics/ Raychem Corporation, Energy Division, or approved equivalent.

In all the above cases, connections of cable conductors shall be made using crimp connectors using a crimping tool designed to make a complete crimp before the tool can be removed. All L-823/L-824 splices and terminations shall be made per the manufacturer's recommendations and listings.

All connections of counterpoise, grounding conductors and ground rods shall be made by the exothermic process or approved equivalent, except that a light base ground clamp connector shall be used for attachment to the light base. All exothermic connections shall be made per the manufacturer's recommendations and listings.

108-2.5 Splicer qualifications. Every airfield lighting cable splicer shall be qualified in making airport cable splices and terminations on cables rated at or above 5,000 volts AC. The Contractor shall submit to the RPR proof of the qualifications of each proposed cable splicer for the airport cable type and voltage level to be worked on. Cable splicing/terminating personnel shall have a minimum of three (3) years continuous experience in terminating/splicing medium voltage cable.

108-2.6 Concrete. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

108-2.7 Flowable backfill. Flowable material used to backfill trenches for power cable trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

108-2.8 Cable identification tags. Cable identification tags shall be made from a non-corrosive material with the circuit identification stamped or etched onto the tag. The tags shall be of the type as detailed on the plans.

108-2.9 Tape. Electrical tapes shall be Scotch™ Electrical Tapes –Scotch™ 88 (1-1/2 inch (38 mm) wide) and Scotch™ 130C® linerless rubber splicing tape (2-inch (50 mm) wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M™), or an approved equivalent.

108-2.10 Electrical coating. Electrical coating shall be Scotchkote™ as manufactured by 3M™, or an approved equivalent.

108-2.11 Existing circuits. Whenever the scope of work requires connection to an existing circuit, the existing circuit's insulation resistance shall be tested, in the presence of the RPR. The test shall be performed per this item and prior to any activity that will affect the respective circuit. The Contractor shall record the results on forms acceptable to the RPR. When the work affecting the circuit is complete,

the circuit's insulation resistance shall be checked again, in the presence of the RPR. The Contractor shall record the results on forms acceptable to the RPR. The second reading shall be equal to or greater than the first reading or the Contractor shall make the necessary repairs to the existing circuit to bring the second reading above the first reading. All repair costs including a complete replacement of the L-823 connectors, L-830 transformers and L-824 cable, if necessary, shall be borne by the Contractor. All test results shall be submitted in the Operation and Maintenance (O&M) Manual.

108-2.12 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend tape shall be polyethylene film with a metalized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item. Detectable warning tape for communication cables shall be orange. Detectable warning tape color code shall comply with the APWA Uniform Color Code.

CONSTRUCTION METHODS

108-3.1 General. The Contractor shall install the specified cable at the approximate locations indicated on the plans. Unless otherwise shown on the plans, all cable required to cross under pavements expected to carry aircraft loads shall be installed in concrete encased duct banks. Cable shall be run without splices, from fixture to fixture.

Cable connections between lights will be permitted only at the light locations for connecting the underground cable to the primary leads of the individual isolation transformers. The Contractor shall be responsible for providing cable in continuous lengths for home runs or other long cable runs without connections unless otherwise authorized in writing by the RPR or shown on the plans.

In addition to connectors being installed at individual isolation transformers, L-823 cable connectors for maintenance and test points shall be installed at locations shown on the plans. Cable circuit identification markers shall be installed on both sides of the L-823 connectors installed and on both sides of slack loops where a future connector would be installed.

Provide not less than 3 feet (1 m) of cable slack on each side of all connections, isolation transformers, light units, and at points where cable is connected to field equipment. Where provisions must be made for testing or for future above grade connections, provide enough slack to allow the cable to be extended at least one foot (30 cm) vertically above the top of the access structure. This requirement also applies where primary cable passes through empty light bases, junction boxes, and access structures to allow for future connections, or as designated by the RPR.

Primary airfield lighting cables installed shall have cable circuit identification markers attached on both sides of each L-823 connector and on each airport lighting cable entering or leaving cable access points, such as manholes, hand holes, pull boxes, junction boxes, etc. Markers shall be of sufficient length for imprinting the cable circuit identification legend on one line, using letters not less than 1/4 inch (6 mm) in size. The cable circuit identification shall match the circuits noted on the construction plans.

108-3.2 Installation in duct banks or conduits. This item includes the installation of the cable in duct banks or conduit per the following paragraphs. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected and that any potential interference is avoided.

Duct banks or conduits shall be installed as a separate item per Item L-110, Airport Underground Electrical Duct Banks and Conduit. The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean light bases, manholes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed, the light bases and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, light bases, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or alternately, heat shrinkable tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cable shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

The Contractor shall submit the recommended pulling tension values to the RPR prior to any cable installation. If required by the RPR, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the RPR. Cable pull tensions shall be recorded by the Contractor and reviewed by the RPR. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the RPR, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

108-3.3 Installation of direct-buried cable in trenches. Unless otherwise specified, the Contractor shall not use a cable plow for installing the cable. Cable shall be unreeled uniformly in place alongside or in the trench and shall be carefully placed along the bottom of the trench. The cable shall not be unreeled and pulled into the trench from one end. Slack cable sufficient to provide strain relief shall be placed in the trench in a series of S curves. Sharp bends or kinks in the cable shall not be permitted.

Where cables must cross over each other, a minimum of 3 inches (75 mm) vertical displacement shall be provided with the topmost cable depth at or below the minimum required depth below finished grade.

a. Trenching. Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored. Trenches for cables may be excavated manually or with mechanical

trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of surface is disturbed. Graders shall not be used to excavate the trench with their blades. The bottom surface of trenches shall be essentially smooth and free from coarse aggregate. Unless otherwise specified, cable trenches shall be excavated to a minimum depth of 18 inches (0.5 m) below finished grade per NEC Table 300.5, except as follows:

- When off the airport or crossing under a roadway or driveway, the minimum depth shall be 36 inches (91 cm) unless otherwise specified.
- Minimum cable depth when crossing under a railroad track, shall be 42 inches (1 m) unless otherwise specified.

The Contractor shall excavate all cable trenches to a width not less than 6 inches (150 mm). Unless otherwise specified on the plans, all cables in the same location and running in the same general direction shall be installed in the same trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required cable depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. Flowable backfill material may alternatively be used.

Duct bank or conduit markers temporarily removed for trench excavations shall be replaced as required.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

(1) Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred.

(2) Trenching, etc., in cable areas shall then proceed, with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair or replacement.

b. Backfilling. After the cable has been installed, the trench shall be backfilled. The first layer of backfill in the trench shall encompass all cables ; be 3 inches (75 mm) deep, loose measurement; and shall be either earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. This layer shall not be compacted. The second layer shall be 5 inches (125 mm) deep, loose measurement, and shall contain no particles that would be retained on a one inch (25.0 mm) sieve. The remaining third and subsequent layers of backfill shall not exceed 8 inches (20 cm) of loose measurement and be excavated or imported material and shall not contain stone or aggregate larger than 4 inches (100 mm) maximum diameter.

The second and subsequent layers shall be thoroughly tamped and compacted to at least the density of the adjacent material. If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the backfill compaction shall be to a minimum of 100 percent of ASTM D1557

Trenches shall not contain pools of water during backfilling operations. The trench shall be completely backfilled and tamped level with the adjacent surface, except that when turf is to be established over the trench, the backfilling shall be stopped at an appropriate depth consistent with the

type of turfing operation to be accommodated. A proper allowance for settlement shall also be provided. Any excess excavated material shall be removed and disposed of per the plans and specifications.

Underground electrical warning (caution) tape shall be installed in the trench above all direct-buried cable. Contractor shall submit a sample of the proposed warning tape for acceptance by the RPR. If not shown on the plans, the warning tape shall be located 6 inches (150 mm) above the direct-buried cable or the counterpoise wire if present. A 3-6 inch (75 - 150 mm) wide polyethylene film detectable tape, with a metalized foil core, shall be installed above all direct buried cable or counterpoise. The tape shall be of the color and have a continuous legend as indicated on the plans. The tape shall be installed 8 inches (200 mm) minimum below finished grade.

c. Restoration. Following restoration of all trenching near airport movement surfaces, the Contractor shall visually inspect the area for foreign object debris (FOD) and remove any that is found. Where soil and sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by work shall be restored to its original condition. The restoration shall include the topsoiling, fertilizing, liming, seeding, mulching as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. When trenching is through paved areas, restoration shall be equal to existing conditions. If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the backfill compaction shall be to a minimum of 100 percent of ASTM D1557 Restoration shall be considered incidental to the pay item of which it is a component part.

108-3.4 Cable markers for direct-buried cable. The location of direct buried circuits shall be marked by a concrete slab marker, 2 feet (60 cm) square and 4-6 inch (10 - 15 cm) thick, extending approximately one inch (25 mm) above the surface. Each cable run from a line of lights and signs to the equipment vault shall be marked at approximately every 200 feet (61 m) along the cable run, with an additional marker at each change of direction of cable run. All other direct-buried cable shall be marked in the same manner. Cable markers shall be installed directly above the cable. The Contractor shall impress the word "CABLE" and directional arrows on each cable marking slab. The letters shall be approximately 4 inches (100 mm) high and 3 inches (75 mm) wide, with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep. Stencils shall be used for cable marker lettering; no hand lettering shall be permitted.

At the location of each underground cable connection/splice, except at lighting units, or isolation transformers, a concrete marker slab shall be installed to mark the location of the connection/splice. The Contractor shall impress the word "SPLICE" on each slab. The Contractor also shall impress additional circuit identification symbols on each slab as directed by the RPR. All cable markers and splice markers shall be painted international orange. Paint shall be specifically manufactured for uncured exterior concrete. After placement, all cable or splice markers shall be given one coat of high-visibility aviation orange paint as approved by the RPR. Furnishing and installation of cable markers is incidental to the respective cable pay item.

108-3.5 Splicing. Connections of the type shown on the plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

a. Cast splices. These shall be made by using crimp connectors for jointing conductors. Molds shall be assembled, and the compound shall be mixed and poured per the manufacturer's instructions and to the satisfaction of the RPR.

b. Field-attached plug-in splices. These shall be assembled per the manufacturer's instructions. These splices shall be made by plugging directly into mating connectors. The joint where the connectors come together shall be finished by one of the following methods: (1) wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint (2) Covered with heat shrinkable tubing with integral sealant

extending at least 1-1/2 inches (38 mm) on each side of the joint or (3) On connector kits equipped with water seal flap; roll-over water seal flap to sealing position on mating connector.

c. Factory-molded plug-in splices. These shall be made by plugging directly into mating connectors. The joint where the connectors come together shall be finished by one of the following methods: (1) Wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint. (2) Covered with heat shrinkable tubing with integral sealant extending at least 1-1/2 inches (38 mm) on each side of the joint. or (3) On connector kits so equipped with water seal flap; roll-over water seal flap to sealing position on mating connector.

d. Taped or heat-shrink splices. A taped splice shall be made in the following manner:

Bring the cables to their final position and cut so that the conductors will butt. Remove insulation and jacket allowing for bare conductor of proper length to fit compression sleeve connector with 1/4 inch (6 mm) of bare conductor on each side of the connector. Prior to splicing, the two ends of the cable insulation shall be penciled using a tool designed specifically for this purpose and for cable size and type. Do not use emery paper on splicing operation since it contains metallic particles. The copper conductors shall be thoroughly cleaned. Join the conductors by inserting them equidistant into the compression connection sleeve. Crimp conductors firmly in place with crimping tool that requires a complete crimp before tool can be removed. Test the crimped connection by pulling on the cable. Scrape the insulation to assure that the entire surface over which the tape will be applied (plus 3 inches (75 mm) on each end) is clean. After scraping, wipe the entire area with a clean lint-free cloth. Do not use solvents.

Apply high-voltage rubber tape one-half lapped over bare conductor. This tape should be tensioned as recommended by the manufacturer. Voids in the connector area may be eliminated by highly elongating the tape, stretching it just short of its breaking point. The manufacturer's recommendation for stretching tape during splicing shall be followed. Always attempt to exactly half-lap to produce a uniform buildup. Continue buildup to 1-1/2 times cable diameter over the body of the splice with ends tapered a distance of approximately one inch (25 mm) over the original jacket. Cover rubber tape with two layers of vinyl pressure-sensitive tape one-half lapped. Do not use glyptol or lacquer over vinyl tape as they react as solvents to the tape. No further cable covering or splice boxes are required.

Heat shrinkable tubing shall be installed following manufacturer's instructions. Direct flame heating shall not be permitted unless recommended by the manufacturer. Cable surfaces within the limits of the heat-shrink application shall be clean and free of contaminants prior to application.

e. Assembly. Surfaces of equipment or conductors being terminated or connected shall be prepared in accordance with industry standard practice and manufacturer's recommendations. All surfaces to be connected shall be thoroughly cleaned to remove all dirt, grease, oxides, nonconductive films, or other foreign material. Paints and other nonconductive coatings shall be removed to expose base metal. Clean all surfaces at least 1/4 inch (6.4 mm) beyond all sides of the larger bonded area on all mating surfaces. Use a joint compound suitable for the materials used in the connection. Repair painted/coated surface to original condition after completing the connection.

108-3.6 Bare counterpoise wire installation for lightning protection and grounding. If shown on the plans or included in the job specifications, bare solid #6 AWG copper counterpoise wire shall be installed for lightning protection of the underground cables. The RPR shall select one of two methods of lightning protection for the airfield lighting circuit based upon sound engineering practice and lightning strike density.

a. Equipotential. [The counterpoise size is as shown on the plans. The equipotential method is applicable to all airfield lighting systems; i.e. runway, taxiway, apron – touchdown zone, centerline, edge, threshold and approach lighting systems. The equipotential method is also successfully applied to

provide lightning protection for power, signal and communication systems. The light bases, counterpoise, etc – all components - are bonded together and bonded to the vault power system ground loop/electrode.

Counterpoise wire shall be installed in the same trench for the entire length of buried cable, conduits and duct banks that are installed to contain airfield cables. The counterpoise is centered over the cable/conduit/duct to be protected.

The counterpoise conductor shall be installed no less than 8 inches (200 mm) minimum or 12 inches (300 mm) maximum above the raceway or cable to be protected, except as permitted below:

(1) The minimum counterpoise conductor height above the raceway or cable to be protected shall be permitted to be adjusted subject to coordination with the airfield lighting and pavement designs.

(2) The counterpoise conductor height above the protected raceway(s) or cable(s) shall be calculated to ensure that the raceway or cable is within a 45-degree area of protection, (45 degrees on each side of vertical creating a 90 degree angle).

The counterpoise conductor shall be bonded to each metallic light base, mounting stake, and metallic airfield lighting component.

All metallic airfield lighting components in the field circuit on the output side of the constant current regulator (CCR) or other power source shall be bonded to the airfield lighting counterpoise system.

All components rise and fall at the same potential; with no potential difference, no damaging arcing and no damaging current flow.

See AC 150/5340-30, Design and Installation Details for Airport Visual Aids and NFPA 780, Standard for the Installation of Lightning Protection Systems, Chapter 11, for a detailed description of the Equipotential Method of lightning protection.

Reference FAA STD-019E, Lightning and Surge Protection, Grounding Bonding and Shielding Requirements for Facilities and Electronic Equipment, Part 4.1.1.7.][not used]

b. Isolation. not used

c. Common Installation requirements. When a metallic light base is used, the grounding electrode shall be bonded to the metallic light base or mounting stake with a No. 6 AWG bare, annealed or soft drawn, solid copper conductor.

When a nonmetallic light base is used, the grounding electrode shall be bonded to the metallic light fixture or metallic base plate with a No. 6 AWG bare, annealed or soft drawn, solid copper conductor.

Grounding electrodes may be rods, ground dissipation plates, radials, or other electrodes listed in the NFPA 70 (NEC) or NFPA 780.

Where raceway is installed by the directional bore, jack and bore, or other drilling method, the counterpoise conductor shall be permitted to be installed concurrently with the directional bore, jack and bore, or other drilling method raceway, external to the raceway or sleeve.

The counterpoise wire shall also be exothermically welded to ground rods installed as shown on the plans but not more than 500 feet (150 m) apart around the entire circuit. The counterpoise system shall be continuous and terminate at the transformer vault or at the power source. It shall be securely attached to the vault or equipment external ground ring or other made electrode-grounding system. The connections shall be made as shown on the plans and in the specifications.

Where an existing airfield lighting system is being extended or modified, the new counterpoise conductors shall be interconnected to existing counterpoise conductors at each intersection of the new and existing airfield lighting counterpoise systems.

d. Parallel Voltage Systems. Provide grounding and bonding in accordance with NFPA 70, National Electrical Code.

108-3.7 Counterpoise installation above multiple conduits and duct banks. Counterpoise wires shall be installed above multiple conduits/duct banks for airfield lighting cables, with the intent being to provide a complete area of protection over the airfield lighting cables. When multiple conduits and/or duct banks for airfield cable are installed in the same trench, the number and location of counterpoise wires above the conduits shall be adequate to provide a complete area of protection measured 45 degrees each side of vertical.

Where duct banks pass under pavement to be constructed in the project, the counterpoise shall be placed above the duct bank. Reference details on the construction plans.

108-3.8 Counterpoise installation at existing duct banks. When airfield lighting cables are indicated on the plans to be routed through existing duct banks, the new counterpoise wiring shall be terminated at ground rods at each end of the existing duct bank where the cables being protected enter and exit the duct bank. The new counterpoise conductor shall be bonded to the existing counterpoise system.

108-3.9 Exothermic bonding. Bonding of counterpoise wire shall be by the exothermic welding process or equivalent method accepted by the RPR. Only personnel experienced in and regularly engaged in this type of work shall make these connections.

Contractor shall demonstrate to the satisfaction of the RPR, the welding kits, materials and procedures to be used for welded connections prior to any installations in the field. The installations shall comply with the manufacturer's recommendations and the following:

a. All slag shall be removed from welds.

b. Using an exothermic weld to bond the counterpoise to a lug on a galvanized light base is not recommended unless the base has been specially modified. Consult the manufacturer's installation directions for proper methods of bonding copper wire to the light base. See AC 150/5340-30 for galvanized light base exception.

c. If called for in the plans, all buried copper and weld material at weld connections shall be thoroughly coated with 6 mm of 3M™ Scotchkote™, or approved equivalent, or coated with coal tar Bitumastic® material to prevent surface exposure to corrosive soil or moisture.

108-3.10 Testing. The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the RPR. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the RPR. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor must maintain the test results throughout the entire project as well as during the warranty period that meet the following:

a. Earth resistance testing methods shall be submitted to the RPR for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the RPR. All such testing shall be at the sole expense of the Contractor.

b. Should the counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The RPR shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

After installation, the Contractor shall test and demonstrate to the satisfaction of the RPR the following:

- c. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.
- d. That all affected circuits (existing and new) are free from unspecified grounds.
- e. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than 50 megohms. Verify continuity of all series airfield lighting circuits prior to energization.
- f. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.
- g. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.
- h. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.
- i. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance test meters may be used to satisfy the impedance testing requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the RPR prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the RPR. Where connecting new cable to existing cable, insulation resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved "repair" procedures for items that have failed testing other than complete replacement.

METHOD OF MEASUREMENT

108-4.1 The cost of all excavation, backfill, dewatering and restoration regardless of the type of material encountered shall be included in the unit price bid for the work.

108-4.2 Cable or counterpoise wire installed in trench, duct bank or conduit shall be measured by the number of linear feet (meters) installed and grounding connectors, and trench marking tape ready for operation, and accepted as satisfactory. Separate measurement shall be made for each cable or counterpoise wire installed in trench, duct bank or conduit. The measurement for this item shall not include additional quantities required for slack.

108-4.3 When ordered by the Resident Project Representative (RPR) due to site specific location grounding issues, additional ground rods shall be measured by each 10-foot] section installed complete.

BASIS OF PAYMENT

108-5.1 Payment will be made at the contract unit price for trenching, cable and bare counterpoise wire installed in trench (direct-buried), or cable and equipment ground installed in duct bank or conduit, in place by the Contractor and accepted by the RPR. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals, including ground rods and ground connectors and trench marking tape, necessary to complete this item.

Payment will be made under:

Item L-108-5.1	No. 8 AWG 5kV L-824 Type C Cable, Installed in Trench or Duct Bank - per liner foot (meter)
Item L-108-5.2	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed in Trench Including Connections/Terminations - per linear foot (meter)
Item L-108-5.3	No. 1/0 AWG 600V THWN-2 Type C Cable, Installed in Duct Bank or Conduit - per liner foot (meter)
Item L-108-5.4	No. 1/0 AWG, Stranded, equipment Ground, installed in Duct Bank or Conduit- per linear foot (meter)
Item L-108-5.5	Additional Ground Rods – per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-53	Airport Lighting Equipment Certification Program

Commercial Item Description

A-A-59544A	Cable and Wire, Electrical (Power, Fixed Installation)
A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic

ASTM International (ASTM)

ASTM B3	Standard Specification for Soft or Annealed Copper Wire
ASTM B8	Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM D4388	Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes

Mil Spec

MIL-PRF-23586F	Performance Specification: Sealing Compound (with Accelerator), Silicone Rubber, Electrical
MIL-I-24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive

National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
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NFPA-780 Standard for the Installation of Lightning Protection Systems
American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)
ANSI/IEEE STD 81 IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and
Earth Surface Potentials of a Ground System
Federal Aviation Administration Standard
FAA STD-019E Lightning and Surge Protection, Grounding Bonding and Shielding
Requirements for Facilities and Electronic Equipment

END OF ITEM L-108

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Item L-110 Airport Underground Electrical Duct Banks and Conduits**DESCRIPTION**

110-1.1 This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing of all underground electrical duct banks and individual and multiple underground conduits and removal of existing duct banks. It shall also include all turfing trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

EQUIPMENT AND MATERIALS**110-2.1 General.**

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

b. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, that comply with these specifications, at the Contractor's cost.

c. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in project that accrue directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be electronically submitted in pdf format. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes specified in this document.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by

the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

110-2.2 Steel conduit. Rigid galvanized steel (RGS) conduit and fittings shall be hot dipped galvanized inside and out and conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242. All RGS conduits or RGS elbows installed below grade, in concrete, permanently wet locations or other similar environments shall be painted with a 10-mil thick coat of asphaltum sealer or shall have a factory-bonded polyvinyl chloride (PVC) cover. Any exposed galvanizing or steel shall be coated with 10 mils of asphaltum sealer. When using PVC coated RGS conduit, care shall be exercised not to damage the factory PVC coating. Damaged PVC coating shall be repaired per the manufacturer's written instructions. In lieu of PVC coated RGS, corrosion wrap tape shall be permitted to be used where RGS is in contact with direct earth."

110-2.3 Plastic conduit. Plastic conduit and fittings shall conform to the following requirements:

- UL 514B covers W-C-1094-Conduit fittings all types, classes 1 thru 3 and 6 thru 10.
- UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).
- UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.
- UL 651A covers W-C-1094-Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

a. Type I–Schedule 40 and Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

110-2.4 Split conduit. Split conduit shall be pre-manufactured for the intended purpose and shall be made of steel or plastic.

110-2.5 Conduit spacers. Conduit spacers shall be prefabricated interlocking units manufactured for the intended purpose. They shall be of double wall construction made of high grade, high density polyethylene complete with interlocking cap and base pads. They shall be designed to accept No. 4 reinforcing bars installed vertically.

110-2.6 Concrete. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

110-2.7 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program. Precast concrete structures shall conform to ASTM C478.

110-2.8 Flowable backfill. Flowable material used to back fill conduit and duct bank trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

110-2.9 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) red (electrical power lines, cables, conduit and lighting cable), orange (telephone/fiber optic cabling) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

CONSTRUCTION METHODS

110-3.1 General. The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The RPR shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2 inches (50 mm) inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3 inches (75 mm) per 100 feet (30 m). On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points or conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. Under pavement, the top of the duct bank shall not be less than 18 inches (0.5 m) below the subgrade; in other locations, the top of the duct bank or underground conduit shall be not less than 18 inches (0.5 m) below finished grade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than 1/4 inch (6 mm) smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed the light bases, manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor's expense. All accessible points shall be kept closed when not installing cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 200-pound (90 kg) test polypropylene pull rope. The ends shall be secured and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet (1.5 m).

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required conduit or duct bank depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. Flowable backfill may alternatively be used.

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. Contractor shall submit a sample of the proposed warning tape for approval by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet (60 cm).

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the RPR, the unsuitable material shall be removed per Item P-152 and replaced with suitable material. Additional duct bank supports shall be installed, as approved by the RPR.

All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion per federal, state, and local requirements is incidental to Item L-110.

Unless otherwise specified, excavated materials that are deemed by the RPR to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the RPR and compacted per Item P-152.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

a. Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred.

b. Trenching, etc., in cable areas shall then proceed with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair.

110-3.2 Duct banks. Unless otherwise shown in the plans, duct banks shall be installed so that the top of the concrete envelope is not less than 18 inches (0.5 m) below the bottom of the base or stabilized base course layers where installed under runways, taxiways, aprons, or other paved areas, and not less than 18 inches (0.5 m) below finished grade where installed in unpaved areas.

Unless otherwise shown on the plans, duct banks under paved areas shall extend at least 3 feet (1 m) beyond the edges of the pavement or 3 feet (1 m) beyond any under drains that may be installed alongside the paved area. Trenches for duct banks shall be opened the complete length before concrete is placed so that if any obstructions are encountered, provisions can be made to avoid them. Unless otherwise shown on the plans, all duct banks shall be placed on a layer of concrete not less than 3 inches (75 mm) thick prior to its initial set. The Contractor shall space the conduits not less than 3 inches (75 mm) apart (measured from outside wall to outside wall). All such multiple conduits shall be placed using conduit spacers applicable to the type of conduit. As the conduit laying progresses, concrete shall be placed around and on top of the conduits not less than 3 inches (75 mm) thick unless otherwise shown on the plans. All conduits shall terminate with female ends for ease of access in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Conduits forming the duct bank shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth prior to placing the concrete encasement. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where shown on the plans. Under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot (1.5-m) intervals.

All pavement surfaces that are to have ducts installed therein shall be neatly saw cut to form a vertical face. All excavation shall be included in the contract with price for the duct.

Install a plastic, detectable, color as noted, 3 to 6 inches (75 to 150 mm) wide tape, 8 inches (200 mm) minimum below grade above all underground conduit or duct lines not installed under pavement. Utilize the 3-inch (75-mm) wide tape only for single conduit runs. Utilize the 6-inch (150-mm) wide tape for multiple conduits and duct banks. For duct banks equal to or greater than 24 inches (600 mm) in width, utilize more than one tape for sufficient coverage and identification of the duct bank as required.

When existing cables are to be placed in split duct, encased in concrete, the cable shall be carefully located and exposed by hand tools. Prior to being placed in duct, the RPR shall be notified so that he may inspect the cable and determine that it is in good condition. Where required, split duct shall be installed as shown on the drawings or as required by the RPR.

110-3.3 Conduits without concrete encasement. Trenches for single-conduit lines shall be not less than 6 inches (150 mm) nor more than 12 inches (300 mm) wide. The trench for 2 or more conduits installed at the same level shall be proportionately wider. Trench bottoms for conduits without concrete encasement

shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 4 inches (100 mm) thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a 1/4-inch (6.3 mm) sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches (0.5 m) below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24 inches (60 cm) below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

110-3.4 Markers. The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet (60 cm) square and 4 - 6 inches (100 - 150 mm) thick extending approximately one inch (25 mm) above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet (61 m) along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word "DUCT" or "CONDUIT" on each marker slab. Impression of letters shall be done in a manner, approved by the RPR, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the RPR. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the RPR. The letters shall be 4 inches (100 mm) high and 3 inches (75 mm) wide with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay item.

110-3.5 Backfilling for conduits. For conduits, 8 inches (200 mm) of sand, soft earth, or other fine fill (loose measurement) shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted per Item P-152 except that material used for back fill shall be select material not larger than 4 inches (100 mm) in diameter.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.6 Backfilling for duct banks. After the concrete has cured, the remaining trench shall be backfilled and compacted per Item P-152 "Excavation and Embankment" except that the material used for backfill shall be select material not larger than 4 inches (100 mm) in diameter. In addition to the requirements of Item P-152, where duct banks are installed under pavement, one moisture/density test per lift shall be made for each 250 linear feet (76 m) of duct bank or one work period's construction, whichever is less.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.7 Restoration. Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to its original condition. The restoration shall include topsoiling, fertilizing, liming, seeding, and mulching shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

110-3.8 Ownership of removed cable. The Contractor shall obtain ownership of removed cable and shall properly dispose of the cable materials off the Airport site.

METHOD OF MEASUREMENT

110-4.1 Underground conduits and duct banks shall be measured by the linear feet (meter) of conduits and duct banks installed, including encasement, locator tape, trenching and backfill with designated material, and restoration, and for drain lines, the termination at the drainage structure, all measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes.

BASIS OF PAYMENT

110-5.1 Payment will be made at the contract unit price per linear foot for each type and size of conduit and duct bank completed and accepted, including trench and backfill with the designated material, and, for drain lines, the termination at the drainage structure. This price shall be full compensation for removal and disposal of existing duct banks and conduits as shown on the plans, furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications.

Payment will be made under:

Item L-110-5.1	Non-Encased Electrical Duct Bank, 1-way 2-inch- per linear foot (meter)
Item L-110-5.2	Concrete Encased Electrical Duct Bank, 4-way 4-inch- per linear foot (meter)
Item L-110-5.3a	Removal and Disposal of Direct Buried Cable- per linear foot (meter)
Item L-110-5.3b	Removal and Disposal of Conduit- per linear foot (meter)

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circular (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program

ASTM International (ASTM)

ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
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National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
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Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit - Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 1242	Electrical Intermediate Metal Conduit Steel
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings
UL Standard 651A	Type EB and A Rigid PVC Conduit and HDPE Conduit

END OF ITEM L-110

Item L-115 Electrical Manholes and Junction Structures**DESCRIPTION**

115-1.1 This item shall consist of electrical manholes and junction structures (hand holes, pull boxes, junction cans, etc.) installed per this specification, at the indicated locations and conforming to the lines, grades and dimensions shown on the plans or as required by the RPR. This item shall include the installation of each electrical manhole and/or junction structures with all associated excavation, backfilling, sheeting and bracing, concrete, reinforcing steel, ladders, appurtenances, testing, dewatering and restoration of surfaces to the satisfaction of the RPR including removal of existing manholes and junction structures as shown on the plans

EQUIPMENT AND MATERIALS**115-2.1 General.**

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when so requested by the RPR.

b. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

c. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be electronically submitted in pdf format, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes, specified in this document.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

115-2.2 Concrete structures. Concrete shall be proportioned, placed, and cured per [Item P-610, Concrete for Miscellaneous Structures]. Cast-in-place concrete structures shall be as shown on the plans.

115-2.3 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another engineer approved third party certification program. Provide precast concrete structures where shown on the plans.

Precast concrete structures shall be an approved standard design of the manufacturer. Precast units shall have mortar or bitumastic sealer placed between all joints to make them watertight. The structure shall be designed to withstand 30,000 lb aircraft loads, unless otherwise shown on the plans. Openings or knockouts shall be provided in the structure as detailed on the plans.

Threaded inserts and pulling eyes shall be cast in as shown on the plans.

If the Contractor chooses to propose a different structural design, signed and sealed shop drawings, design calculations, and other information requested by the RPR shall be submitted by the Contractor to allow for a full evaluation by the RPR. The RPR shall review per the process defined in the General Provisions.

115-2.4 Junction boxes. Junction boxes shall be L-867 Class 1 (non-load bearing) or L-868 Class 1 (load bearing) airport light bases that are encased in concrete. The light bases shall have a L-894 blank cover, gasket, and stainless steel hardware. All bolts, studs, nuts, lock washers, and other similar fasteners used for the light fixture assemblies must be fabricated from 316L (equivalent to EN 1.4404), 18-8, 410, or 416 stainless steel. If 18-8, 410, or 416 stainless steel is utilized it shall be passivated and be free from any discoloration. Covers shall be 3/8-inch (9-mm) thickness for L-867 and 3/4-inch (19-mm) thickness for L-868. All junction boxes shall be provided with both internal and external ground lugs.

115-2.5 Mortar. The mortar shall be composed of one part of cement and two parts of mortar sand, by volume. The cement shall be per the requirements in ASTM C150, Type I. The sand shall be per the requirements in ASTM C144. Hydrated lime may be added to the mixture of sand and cement in an amount not to exceed 15% of the weight of cement used. The hydrated lime shall meet the requirements of ASTM C206. Water shall be potable, reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable, or other substances injurious to the finished product.

115-2.6 Concrete. Concrete shall be proportioned, placed, and cured per Item P-610, Concrete for Miscellaneous Structures.

115-2.7 Frames and covers. The frames shall conform to one of the following requirements:

- a. ASTM A48 Gray iron castings
- b. ASTM A47 Malleable iron castings
- c. ASTM A27 Steel castings
- d. ASTM A283, Grade D Structural steel for grates and frames
- e. ASTM A536 Ductile iron castings
- f. ASTM A897 Austempered ductile iron castings

All castings specified shall withstand a maximum tire pressure of 250 psi and maximum load of 30,000 lbs.

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings specified.

Each frame and cover unit shall be provided with fastening members to prevent it from being dislodged by traffic, but which will allow easy removal for access to the structure.

All castings shall be thoroughly cleaned. After fabrication, structural steel units shall be galvanized to meet the requirements of ASTM A123.

Each cover shall have the word "ELECTRIC" or other approved designation cast on it. Each frame and cover shall be as shown on the plans or approved equivalent. No cable notches are required.

Each manhole shall be provided with a "DANGER -- PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER" safety warning sign as detailed in the Contract Documents and in accordance with OSHA 1910.146 (c)(2).

115-2.8 Ladders. Ladders, if specified, shall be galvanized steel or as shown on the plans.

115-2.9 Reinforcing steel. All reinforcing steel shall be deformed bars of new billet steel meeting the requirements of ASTM A615, Grade 60.

115-2.10 Bedding/special backfill. Bedding or special backfill shall be as shown on the plans.

115-2.11 Flowable backfill. Flowable material used to backfill shall conform to the requirements of Item P-153, Controlled Low Strength Material.

115-2.12 Cable trays. Cable trays shall be of plastic . Cable trays shall be located as shown on the plans.

115-2.13 Plastic conduit. Plastic conduit shall comply with Item L-110, Airport Underground Electrical Duct Banks and Conduits.

115-2.14 Conduit terminators. Conduit terminators shall be pre-manufactured for the specific purpose and sized as required or as shown on the plans.

115-2.15 Pulling-in irons. Pulling-in irons shall be manufactured with 7/8-inch (22 mm) diameter hot-dipped galvanized steel or stress-relieved carbon steel roping designed for concrete applications (7 strand, 1/2-inch (12 mm) diameter with an ultimate strength of 270,000 psi (1862 MPa)). Where stress-relieved carbon steel roping is used, a rustproof sleeve shall be installed at the hooking point and all exposed surfaces shall be encapsulated with a polyester coating to prevent corrosion.

115-2.16 Ground rods. Ground rods shall be one piece, copper clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case shall they be less than 8 feet (2.4 m) long nor less than 5/8 inch (16 mm) in diameter.

CONSTRUCTION METHODS

115-3.1 Unclassified excavation. It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Damage to utility lines, through lack of care in excavating, shall be repaired or replaced to the satisfaction of the RPR without additional expense to the Owner.

The Contractor shall perform excavation for structures and structure footings to the lines and grades or elevations shown on the plans or as staked by the RPR. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown.

All excavation shall be unclassified and shall be considered incidental to Item L-115. Dewatering necessary for structure installation and erosion per federal, state, and local requirements is incidental to Item L-115.

Boulders, logs and all other objectionable material encountered in excavation shall be removed. All rock and other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped or serrated, as directed by the RPR. All seams, crevices, disintegrated rock and thin strata shall be removed. When concrete is to rest on a surface other than rock, special care shall be taken not to disturb the bottom of the excavation. Excavation to final grade shall not be made until just before the concrete or reinforcing is to be placed.

The Contractor shall provide all bracing, sheeting and shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheeting and shoring shall be included in the unit price bid for the structure.

Unless otherwise provided, bracing, sheeting and shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall be effected in a manner that will not disturb or mar finished masonry. The cost of removal shall be included in the unit price bid for the structure.

After each excavation is completed, the Contractor shall notify the RPR. Structures shall be placed after the RPR has approved the depth of the excavation and the suitability of the foundation material.

Prior to installation the Contractor shall provide a minimum of 6 inches (150 mm) of sand or a material approved by the RPR as a suitable base to receive the structure. The base material shall be compacted and graded level and at proper elevation to receive the structure in proper relation to the conduit grade or ground cover requirements, as indicated on the plans.

115-3.2 Concrete structures. Concrete structures shall be built on prepared foundations conforming to the dimensions and form indicated on the plans. The concrete and construction methods shall conform to the requirements specified in Item P-610. Any reinforcement required shall be placed as indicated on the plans and shall be approved by the RPR before the concrete is placed.

115-3.3 Precast unit installations. Precast units shall be installed plumb and true. Joints shall be made watertight by use of sealant at each tongue-and-groove joint and at roof of manhole. Excess sealant shall be removed and severe surface projections on exterior of neck shall be removed.

115-3.4 Placement and treatment of castings, frames and fittings. All castings, frames and fittings shall be placed in the positions indicated on the Plans or as directed by the RPR and shall be set true to line and to correct elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place and position before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

Field connections shall be made with bolts, unless indicated otherwise. Welding will not be permitted unless shown otherwise on the approved shop drawings and written approval is granted by the casting manufacturer. Erection equipment shall be suitable and safe for the workman. Errors in shop fabrication or deformation resulting from handling and transportation that prevent the proper assembly and fitting of parts shall be reported immediately to the RPR and approval of the method of correction shall be obtained. Approved corrections shall be made at Contractor's expense.

Anchor bolts and anchors shall be properly located and built into connection work. Bolts and anchors shall be preset by the use of templates or such other methods as may be required to locate the anchors and anchor bolts accurately.

Pulling-in irons shall be located opposite all conduit entrances into structures to provide a strong, convenient attachment for pulling-in blocks when installing cables. Pulling-in irons shall be set directly into the concrete walls of the structure.

115-3.5 Installation of ladders. Ladders shall be installed such that they may be removed if necessary. Mounting brackets shall be supplied top and bottom and shall be cast in place during fabrication of the structure or drilled and grouted in place after erection of the structure.

115-3.6 Removal of sheeting and bracing. In general, all sheeting and bracing used to support the sides of trenches or other open excavations shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a structure shall be withdrawn, unless otherwise directed, before more than 6 inches (150 mm) of material is placed above the top of the structure and before any bracing is removed. Voids left by the sheeting shall be carefully refilled with

selected material and rammed tight with tools especially adapted for the purpose or otherwise as may be approved.

The RPR may direct the Contractor to delay the removal of sheeting and bracing if, in his judgment, the installed work has not attained the necessary strength to permit placing of backfill.

115-3.7 Backfilling. After a structure has been completed, the area around it shall be backfilled in horizontal layers not to exceed 6 inches (150 mm) in thickness measured after compaction to the density requirements in Item P-152. Each layer shall be deposited all around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the RPR.

Backfill shall not be placed against any structure until approval is given by the RPR. In the case of concrete, such approval shall not be given until tests made by the laboratory under supervision of the RPR establish that the concrete has attained sufficient strength to provide a factor of safety against damage or strain in withstanding any pressure created by the backfill or the methods used in placing it.

Where required, the RPR may direct the Contractor to add, at his own expense, sufficient water during compaction to assure a complete consolidation of the backfill. The Contractor shall be responsible for all damage or injury done to conduits, duct banks, structures, property or persons due to improper placing or compacting of backfill.

115-3.8 Connection of duct banks. To relieve stress of joint between concrete-encased duct banks and structure walls, reinforcement rods shall be placed in the structure wall and shall be formed and tied into duct bank reinforcement at the time the duct bank is installed.

115-3.9 Grounding. A ground rod shall be installed in the floor of all concrete structures so that the top of rod extends 6 inches (150 mm) above the floor. The ground rod shall be installed within one foot (30 cm) of a corner of the concrete structure. Ground rods shall be installed prior to casting the bottom slab. Where the soil condition does not permit driving the ground rod into the earth without damage to the ground rod, the Contractor shall drill a 4-inch (100 mm) diameter hole into the earth to receive the ground rod. The hole around the ground rod shall be filled throughout its length, below slab, with Portland cement grout. Ground rods shall be installed in precast bottom slab of structures by drilling a hole through bottom slab and installing the ground rod. Bottom slab penetration shall be sealed watertight with Portland cement grout around the ground rod.

A grounding bus of 4/0 bare stranded copper shall be exothermically bonded to the ground rod and loop the concrete structure walls. The ground bus shall be a minimum of one foot (30 cm) above the floor of the structure and separate from other cables. No. 2 American wire gauge (AWG) bare copper pigtailed shall bond the grounding bus to all cable trays and other metal hardware within the concrete structure. Connections to the grounding bus shall be exothermic. If an exothermic weld is not possible, connections to the grounding bus shall be made by using connectors approved for direct burial in soil or concrete per UL 467. Hardware connections may be mechanical, using a lug designed for that purpose.

115-3.10 Cleanup and repair. After erection of all galvanized items, damaged areas shall be repaired by applying a liquid cold-galvanizing compound per MIL-P-21035. Surfaces shall be prepared and compound applied per the manufacturer's recommendations.

Prior to acceptance, the entire structure shall be cleaned of all dirt and debris.

115-3.11 Restoration. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt and rubbish from the site. The Contractor shall restore all disturbed areas equivalent to or better than their original condition. All sodding, grading and restoration shall be considered incidental to the respective Item L-115 pay item.

The Contractor shall grade around structures as required to provide positive drainage away from the structure.

Areas with special surface treatment, such as roads, sidewalks, or other paved areas shall have backfill compacted to match surrounding areas, and surfaces shall be repaired using materials comparable to original materials.

Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

After all work is completed, the Contractor shall remove all tools and other equipment, leaving the entire site free, clear and in good condition.

115-3.12 Inspection. Prior to final approval, the electrical structures shall be thoroughly inspected for conformance with the plans and this specification. Any indication of defects in materials or workmanship shall be further investigated and corrected. The earth resistance to ground of each ground rod shall not exceed 25 ohms. Each ground rod shall be tested using the fall-of-potential ground impedance test per American National Standards Institute / Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81. This test shall be performed prior to establishing connections to other ground electrodes.

115-3.13 Manhole elevation adjustments. The Contractor shall adjust the tops of existing manholes in areas designated in the Contract Documents to the new elevations shown. The Contractor shall be responsible for determining the exact height adjustment required to raise or lower the top of each manhole to the new elevations. The existing top elevation of each manhole to be adjusted shall be determined in the field and subtracted/added from the proposed top elevation.

The Contractor shall remove/extend the existing top section or ring and cover on the manhole structure or manhole access. The Contractor shall install precast concrete sections or grade rings of the required dimensions to adjust the manhole top to the new proposed elevation or shall cut the existing manhole walls to shorten the existing structure, as required by final grades. The Contractor shall reinstall the manhole top section or ring and cover on top and check the new top elevation.

The Contractor shall construct a concrete slab around the top of adjusted structures located in graded areas that are not to be paved. The concrete slab shall conform to the dimensions shown on the plans.

115-3.14 Duct extension to existing ducts. Where existing concrete encased ducts are to be extended, the duct extension shall be concrete encased plastic conduit. The fittings to connect the ducts together shall be standard manufactured connectors designed and approved for the purpose. The duct extensions shall be installed according to the concrete encased duct detail and as shown on the plans.

METHOD OF MEASUREMENT

115-4.1 Electrical manholes and junction structures shall be measured by each unit completed in place and accepted. The following items shall be included in the price of each unit: All required excavation and dewatering;; sheeting and bracing; all required backfilling with on-site materials; restoration of all surfaces and finished grading and turfing; all required connections; temporary cables and connections; and ground rod testing

115-4.2 Manhole elevation adjustments shall be measured by the completed unit installed, in place, completed, and accepted. Separate measurement shall not be made for the various types and sizes.

BASIS OF PAYMENT

115-5.1 The accepted quantity of electrical manholes and junction structures will be paid for at the Contract unit price per each, complete and in place. This price shall be full compensation for furnishing

all materials and for all preparation, excavation, backfilling and placing of the materials, furnishing and installation of appurtenances and connections to duct banks and other structures as may be required to complete the item as shown on the plans and for all labor, equipment, tools and incidentals necessary to complete the structure.

115-5.2 Payment shall be made at the contract unit price for manhole elevation adjustments. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary, including but not limited to, spacers, concrete, rebar, dewatering, excavating, backfill, topsoil, sodding and pavement restoration, where required, to complete this item as shown in the plans and to the satisfaction of the RPR.

Payment will be made under:

Item L-115-5.1	Remove Existing Electric Handhole – per each
Item L-115-5.2	Remove and Dispose of Duct Marker – per each
Item L-115-5.3	Install L-867E Electric Handhole in Turf– per each
Item L-115-5.4	Install 4’x4’ Concrete Junction Structure in Turf– per each
Item L-115-5.5	Install 4’x4’ Load Rated Concrete Junction Structure in Proposed Pavement– per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

American National Standards Institute / Insulated Cable Engineers Association (ANSI/ICEA)

ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System
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Advisory Circular (AC)

AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program

Commercial Item Description (CID)

A-A 59544	Cable and Wire, Electrical (Power, Fixed Installation)
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ASTM International (ASTM)

ASTM A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A48	Standard Specification for Gray Iron Castings

ASTM A123	Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
ASTM A283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM A536	Standard Specification for Ductile Iron Castings
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A897	Standard Specification for Austempered Ductile Iron Castings
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C206	Standard Specification for Finishing Hydrated Lime
FAA Engineering Brief (EB)	
EB #83	In Pavement Light Fixture Bolts
Mil Spec	
MIL-P-21035	Paint High Zinc Dust Content, Galvanizing Repair
National Fire Protection Association (NFPA)	
NFPA-70	National Electrical Code (NEC)

END OF ITEM L-115

Item L-125 Installation of Airport Lighting Systems**DESCRIPTION**

125-1.1 This item shall consist of airport lighting systems furnished and installed in accordance with this specification, the referenced specifications, and the applicable advisory circulars (ACs). The systems shall be installed at the locations and in accordance with the dimensions, design, and details shown in the plans. This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the RPR.

EQUIPMENT AND MATERIALS**125-2.1 General.**

a. Airport lighting equipment and materials covered by Federal Aviation Administration (FAA) specifications shall be certified under the Airport Lighting Equipment Certification Program in accordance with AC 150/5345-53, current version. FAA certified airfield lighting shall be compatible with each other to perform in compliance with FAA criteria and the intended operation. If the Contractor provides equipment that does not perform as intended because of incompatibility with the system, the Contractor assumes all costs to correct the system for to operate properly.

b. Manufacturer's certifications shall not relieve the Contractor of their responsibility to provide materials in accordance with these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

c. All materials and equipment used shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Clearly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be clearly made with arrows or circles (highlighting is not acceptable). The Contractor shall be responsible for delays in the project accruing directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be submitted in electronic PDF format, tabbed by specification section. The RPR reserves the right to reject any or all equipment, materials or procedures, which, in the RPR's opinion, does not meet the system design and the standards and codes, specified herein.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. All LED light fixtures, with the exception of obstruction lighting (AC 150/5345-43), must be warranted by the manufacturer for a minimum of 4 years after date of installation inclusive of all electronics. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

EQUIPMENT AND MATERIALS

125-2.2 Conduit/Duct. Conduit shall conform to Specification Item L-110 Airport Underground Electrical Duct Banks and Conduits.

125-2.3 Cable and Counterpoise. Cable and Counterpoise shall conform to Item L-108 Underground Power Cable for Airports.

125-2.4 Tape. Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88 respectively, as manufactured by 3M Company or an approved equal.

125-2.5 Cable Connections. Cable Connections shall conform to Item L-108 Installation of Underground Cable for Airports.

125-2.6 Retroreflective Markers. Not required.

125-2.7 Runway and Taxiway Lights. Runway and taxiway lights shall conform to the requirements of AC 150/5345-46. Lamps shall be of size and type indicated, or as required by fixture manufacturer for each lighting fixture required under this contract. Filters shall be of colors conforming to the specification for the light concerned or to the standard referenced.

Lights

Type	Class	Mode	Style	Option	Base	Filter	Transformer	Notes
L-861T	2	1	N/A	N/A	L-867B	Blue	L-830	30" Ht.

125-2.8 Runway and Taxiway Signs. Runway and Taxiway Guidance Signs should conform to the requirements of AC 150/5345-44.

Signs

Type	Size	Style	Class	Mode	Notes
L-858	2	2	2	1	

125-2.9 Runway End Identifier Light (REIL). Not required.

125-2.10 Precision Approach Path Indicator (PAPI). Not required.

125-2.11 Circuit Selector Cabinet. Not required

125-2.12 Light Base and Transformer Housings. Light Base and Transformer Housings should conform to the requirements of AC 150/5345-42. Light bases shall be Type L-867, Class 1, Size B shall be provided as indicated or as required to accommodate the fixture or device installed thereon. Base plates, cover plates, and adapter plates shall be provided to accommodate various sizes of fixtures.

125-2.13 Isolation Transformers. Isolation Transformers shall be Type L-830, size as required for each installation. Transformer shall conform to AC 150/5345-47.

INSTALLATION

125-3.1 Installation. The Contractor shall furnish, install, connect and test all equipment, accessories, conduit, cables, wires, buses, grounds and support items necessary to ensure a complete and operable airport lighting system as specified here and shown in the plans.

The equipment installation and mounting shall comply with the requirements of the National Electrical Code and state and local code agencies having jurisdiction.

The Contractor shall install the specified equipment in accordance with the applicable advisory circulars and the details shown on the plans.

125-3.2 Testing. All lights shall be fully tested by continuous operation for not less than 24 hours as a completed system prior to acceptance. The test shall include operating the constant current regulator in each step not less than 10 times at the beginning and end of the 24-hour test. The fixtures shall illuminate properly during each portion of the test.

125-3.3 Shipping and Storage. Equipment shall be shipped in suitable packing material to prevent damage during shipping. Store and maintain equipment and materials in areas protected from weather and physical damage. Any equipment and materials, in the opinion of the RPR, damaged during construction or storage shall be replaced by the Contractor at no additional cost to the owner. Painted or galvanized surfaces that are damaged shall be repaired in accordance with the manufacturer's recommendations.

125-3.4 Elevated and In-pavement Lights. Water, debris, and other foreign substances shall be removed prior to installing fixture base and light.

A jig or holding device shall be used when installing each light fixture to ensure positioning to the proper elevation, alignment, level control, and azimuth control. Light fixtures shall be oriented with the light beams parallel to the runway or taxiway centerline and facing in the required direction. The outermost edge of fixture shall be level with the surrounding pavement. Surplus sealant or flexible embedding material shall be removed. The holding device shall remain in place until sealant has reached its initial set.

METHOD OF MEASUREMENT

125-4.1. Taxiway lights will be measured by the number of each type installed as completed units in place, ready for operation, and accepted by the RPR. Guidance signs will be measured by the number of each type and size installed as completed units, in place, ready for operation, and accepted by the RPR.

BASIS OF PAYMENT

125-5.1 Payment will be made at the Contract unit price for each complete runway or taxiway light, guidance sign, reflective marker, runway end identification light, precision approach path indicator, or abbreviated precision approach path indicator installed by the Contractor and accepted by the RPR. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

Payment will be made under:

Item L-125-5.1	Airfield Signage (L-858 LED, Size 2) with Foundation with L-830 Transformer – per each
Item L-125-5.2	Base Mounted Taxiway Edge Lights (L-861T LED) with L-830 Transformer – per each
Item L-125-5.3	Remove and Relocate Existing Base Mounted Taxiway Edge Light and Base – per each
Item L-125-5.4	Retroreflective Taxiway Edge Marker (L-853) - per each

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5340-18	Standards for Airport Sign Systems
AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-5	Circuit Selector Switch
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-28	Precision Approach Path Indicator (PAPI) Systems
AC 150/5345-39	Specification for L-853, Runway and Taxiway Retroreflective Markers
AC 150/5345-42	Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories
AC 150/5345-44	Specification for Runway and Taxiway Signs
AC 150/5345-46	Specification for Runway and Taxiway Light Fixtures
AC 150/5345-47	Specification for Series to Series Isolation Transformers for Airport Lighting Systems
AC 150/5345-51	Specification for Discharge-Type Flashing Light Equipment
AC 150/5345-53	Airport Lighting Equipment Certification Program

Engineering Brief (EB)

EB No. 67	Light Sources Other than Incandescent and Xenon for Airport and Obstruction Lighting Fixtures
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END OF ITEM L-125

**ITEM X-600 REPLACE UNKNOWN CABLES AND COORDINATE WITH CENTRAL MAINE
POWER AND COMMUNICATION PROVIDER, INVESTIGATE GAS LINE DEPTH**

CONTRACT DOCUMENTS

600-0.1 This section of these Specifications is part of the Contract Documents as defined in the General Provisions. All applicable parts of the balance of the Contract Documents are equally as binding for this section as for all other sections.

DESCRIPTION

600-1.1 This work shall consist of the coordination and payment for labor and materials required to complete the following:

1. Identify and replace the overhead communication and electric cables from the overhead wires serving the Giguere Equipment Storage Building to new underground conduits with new cables and terminating in the existing building's electrical and communication termination locations.
2. Coordinate the service connection with Central Maine Power and the local Communication Provider at both the Giguere Equipment Storage Building and the new T-Hangar.
3. Investigate the depth of the existing gas line below the access drive to confirm 36-inch clearance from the pavement to the top of the gas line.

MATERIALS

600-2.1 Materials are unknown but new communication and electric cables shall be the type and size recommended by the utilities.

CONSTRUCTION DETAILS

600-3.1 Contractor shall coordinate all electrical work and prepare all additional paperwork associated with the new electrical service to buildings with CMP and the communications provider, as shown on the plans or as directed by the Engineer. Work shall be scheduled for minimum interruption of service and must meet the approval of the utility company and the Engineer.

600-3.2 Contractor shall coordinate all gas line depth investigation work with the local gas line provider, Unitol. The point of contact is Sheena Mason, Senior Engineer (207) 752-1551.

METHOD OF MEASUREMENT

600-4.1 The work performed by the utility and contractor shall be paid for the actual cost provided applied against the allowance provided for the item. The measurement for this work will be for all items necessary to complete the connection of power and communications; and investigate the gas line depth. The Utility Allowance work shall be all inclusive for any work and materials necessary to complete the item to the satisfaction of the RPR. For work performed by third party utility companies; measurement for payment will be made using actual utility company billing(s)/invoice(s) for the work obtained by the Contractor. No payment will be made until the billing(s)/invoice(s) is submitted with proof of payment of the invoice.

BASIS OF PAYMENT

600-5.1 This work shall include payment based on actual cost invoiced to the Contractor from the utility companies. Utility company billing(s)/invoice(s) shall be attached to payment request. The Contractor will be allowed to include a mark-up, limited to fifteen percent (15%) of the utility invoice amount.

Various pay items are required to match funding sources.

Payment will be made under:

X-600-1	Replace Unknown Communication and Electric Cables – Allowance
X-600-2	Investigate Depth of Gas Line – Allowance
X-600-3	Service Connection Coordination With CMP (Taxilane & Service Road) – Allowance
X-600-4	Service Connection Coordination With CMP (T-Hangar) – Allowance
X-600-5	Service Connection Coordination With Communication Provider– Allowance

END OF ITEM X-600

ITEM X-800 PERMANENT VEHICLE TRAFFIC SIGN**CONTRACT DOCUMENTS**

800-0.1 This section of these Specifications is part of the Contract Documents as defined in the General Provisions. All applicable parts of the balance of the Contract Documents are equally as binding for this section as for all other sections.

DESCRIPTION

800-1.1 This work shall consist of installation of permanent vehicle traffic signs.

MATERIALS

800-2.1 Materials are as shown on the plans. All new permanent vehicle traffic signs shall also conform to the requirements of the latest version of the Manual for Uniform Traffic Control Devices and MaineDOT for the applicable sign details shown on the plans. The sign shall be installed at the location shown on the plans. The installation of the sign shall be plumb to the ground surface.

CONSTRUCTION DETAILS

800-3.1 Contractor shall install permanent vehicle traffic signs as shown on the plans.

METHOD OF MEASUREMENT

800-4.1 Permanent vehicle traffic signs shall be measured by each sign installed as shown on the plans.

BASIS OF PAYMENT

800-5.1 Payment will be made at the Contract unit price for each sign unit complete, installed by the Contractor and accepted by the RPR. This payment will be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete this item.

Payment will be made under:

X-800-1 Permanent Vehicle Traffic Sign – Each

END OF ITEM X-800

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ITEM B-001 CONSTRUCT T-HANGAR BUILDING**CONTRACT DOCUMENTS**

001-0.1 This section of these Specifications is part of the Contract Documents as defined in the General Provisions. All applicable parts of the balance of the Contract Documents are equally as binding for this section as for all other sections.

DESCRIPTION

001-1.1 This item shall consist of work to construct the T-hangar building and Restroom in its entirety, complete with working systems and ready for occupancy by the Owner. In general, this includes all work within a five (5) feet perimeter of the outside of the building foundations and other work as shown on the plans, as specified here-in and as directed by the Engineer. The T-hangar building site work will be measured for payment using unit prices measured under their respective Item Numbers.

Site Work utilizes FAA specifications for the taxilane, apron and related work items.

Site Work building utilities are included under respective non-FAA Division 26 and 33 specifications.

For additional information regarding scope of work can found in Specification M-001 and on the Contract plans.

In general T-hangar work includes but is not limited to:

- Furnishing all required submittals and schedules
- Preparing and submitting all permit applications to the City of Auburn Maine.
 - Commercial Construction, Fence, and Electrical permits are required. The Contractor shall include labor and costs related to preparing the applications and paying fees to the City of Auburn Maine. Applications shall be applied for through the City of Auburn at [SmartGOV permit portal](#). Permit fees are available at [2022 planning permitting all fee schedule.pdf](#)
 - Engineering and Public Work Private Property Excavation and Fill permits are required. The Contractor shall include labor and costs related to preparing the application and paying fees to the City of Auburn Maine. Applications shall be applied for through the City of Auburn at [SmartGOV permit portal](#). Permit fees are available by calling the Public Works Department at 207.333.6601 x2173.
- All required shoring for excavation
- Excavation and disposal of surplus excavated material
- Foundation for the T-hangar building
- Structural back fill of T-hangar building foundations
- Backfill and compaction of the T-hangar building foundations
- T-hangar building structural steel
- T-hangar building roof construction
- T-hangar building slab on grade with vapor retarder
- All T-hangar , wall systems, doors, bi-fold doors and other features
- All T-hangar building interior partitions wall coverings, doors and glazing
- All T-hangar building ceilings

- All T-hangar building interior finishes: flooring, mill work, doors, windows, signage, hardware, wall and ceiling treatments and other work
- All T-hangar building interior and exterior electrical wiring, lighting, and electrical equipment
- All T-hangar building interior plumbing, and mechanical systems, including heating, cooling and ventilation
- All other work to complete the finished buildings and other work not specified above to the satisfaction of the Owner.

In general Restroom work includes but is not limited to:

- Preparing and submitting all permit applications to the City of Auburn Maine.
 - Internal Plumbing permit application is required. The Contractor shall include all labor and costs related to preparing the applications and paying fees to the City of Auburn Maine. Applications shall be applied for through the City of Auburn at [SmartGOV permit portal](#). Permit fees are available at [2022 planning permitting all fee schedule.pdf](#)
 - Note Planning Board indicated that a Mechanical permit is not required for the project.
 - Engineering and Public Work Public Property Excavation is required for work in Flightline Drive. The Contractor shall include labor and costs related to preparing the application and paying fee to the City of Auburn Maine. Applications shall be applied for through the City of Auburn at [SmartGOV permit portal](#). Permit fees are available by calling the Public Works Department at 207.333.6601 x2173. The City of Auburn requires Contractor's to guarantee the work in Flightline Drive for a period of 3-years. The City of Auburn does not allow excavation in Flightline Drive, a public way, between November 15 and April 15. Contractor shall plan work accordingly.
- Restroom construction including all required insulation for a heated space, interior walls, toilets, lavatories, restroom appurtenances (i.e. grab bar, mirror, partitions and similar), plumbing, heaters, ventilation and electrical systems.
- Restroom work is depicted on Architectural drawings entitled "Enlarged Restroom Plans" and "Enlarged Restroom Elevations"; on Plumbing drawings entitled "Plumbing Floor Plan", "Plumbing Isometric Views", and "Plumbing Details"; and Electrical drawings restroom specific requirements shown on "Power & Telecom Plan", and "Lighting Plan".
- All other work to complete the restroom not specified above to the satisfaction of the Owner.

MATERIALS

001-2.1 GENERAL. Refer to applicable Construction Specifications Institute (CSI) formatted specification sections contained within the project specifications.

Refer to drawings and specification sections contained within the project specifications.

CONSTRUCTION METHODS

001-3.1 GENERAL. Refer to applicable CSI formatted specification section contained within the project specifications.

Refer to applicable specification section contained within the project specifications.

METHOD OF MEASUREMENT

001-4.1 T-HANGAR BUILDING. The work to construct the T-Hangar Building shall be measured for payment per the lump sum items listed below, complete with working systems, ready for occupancy and use by the Owner including but limited to work referenced in section 001-1.1 above, constructed to the satisfaction of the Owner.

001-4.2 RESTROOM. The work to construct the restroom shall be measured for payment per the lump sum items listed below, complete with working systems, ready for the occupancy and use by the Owner including but limited to work referenced in section 001-1.1 above, constructed to the satisfaction of the Owner.

Permit applications and fees are not measured separately.

BASIS OF PAYMENT

001-5.1 T-HANGAR BUILDING – ARCHITECTURAL. Payment will be made at the Contract lump sum prices for the construction of the T-hangar building architectural **including the contractor engineered metal building** measured as specified above, which prices and the payment thereof shall constitute full compensation for all labor, materials, equipment, incidentals and expenses necessary to the satisfactory completion of the T-hangar building construction to the satisfaction of the Engineer. Architectural systems related to the restroom are **NOT INCLUDED** in this item.

001-5.2 T-HANGAR BUILDING – FOUNDATION AND SLAB. Payment will be made at the Contract lump sum prices for the construction of the T-hangar building foundation and slab measured as specified above, which prices and the payment thereof shall constitute full compensation for all labor, materials, equipment, incidentals and expenses necessary to the satisfactory completion of the T-hangar building construction to the satisfaction of the Engineer.

001-5.3 T-HANGAR BUILDING – ELECTRICAL. Payment will be made at the Contract lump sum prices for the construction of the T-hangar building electrical measured as specified above, which prices and the payment thereof shall constitute full compensation for all labor, materials, equipment, incidentals and expenses necessary to the satisfactory completion of the T-hangar building construction to the satisfaction of the Engineer. Electrical related to the restroom are **NOT INCLUDED** in this item.

001-5.4 T-HANGAR BUILDING – GENERAL BID (See Note 1). Payment will be made at the Contract lump sum prices for the construction of the T-hangar building systems not included in the other T-Hangar Building systems identified measured as specified above, which prices and the payment thereof shall constitute full compensation for all labor, materials, equipment, incidentals and expenses necessary to the satisfactory completion of the T-hangar building construction to the satisfaction of the Engineer. General Bid items related to the restroom are **NOT INCLUDED** in this item.

Note 1: The General bid for the T-hangar building shall include all work which is not included in the other lump sum payment items to complete the T-hangar building in its entirety and ready for occupancy and use by the Owner.

001-5.5 RESTROOM – ARCHITECTURAL. Payment will be made at the Contract lump sum prices for the construction of the **restroom** architectural measured as specified above, which prices and the payment thereof shall constitute full compensation for all labor, materials, equipment, incidentals and expenses necessary to the satisfactory completion of the **restroom** construction to the satisfaction of the Engineer. Architectural systems related to the T-Hangar are **NOT INCLUDED** in this item.

001-5.6 RESTROOM – PLUMBING. Payment will be made at the Contract lump sum prices for the construction of the **restroom** plumbing measured as specified above, which prices and the

payment thereof shall constitute full compensation for all labor, materials, equipment, incidentals and expenses necessary to the satisfactory completion of the restroom construction to the satisfaction of the Engineer.

001-5.7 RESTROOM – ELECTRICAL. Payment will be made at the Contract lump sum prices for the construction of the **restroom** electrical measured as specified above, which prices and the payment thereof shall constitute full compensation for all labor, materials, equipment, incidentals and expenses necessary to the satisfactory completion of the restroom construction to the satisfaction of the Engineer. Electrical related to the T-Hangar are **NOT INCLUDED** in this item.

001-5.8 RESTROOM – GENERAL BID (See Note 2). Payment will be made at the Contract lump sum prices for the construction of the **restroom** not included in the other restroom identified measured as specified above, which prices and the payment thereof shall constitute full compensation for all labor, materials, equipment, incidentals and expenses necessary to the satisfactory completion of the restroom construction to the satisfaction of the Engineer. General bid costs related to the T-Hangar are **NOT INCLUDED** in this item.

Note 2: The General bid for the Restroom shall include all work which is not included in the other lump sum payment items to complete the Restroom in its entirety and ready for occupancy and use by the Owner.

Permit applications and fees are not paid for but shall be considered incidental to the project.

Separate lump sum payment will be made for the following:

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
B-001-1	T-HANGAR BUILDING – ARCHITECTURAL SYSTEMS	Per Lump Sum
B-001-2	T-HANGAR BUILDING – FOUNDATION AND SLAB SYSTEMS	Per Lump Sum
B-001-3	T-HANGAR BUILDING – ELECTRICAL SYSTEMS	Per Lump Sum
B-001-4	T-HANGAR BUILDING – GENERAL BID	Per Lump Sum
B-001-5	RESTROOM – ARCHITECTURAL SYSTEMS	Per Lump Sum
B-001-6	RESTROOM – PLUMBING SYSTEMS	Per Lump Sum
B-001-7	RESTROOM – ELECTRICAL SYSTEMS	Per Lump Sum
B-001-8	RESTROOM – GENERAL BID	Per Lump Sum

END OF ITEM B-001

SECTION 011000
SUMMARY

PART 1 GENERAL**1.01 PROJECT**

- A. Project Name: Construct New T-Hangar and Taxilane
- B. Owner's Name: Auburn-Lewiston Municipal Airport.
- C. Engineer's Name: McFarland Johnson, Inc.
- D. This project includes the construction of a new 10-bay t-hangar, related utilities, adjacent apron pavement, and a taxilane. The project also includes an alternative additive for a motorized gate. Construction will include erosion control best management

1.02 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.03 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
 - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the site is unoccupied.
 - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
 - 3. Prevent accidental disruption of utility services to other facilities.

1.04 SPECIFICATION SECTIONS APPLICABLE TO EVERY CONTRACT

- A. Unless otherwise noted, provisions of the sections listed below apply to every contract. Specific items of work listed under individual contract descriptions constitute exceptions.
- B. Section 013000 - Administrative Requirements.

- C. Section 013216 - Construction Progress Schedule.
- D. Section 014000 - Quality Requirements.
- E. Section 014100 – Regulatory Requirements
- F. Section 014219 - Reference Standards.
- G. Section 015000 - Temporary Facilities and Controls.
- H. Section 016000 - Product Requirements.
- I. Section 017419 – Construction Waste Management and Disposal
- J. Section 017000 - Execution and Closeout Requirements.
- K. Section 017800 - Closeout Submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 012513
SUBSTITUTION PROCEDURES**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

- A. Section 004325 - Substitution Request Form - During Procurement: Required form for substitution requests made prior to award of contract (During procurement).
- B. Section 006325 - Substitution Request Form - During Construction: Required form for substitution requests made after award of contract (During construction).

1.03 DEFINITIONS

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 GENERAL REQUIREMENTS**

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
 - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
 - 6. Agrees to reimburse Owner and Engineer for review or redesign services associated with re-approval by authorities.
- B. A Substitution Request for specified installer constitutes a representation that the submitter:
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
- D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.

1. Forms included in the Project Manual are adequate for this purpose, and must be used.
- E. Limit each request to a single proposed substitution item.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions:
- B. Submittal Form (before award of contract):

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
 1. Submit substitution requests by completing the form in Section 006325; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. Engineer will consider requests for substitutions only within 15 days after date of Agreement.

3.04 RESOLUTION

- A. Engineer may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Engineer will notify Contractor in writing of decision to accept or reject request.

3.05 ACCEPTANCE

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

- A. See Section 017800 - Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL**1.1 GENERAL PROVISIONS**

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made part of this Section.

1.2 SECTION INCLUDES

- A. General administrative requirements.
- B. Electronic document submittal service.
- C. Pre-construction conference.
- D. Site mobilization conference.
- E. Progress meetings.
- F. Special meetings.
- G. Construction progress documentation.
- H. Daily Construction Reports
- I. Work Documentation - Periodic Site Observations
- J. Pre-Construction Inspection and Audio Video Recording Site Conditions
- K. Progress photographs.
- L. Requests for Interpretation (RFI) procedures.
- M. Submittals
 - 1. Submission Requirements
 - 2. Submittal Schedule
 - 3. Submittal Coordination
 - 4. Submittals for review, information, and project closeout.
 - 5. Number of copies of submittals.
 - 6. Submittal procedures.
 - 7. Submittal Review

1.3 RELATED REQUIREMENTS

- A. Section 01 32 16 - CONSTRUCTION PROGRESS SCHEDULE: Form, content, and administration of schedules.
- B. Section 01 60 00 - PRODUCT REQUIREMENTS: General product requirements.

- C. Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS: Additional coordination requirements.
- D. Section 01 78 00 - CLOSEOUT SUBMITTALS: Project record documents; operation and maintenance data; warranties and bonds.

1.4 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Architect:
 - 1. Requests for Interpretation (RFI).
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Design data.
 - 6. Manufacturer's instructions and field reports.
 - 7. Applications for payment and change order requests.
 - 8. Progress schedules.
 - 9. Coordination drawings.
 - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
 - 11. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
 - 1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation (RFIs), progress documentation, contract modification documents (e.g., supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punch list, and any other document any participant wishes to make part of the project record.
 - 2. Contractor and Architect are required to use this service.
 - 3. It is Contractor's responsibility to submit documents in allowable format.
 - 4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
 - 5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as

Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.

6. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
 7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the Contract Sum.
- C. Submittal Service: Use one of the following:
1. Submittal Exchange (tell: 1-800-714-0024): www.submittalexchange.com/#sle.
 2. EADOC LLC (tel: 1-877-305-3844): www.eadocsoftware.com/#sle.
 3. Newforma ConstructEx: www.newforma.com/products/constructex/#sle.
 4. Viewpoint: www.viewpoint.com/viewpointone/#sle.
 5. Procore: www.procore.com/#sle.
 6. Or similar system approved by Architect and Owner.
- D. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.
- E. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.2 PRE-CONSTRUCTION CONFERENCE

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
1. Owner.
 2. Architect.
 3. Contractor.
 4. Local FAA
 5. Other persons are required to attend as the Architect may direct or the Contractor may wish to have present.
- C. Agenda:
1. Execution of Owner-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 5. Submission of initial Submittal schedule.
 6. Designation of personnel representing the parties to Contract and Architect.

7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 8. Scheduling.
 9. Review of Construction Safety and Phasing Plan (CSPP).
- D. Record minutes and distribute copies within five days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.3 SITE MOBILIZATION CONFERENCE

- A. In addition to the pre-construction conference, the Architect may schedule meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
1. Contractor.
 2. Owner.
 3. Architect.
 4. Contractor's superintendent.
 5. Major subcontractors.
 6. Other persons are required to attend as the Architect may direct or the Contractor may wish to have present.
- C. Agenda:
1. Use of premises by Owner, Contractor, and subcontractors(s)
 2. Owner's requirements.
 3. Construction facilities and controls provided by Owner.
 4. Temporary utilities provided by Owner.
 5. Survey and building layout.
 6. Barricading and protection of the public, dust barriers.
 7. Security and housekeeping procedures.
 8. Schedules.
 9. Project Coordination
 10. Application for payment procedures.
 11. Procedures for testing and inspection.
 12. Procedures for maintaining record documents.
 13. Requirements for start-up of equipment.
 14. Inspection and acceptance of equipment put into service during construction period.
 15. Review of Construction Safety and Phasing Plan (CSPP).
- D. Record minutes and distribute copies within five days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.4 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance
 - 1. Required:
 - a. Contractor.
 - b. Owner.
 - c. Architect.
 - d. Contractor's superintendent.
 - e. Major subcontractors.
 - f. Each applicator, installer, and supplier whose work is on-going or scheduled.
 - g. Subcontractors, vendors, suppliers shall be present at meetings upon the request of Contactor.
 - 2. Attendee Authority: Subcontractors and supplier representatives present at meetings shall have authority to act for a make commitment for, the entity which they represent.
 - 3. Restricted Attendance: Owner and Architect reserve the right to expel or exclude from any Progress Meeting any person(s) or company representative(s) without statement of reason or excuse.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Construction Safety and Phasing Plan (CSPP) and Safety Plan Compliance Document (SPCD).
 - 3. Review of Work progress.
 - 4. Field observations, problems, and decisions.
 - 5. Identification of problems that impede, or will impede, planned progress.
 - 6. Review of submittals schedule and status of submittals.
 - 7. Review of RFIs log and status of responses.
 - 8. Review of off-site fabrication and delivery schedules.
 - 9. Maintenance of progress schedule.
 - 10. Corrective measures to regain projected schedules.
 - 11. Planned progress during succeeding work period.
 - 12. Coordination of projected progress.
 - 13. Maintenance of quality and work standards.
 - 14. Effect of proposed changes on progress schedule and coordination.
 - 15. Other business relating to Work.

- E. Record minutes and distribute copies within five days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.5 SPECIAL MEETINGS

- A. Special Meetings requested by the Owner or Architect: The Contractor along with any requested or necessary sub-contractors, applicators, vendors, or material suppliers shall attend additional meetings when requested by the Owner or Architect as they deem necessary. Such meetings may be convened on short notice if conditions at the project site so require and attendance is mandatory. The Owner and Architect are not limited as to the number of additional meetings that may be requested, or the agenda for such meetings.

3.6 CONSTRUCTION PROGRESS DOCUMENTATION

- A. Construction Schedule
 - 1. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
 - 2. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
 - 3. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - 4. Include written certification that major contractors have reviewed and accepted proposed schedule.
 - 5. Within 10 days after joint review, submit complete schedule.
 - 6. Submit updated schedule with each Application for Payment.
- B. Contract Progress Reporting
 - 1. Construction Schedule updates
 - a. During progress of Work, revise and resubmit with Application for Payment in accordance with the provisions of the General Conditions and Supplementary Conditions.
 - b. Maintain progress schedule with project progress and utilize the plan in planning, coordinating, and performing the Work under this contract.
 - c. Furnish copies of the Progress schedule, and revisions, to all sub-contractors, installers, equipment vendors and suppliers.
 - d. Update schedule showing actual progress of Work in Progress, identify Work started and completed during the previous update period. Show estimated time required to complete each activity started but not yet completed, and reflect any changes in the schedule.
 - e. Prepare a Schedule Analysis for submission with revised project schedules. The Schedule Analysis shall include a description of problem areas, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates, and an explanation of corrective action to be taken. All activities that are behind schedule by more than two weeks shall be addressed individually in the Schedule Analysis.

- f. Submit revised schedules with attached Schedule Analysis, weekly and with each application for payment; clearly identify changes since the previous version. Indicate estimated percentage of completion for each item of Work at each submission.

3.7 INTEGRATED PROJECT TEAM SCHEDULE REVIEW SESSIONS

- A. The General Contractor is responsible for scheduling, coordinating, and conducting monthly schedule review sessions.
- B. Items of Agenda:
 - 1. Review completed work
 - 2. Review of off-site fabrication and delivery schedules
 - 3. Review of current location in overall project schedule.
 - 4. Planned construction activities for upcoming 4 weeks
 - 5. Identify potential delays
 - 6. Identify corrective measures to regain projected schedules.
- C. Attendance is required by Contractor's Project Manager and Superintendent, Architect, Owner's Project Manager, and all trades relevant to the review.

3.8 DAILY CONSTRUCTION REPORTS

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
 - 1. Date.
 - 2. High and low temperatures, and general weather conditions.
 - 3. List of subcontractors at Project site.
 - 4. List of separate contractors at Project site.
 - 5. Approximate count of personnel at Project site.
 - a. Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
 - 6. Major equipment at Project site.
 - 7. Material deliveries.
 - 8. Safety, environmental, or industrial relations incidents.
 - 9. Meetings and significant decisions.
 - 10. Unusual events (submit a separate special report).
 - 11. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
 - 12. Meter readings and similar recordings.
 - 13. Emergency procedures.
 - 14. Directives and requests of Authority(s) Having Jurisdiction (AHJ).
 - 15. Change Orders received and implemented.

16. Testing and/or inspections performed.
 17. Signature of Contractor's authorized representative.
- C. Look Ahead Activity Reports: Prepare each week throughout the term of construction a listing of upcoming construction activities. Each weekly report shall include a listing of planned construction activities for the upcoming 2 weeks (14 calendar days). Submit a Look Ahead Activity Report at each job meeting to all participants. If no meeting is planned on a given week, email the reports directly to both Architect/Engineer and Owner.
1. Maintain a record of all Look Ahead Activity Reports in a 3-ring binder in the Contractor's field office and make available for review by Architect/Engineer and Owner.
- D. Special Reports
1. Unusual Event Reporting: When an event of an unusual and significant nature occurs at Project Site, whether or not related directly to the Work, prepare and submit a special report. List Chain of events, persons or effects, and similar pertinent information.

3.9 WORK DOCUMENTATION - PERIODIC SITE OBSERVATIONS

- A. Observe and maintain a record of tests. Record the following:
1. Specification section number, product(s), and name of subcontractor or installer.
 2. Name of testing agency and name of inspector.
 3. Name of manufacturer's representative present.
 4. Date, time and duration of tests.
 5. Retesting required.
- B. Observe start-up and adjustments; record time and date of equipment start-up and results.
- C. Observe equipment demonstrations to Owner; record items and additional information required for operation and maintenance manuals.
- D. Assist Architect/Engineer with final inspections. Prepare list of items to be completed and corrected.

3.10 PRE-CONSTRUCTION INSPECTION

- A. The Contractor shall conduct a preconstruction inspection of the worksite and notify the Owner in writing of any existing damage to the property or any unsafe conditions at the site prior to commencing the Work
- B. AUDIO VIDEO RECORDING SITE CONDITIONS
1. Contractor shall submit a quality audio-video recording documenting Pre-Construction field conditions for the entire project and adjacent areas within 50 feet of the limits of work.
 2. The Pre-Construction video shall be submitted to the Owner and Consulting Architect as one or more MP4 files viewable on Windows Media Player.
 3. The video(s) must be accepted by the Owner prior to commencing any Work or using any Contractor laydown areas.

3.11 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Photography Type: Digital; electronic files.
 - a. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect. The photographs are to include: major elements of the construction prior to and after the completion of portions of the construction.
- C. In addition to periodic, recurring views, take photographs of each of the following events:
 - 1. Part A – T-Hangar
 - a. Document existing building.
 - b. Document demolished building.
 - c. Completion of site clearing.
 - d. Underground utilities.
 - e. Foundations, including footings, foundation walls, insulation, and vapor barrier.
 - f. Assembly of Hangar Structure
 - g. Enclosure of building, upon completion, Hangar roof and siding.
 - h. Completion of Hangar Doors installation
 - i. Final completion, minimum of ten (10) photos.
 - 2. Part B – ARRF Building
 - a. Document existing building.
 - b. Demolition - document portion of exterior envelope demolished, and interior shell.
 - c. Foundations, including footings, foundation walls, insulation, and vapor barrier.
 - d. Assembly of Structure
 - e. Enclosure of building, including sheathing, weather barrier, insulation, framing for siding, roof and siding.
 - f. Interior wall cavity and ceiling spaces with MEPFP prior to drywall.
 - g. Final completion, minimum of ten (10) photos.
- D. Views:
 - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
 - 2. Consult with Architect for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
- E. Digital Photographs: 24-bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 1. Delivery Medium: Via email.

2. File Naming: Include project identification, date and time of view, and view identification.
3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
4. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

3.12 REQUESTS FOR INTERPRETATION (RFI)

- A. Definition: A request seeking one of the following:
 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 1. Prepare a separate RFI for each specific item.
 2. Prepare in a format and with content acceptable to Owner.
 3. Prepare using software provided by the Electronic Document Submittal Service.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
 1. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
 - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
 1. Discrete and consecutive RFI number, and descriptive subject/title.
 2. Issue date, and requested reply date.
 3. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).

4. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
 1. Indicate current status of every RFI. Update log promptly and on a regular basis.
 2. Note dates of when each request is made, and when a response is received.
 3. Highlight items requiring priority or expedited response.
- G. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
- H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
 1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.

3.13 SUBMITTALS

- A. SUBMISSION REQUIREMENTS:
 1. Furnish Architect with the following submittal types:
 - a. Certificate of BUY AMERICAN compliance.
 - b. Schedules
 - c. Shop Drawings
 - d. Product Data, Manufacturers' Instructions and Certificates and similar submissions
 - e. Emergency Addresses
- B. SUBMITTAL SCHEDULE:
 1. Submit to Architect for review a schedule for submittals in tabular format.
 - a. Submit at the same time as the preliminary schedule specified in Section - 01 32 16 - Construction Progress Schedule.
 - b. Coordinate with Contractor's construction schedule and schedule of values.
 - c. Format schedule to allow tracking of status of submittals throughout duration of construction.
 - d. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.

- e. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
 - 1) For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.
- 2. If the Contractor fails to submit a Submittal Schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

C. SUBMITTAL COORDINATION:

- 1. General: The Contractor is fully responsible for delay in the delivery of materials, progress of the Work and damages incurred due to Contractor's failure to submit, revise and resubmit submissions in accordance with the requirements herein, and in a coordinated and timely manner.
- 2. Make submittals in a proper and timely fashion, allowing for administrative procedures, Architect's review, corrections to submissions and re-submittal, if necessary, and fabrication of products without delaying the project. Minimum processing times required by Architect are in SUBMITTAL PROCEDURES.
- 3. No extension of Contract Time will be authorized due to failure to transmit submittals sufficiently in advance of scheduled performance of Work.
- 4. The Contractor is fully responsible for delay in the delivery of materials or progress of work caused by late review of shop drawings due to failure of the contractor to submit, revise, or resubmit shop drawings in adequate time to allow Architect checking and processing of each submission.
- 5. Make submittals of similar items, systems, or those specified in a single specification together.
- 6. Make submittals for products which other products are contingent upon, first.
- 7. The Contractor shall review all submittals for compliance with the Contract Documents, approve and submit to the Consulting Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents

D. SUBMITTALS FOR REVIEW:

- 1. When the following are specified in individual sections, submit them for review:
 - a. Product data.
 - b. Design data.
 - c. Shop drawings.
 - d. Samples for selection.
 - e. Samples for verification.
 - f. Transparency labels.
- 2. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- 3. Samples will be reviewed for aesthetic, color, or finish selection.

4. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

E. SUBMITTALS FOR INFORMATION:

1. When the following are specified in individual sections, submit them for information:
 - a. Design data.
 - b. Sustainability design submittals and reports.
 - c. Certificates.
 - d. Test reports.
 - e. Inspection reports.
 - f. Manufacturer's instructions.
 - g. Manufacturer's field reports.
 - h. Other types indicated.
 - i. Submit for Architect's knowledge as contract administrator or for Owner.

F. SUBMITTALS FOR PROJECT CLOSEOUT:

1. Submit Correction Punch List for Substantial Completion.
2. Submit Final Correction Punch List for Substantial Completion.
3. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
 - a. Project record documents, including As-Built drawings.
 - b. Operation and maintenance data.
 - c. Warranties.
 - d. Bonds.
 - e. DBE – Utilization and Final Participation Information.
 - f. Construction Material Testing and Acceptance Reports.
 - g. Contractor's Final Statement of Completion (including final payment request and signed affidavit).
 - h. Project photographs – depicting major elements of the construction prior to and after the completion of construction.
 - i. Other types as indicated.
4. Submit for Owner's benefit during and after project completion.

G. NUMBER OF COPIES OF SUBMITTALS:

1. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
2. Samples: Submit the number specified in individual specification sections; Two of which will be retained by Architect.
 - a. After review, produce duplicates.
 - b. Retained samples will not be returned to Contractor unless specifically so stated.

H. SUBMITTAL PROCEDURES:

1. General Requirements:

- a. Use a single transmittal for related items.
- b. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
- c. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
- d. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
- e. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - 1) Upload submittals in electronic form to Electronic Document Submittal Service website.
 - 2) General submission of physical submittals, deliver to Architect at the following Address:
 - a) Fennick McCredie Architecture LTD.
 - b) 70 Franklin Street, Boston, MA, 02110
- f. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - 1) For each submittal for review, allow 10 working days excluding delivery time to and from the Contractor.
 - a) Complex Systems (Structural, Mechanical, Electrical) may require longer than 10 working days for review each time shop drawings are submitted or resubmitted.
 - b) Simultaneous submission of a large number of shop drawings and product data may require longer than 10 working days for review.
 - 2) For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 5 working days.
 - 3) For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Architect's approval, allow an additional 30 days.
 - 4) Reprocessing of submittals: For submittals requiring re-submittal, reprocessing time required shall be the same as first submittal.
- g. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
- h. Provide space for Contractor and Architect review stamps.
- i. When revised for resubmission, identify all changes made since previous submission.
- j. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.

2. Product Data Procedures:

- a. Submit only information required by individual specification sections.
 - b. Collect required information into a single submittal.
 - c. Submit concurrently with related shop drawing submittal.
 - d. Do not submit (Material) Safety Data Sheets for materials or products.
3. Shop Drawing Procedures:
- a. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
 - b. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings.
 - 1) Show adjacent conditions and related work. Show accurate field dimensions where appropriate.
 - 2) Identify materials and products shown. Note all conditions which require coordination with other trades and special installation procedures.
 - 3) Show gage and thickness of materials.
 - 4) Indicate welding details and joint types.
 - 5) Show every component of fabricated items, notes regarding manufacturing process coatings and finishes, identifying numbers conforming to the Contract Documents (i.e., Stair numbers, Door Numbers and similar items), dimensions, and appropriate trade names.
 - 6) Show anchorage and fastening details, including type, size, and spacing.
 - 7) Review each submittal for conformity with the Contract requirements prior to submittal, certify such review on each drawing with Contractor's stamp, signature and date. Reference on shop drawings to other sections, installers, suppliers, or trade(s) shall designate the appropriate specification sections, and the term "by others" shall not be used.
 - 8) Size of Format: Not less than 8-1/2 by 11 inches, and no larger than 30 by 42 inches, except for templates, patterns and similar full-size drawings.
 - c. Do not reproduce Contract Documents to create shop drawings.
 - d. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
4. Samples Procedures:
- a. Transmit related items together as single package.
 - b. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
 - c. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

I. SUBMITTAL REVIEW:

1. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
2. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.

3. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
 - a. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
4. Architect's and consultants' actions on items submitted for review:
 - a. The Architect's stamp shall contain the following date (Engineering consultant review stamps may vary in language, but intent of language is similar).
 - 1) NO EXCEPTIONS TAKEN
 - 2) NOTE MARKINGS - RESUBMISSION NOT REQUIRED
 - 3) REJECTED
 - 4) NOT REVIEWED - SEE EXPLANATION
 - b. The Architect will insert the date of action taken and an identification of the person taking the action.
 - c. Submittal grading
 - 1) NO EXCEPTIONS TAKEN - No Corrections, No marks
 - 2) NOTE MARKINGS - RESUBMISSION NOT REQUIRED - Minor corrections required are as noted; all items can be fabricated as noted, without further correction and resubmission of original submission; checking is complete and all corrections are deemed obvious without ambiguity,
 - 3) REJECTED - Submittal is rejected as not in accord with the Contract Documents, too many corrections, or other justifiable reasons. When returning submission, Architect will state reasons for rejection. Correct and resubmit, do not fabricate.
 - 4) NOT REVIEWED - SEE EXPLANATION - When returning submission, Architect will state reasons for lack of review.
 - d. Review/approval neither extends nor alters any contractual obligations of the Architect, Engineer, Contractor.

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL**1.1 GENERAL PROVISIONS**

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made part of this Section.

1.2 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, with network analysis diagrams and reports.

1.3 RELATED SECTIONS

- A. Section 01 10 00 - SUMMARY: Work sequence.
- B. Section 01 30 00 - ADMINISTRATIVE REQUIREMENTS
- C. Section 01 40 00 - QUALITY REQUIREMENTS

1.4 REFERENCE STANDARDS

- A. AGC (CPSM) - Construction Planning and Scheduling Manual 2004.
- B. M-H (CPM) - CPM in Construction Management - Project Management with CPM 2015.

1.5 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loaded Schedule: Project Schedule that shall be cost-loaded on a summary level consistent with the Schedule of Values.
- C. CPM Schedule: Critical path method scheduling, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.

- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time is not for the exclusive use or benefit of either Owner or General contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
 - 2. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Fragment: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- H. Major Area: A story of construction, a separate building, or a similar significant construction element.
- I. Milestone: A key or critical point in time for reference or measurement.
- J. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.
- K. Calendar Day: Any day of the week, including weekends and holidays.
- L. Work Day: Any day of the work week, excluding weekends and holidays.
- M. Milestone Slippage (Delays): The number of calendar days beyond the Contract and/or Milestone completion date. Types of delays are:
 - 1. GC and Subcontractor caused delay,
 - 2. Delays beyond the control of the GC,
 - 3. Concurrent Delays – delays caused by both the GC and Subcontractor and beyond the control of the GC.
- N. Types of Schedules:
 - 1. Pre-construction Schedule – schedules prepared and updated prior to Guaranteed Maximum Price (FIXED FEE) Schedule.
 - 2. Baseline (FIXED FEE) Schedule – schedule that is referenced in the FIXED FEE. In the event the FIXED FEE agreement is a partial FIXED FEE, the latest FIXED FEE schedule shall be the Baseline (FIXED FEE) Schedule.
 - 3. Recovery Schedule – schedule that is prepared by the GC to recover delays due to actions (or non-actions) by the GC and their Subcontractors.
 - 4. Time Impact Analysis (TIA)/Time Entitlement Analysis (TEA) – schedule prepared by the GC to demonstrate time impact and/or entitlement due to changes and/or conditions beyond the control of the GC.

1.6 SUBMITTALS

- A. All submittals shall be made in accordance with the requirements specified in Section 01 33 00 - SUBMITTAL PROCEDURES. All construction-related submittals shall be made utilizing the Electronic Project Management System.
- B. Project Schedule: Submit on Project Management System.
- C. Within 10 days after date of Agreement, submit preliminary schedule.
 - 1. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

2. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - a. Include written certification that major contractors have reviewed and accepted proposed schedule.
3. Within 10 days after joint review, submit complete schedule.
4. Submit updated schedule with each Application for Payment.
5. Submit in PDF format.

1.7 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- B. Diagram Sheet Size: Maximum 24 x 36 inches.
- C. Sheet Size: Multiples of 8-1/2 x 11 inches.
- D. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULES

- A. In addition to the Construction Schedules, The Contractor shall prepare a Submittal Schedule, coordinated with the Construction Schedule.

3.2 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a Gantt/Bar progress schedule.

3.3 CONTENT

- A. Activity: Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
 1. Activity Duration: Define activities with appropriate level of detail and time duration necessary to manage the Project.
 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and re-submittal times indicated in Section 013300 - Submittal Procedures in schedule. Coordinate submittal review times in the Project Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include not less than 7 days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Design Professional's administrative procedures necessary for certification of Substantial Completion.

- B. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Phasing: Arrange list of activities on schedule by phase.
 - 2. Work Restrictions: Show the effect of pertinent Work restrictions on the Project Schedule.
 - 3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Permits
 - b. Implementation and termination of temporary utility.
 - c. Subcontract awards.
 - d. Submittals.
 - e. Purchases.
 - f. Mockups.
 - g. Fabrication.
 - h. Deliveries.
 - i. Installation.
 - j. Tests and inspections.
 - k. Adjusting.
 - l. Startup and placement into final use and operation.
 - 4. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
 - 5. Schedule shall include all trades indicated on the Schedule of Values.
 - 6. Define activities on which the work is dependent, including:
 - a. Submittal of shop drawings, equipment schedules, samples, color submission, coordination drawings, templates, fabrication and material delivery times.
 - b. Architect's/Engineer's review of shop drawings, equipment schedules, samples, and templates.
- C. Milestones: Include Milestone Dates indicated in the Contract Documents in schedule, including, but not limited to, the date established in the Initial Notice, the dates for Substantial Completion and Final Completion and the Interim Milestones defined in the GC Agreement.
- D. Contract Modifications: For each proposed contract modification and/or change order request and concurrent with its submission, prepare a time-impact (or entitlement) analysis using fragments to demonstrate the effect of the proposed change on the overall project schedule and milestones. The request shall include the cost estimate, fragment schedule, and the remaining milestone table comparing the most recent accepted schedule/update and the change request dates.
- E. Identify each item by specification section number.
- F. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

- G. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- H. Conclude all activities on one common end date, show contract completion date as a milestone activity on the Schedule.
- I. Provide legend for symbols and abbreviations used.

3.4 NETWORK ANALYSIS

- A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method.
- B. Illustrate order and interdependence of activities and sequence of work; how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.
- C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
 - 1. Preceding and following event numbers.
 - 2. Activity description.
 - 3. Estimated duration of activity, in maximum 20-day intervals.
 - 4. Earliest start date.
 - 5. Earliest finish date.
 - 6. Actual start date.
 - 7. Actual finish date.
 - 8. Latest start date.
 - 9. Latest finish date.
 - 10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
 - 11. Monetary value of activity, keyed to Schedule of Values.
 - 12. Percentage of activity completed.
 - 13. Responsibility.
- D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.
- E. Required Reports: List activities in sorts or groups:
 - 1. By preceding work item or event number from lowest to highest.
 - 2. By amount of float, then in order of early start.

3.5 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.

- C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.6 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.
- G. Schedule Updates to include, but are not limited to:
 - 1. Approved changes to the Contract.
 - 2. Any "slippage" due to procurement delays, unforeseen conditions, weather and other delays.
- H. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect.

3.7 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL**1.1 GENERAL PROVISIONS**

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made part of this Section.

1.2 SECTION INCLUDES

- A. Submittals.
- B. Quality assurance.
- C. References and standards.
- D. Testing and inspection agencies and services.
- E. Contractor's design-related professional design services.
- F. Control of installation.
- G. Mock-ups.
- H. Manufacturers' field services.
- I. Defect Assessment.

1.3 RELATED REQUIREMENTS

- A. See Division 02-34 individual specification sections for testing and inspection required.
- B. Section 01 30 00 - ADMINISTRATIVE REQUIREMENTS: Submittal procedures.
- C. Section 01 60 00 - PRODUCT REQUIREMENTS: Requirements for material and product quality.

1.4 DEFINITIONS

- A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.
- B. Design Data: Design-related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.5 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

- B. Base design on performance and/or design criteria indicated in individual specification sections.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:
 - 1. Structural Design of Steel Connections: As described in Section 05 12 00 - Structural Steel Framing.
 - 2. Structural Design for all structural components of the prefabricated metal building: As described in 13 34 19 – Metal Building Systems.

1.6 SUBMITTALS

- A. Refer to Section 01 30 00 - ADMINISTRATIVE REQUIREMENTS, for submittal procedures.
- B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
 - 1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
 - 2. Include required product data and shop drawings.
 - 3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
 - 4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- C. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
 - 1. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.7 QUALITY ASSURANCE

- A. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in The Commonwealth of Massachusetts.

1.8 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ and pay for services of an independent testing agency to perform specified testing.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.1 CONTROL OF INSTALLATION**

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply with manufacturers' instructions, including each step-in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

- A. Before assembling the Hangar Doors, provide a mock-up of the door assembly for one panel of the right side of both the top and bottom sections of a door. The mock-up is required to comply with the following requirements, using materials indicated for the completed Work. The purpose of mock-up is to demonstrate the proposed range of aesthetic effects and workmanship. The Mock-up may remain as part of the final work.
- B. Notify Architect, seven (7) working days in advance of dates and times when mock-ups will be constructed.
- C. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

- D. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- E. Obtain Architect's approval of mock-ups before starting work, fabrication, or construction.
 - 1. Architect will issue written comments within seven (7) working days of initial review and each subsequent follow up review of each mock-up.
 - 2. Make corrections as necessary until Architect's approval is issued.
- F. Architect will use accepted mock-ups as a comparison standard for the remaining Work.
- G. Where mock-up has been accepted by Architect, it may be used in the final project.

3.3 TESTING AND INSPECTION

- A. See individual specification sections for testing and inspection required.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 - 5. Perform additional tests and inspections required by Architect.
 - 6. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.

4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.4 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment, as applicable, and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.5 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

Section 01 4100
REGULATORY REQUIREMENTS

PART 1 - GENERAL**1.1 SUMMARY**

- A. This Section consists of:
1. Applicable codes and regulations.
 2. Trade union jurisdictions.
 3. Wage rate compliance.

1.2 DEFINITIONS

- A. Regulations include laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, and rules, conventions and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.

1.3 APPLICABLE CODES AND REGULATIONS

- A. All work shall be performed in accordance with the latest version, except as indicated otherwise, of all applicable codes including the following:
1. Building Code: MAINE UNIFORM BUILDING AND ENERGY CODE, *International Building Code*, 2015 edition, as published by the International Code Council, Inc. (ICC), adopted in January 23, 2018, as amended.
 2. Plumbing Code, *International Association of Plumbing and Mechanical Officials Uniform Plumbing Code*, 2021 Edition, as published by the International Code Council, Inc. (ICC), as amended.
 3. Electrical Code: *National Electrical Code* (NEC), 2020 edition, document NFPA 70, as published by National Fire Protection Association, adopted by MAINE UNIFORM BUILDING AND ENERGY CODE ("MUBEC"),
 4. Maine Fire Prevention Code, document NFPA 1 – Fire Prevention Code, 2018 Edition, as published by National Fire Protection Association
 5. Life Safety Code: NFPA 101 - Life Safety Code, 2018 Edition, as adopted and modified under the Maine Life Safety Standard, published under State Fire Marshal's Office, Main Department of Safety.
 6. Energy Code: International Energy Conservation Code, 2009 edition, as published by the International Code Council, Inc. (I.C.C.), as adopted by MAINE BUILDING AND ENERGY CODE ("MUBEC"), June 30, 2021, as amended.
 7. Accessibility Code: Maine Department of Labor, Bureau of Rehabilitation, State of Maine Accessibility Code.
 8. State of Maine Department of Transportation Standard Specifications, March 2020 edition as published by the State of Maine, Department of Transportation as amended.
 9. City of Lewiston Appendix A of the Code of Ordinances, Zoning and Land Use Code, as amended.
 10. National Fire Protection Association: NFPA 241 – Safeguarding Building Construction And Demolition Operations.
 11. United States Occupational Safety and Health Administration (OSHA): Standard N°. 29-CFR-1926.59 - HAZARD COMMUNICATION STANDARD.

12. United States Department of Justice, N° 28 CFR Part 36 - AMERICANS WITH DISABILITIES ACT, (Public Law 101-336).
13. Byrd Anti-Lobbying Amendment, 31 USC1352.
14. Nondiscrimination Provisions of Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972 (as amended), Section 504 of the Rehabilitation Act of 1973 (as amended), the Age Discrimination Act of 1973 (as amended) and the regulations issued pursuant thereto by NEH (Code of Federal Regulations, Title 45, Chapter XI).
15. The Drug-Free Workplace Act of 1988, 41 USC 701.

- B. Publication Dates: Where the date of issue of a code or regulation is not specified, comply with the standard in effect as of date of Contract Documents, or as otherwise required by authorities having jurisdiction.

1.4 TRADE UNION JURISDICTIONS

- A. Maintain current information on jurisdictional matters, regulations, actions and pending actions; and administer/supervise performance of Work in a manner which will minimize possibility of disputes, conflicts, delays, claims or losses.

1.5 WAGE RATE COMPLIANCE

- A. The General Contractor is responsible to ensure that the rate per hour to be paid to mechanics, apprentices, teamsters, laborers and other workers employed on the Work shall not be less than the approved wage rates applicable to this project. A legible copy of the approved rates, along with equal opportunity requirements, shall be posted on a weatherproof bulletin board outside the field office and be clearly visible for review by all workers.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 01 41 17
UTILITIES NOTIFICATION

PART 1 – GENERAL**1.1 GENERAL PROVISIONS**

- A. Comply with all regulations and laws concerning excavation, demolition, or explosive work and be advised of utility notification requirements under State of Maine Statue 437 (1991), as amended.

1.2 ADMINISTRATIVE AUTHORITY

- A. Notification of utilities within the State of Maine is performed through the Utilities Underground Plant Damage Prevention System, commonly referred to as “Dig Safe”.

1.3 REGULATORY REQUIREMENTS

- A. Contractors must notify “Dig Safe” by telephone before performing any earth moving operations including: digging, trenching, boring, site demolition, excavation, backfilling, grading, or explosive work in all public ways and private property.
- B. This notification must be made at least 3 business days, prior to the Work described above, but not more than 30 calendar days before commencement of the contemplated Work. Notification shall occur between 6:00 AM to 6:00 PM local time, except in cases of emergency.
 - 1. The toll free phone number is: **811**.
 - 2. Provide the following information:
 - a. Municipality.
 - b. Location of work.
 - c. Intersecting street.
 - d. Type of work.
 - e. Starting date and time of work.
 - f. Name and title of caller.
 - g. Phone number of caller.
 - h. Best time for “Dig Safe” to return calls.
 - i. Company name of General Contractor or Construction Manager.
 - j. Company name of sub-contractor performing subgrade work.
- C. Member utilities of the Utilities Underground Plant Damage Prevention System are required to respond to the notice within 72 hours from the time said notice is received by designating at the locus the location of pipes, mains, wires, or conduits.
 - 1. Locations of underground utilities will be marked by spray paint or stakes. Marks will be color coded with additional descriptions of letters and arrows as required.
- D. Do not commence work until “Dig Safe” has been properly notified and has responded as described above.
- E. Subsequently notify “Dig Safe” of unanticipated additional blasting required after the initial notification to “Dig Safe” has been made. Do not perform the additional blasting work in less than 4 hours following the subsequent notification.

1.4 PROTECTION

- A. The Contractor is fully responsible for protection of the utility location markings, wherever these occur, on or off-site.
- B. Perform Work in such a manner, and with reasonable precautions taken to avoid damage to utilities under the surface in said areas of work. Immediately notify any known or suspected damage to underground utilities to the owner of such utilities.

PART 2 - PRODUCTS (not used)**PART 3 - EXECUTION** (not used)

End of Section

Section 01 4200

REFERENCES

PART 1 - GENERAL

1.1 SUMMARY

- A. Abbreviations and Acronyms.
- B. Definitions
- C. Reference Standards.

1.2 ABBREVIATIONS AND ACRONYMS

- A. The following list of common abbreviations are referenced in individual specification sections. This list is provided for convenience to the Contractor and is not intended to define all abbreviations use in the Contract Documents.

1. Abbreviations for contract and specifications.

CM	Construction Manager (as defined in Section 01 10 00)
EPA	United States Environmental Protection Agency
EPD	Environmental Product Declaration
FAA	Federal Aviation Administration
HVAC	Heating, ventilating, and air conditioning
IAQ	Indoor Air Quality
IEQ	Indoor Environmental Quality
MaineDOT	Maine Department of Transportation
MDEP	Maine Department of Environmental Protection
NIC	Not in Contract
OFCI	Owner Furnished, Contractor Installed
OFI or OFOI	Owner Furnished and Installed (Owner Furnished, Owner Installed)
OPM	Owner's Project Manager (as defined in Section 01 10 00)
SDS	Safety Data Sheet (formerly MSDS)
TSA	Transportation Security Administration, United States Department of Homeland Security.
VOC	Volatile Organic Compounds

B. Abbreviations for measurements and quantities.

C.	Celsius
cm	Centimeter
FT ³ or CF	Cubic Foot
YD ³ or CY	Cubic Yard
F.	Fahrenheit
FT	Foot
Hrs	Hours
Kg	Kilogram
L	Liter
M	Meter

FT ² or SF SF	Square Foot
m ² or SM	Square Meter
YD ² or SY	Square Yard
m ³ or CM	Cubic Meter
mm	Millimeter
PSI	Pounds per Square Inch
PSF	Pounds per Square Foot
t	ton

1.3 DEFINITIONS

- A. Definitions of contracting parties (Owner, Owner's Project Manager, Construction Manager, and Architect): Refer to Section 01 10 00 – PROJECT SUMMARY.
- B. Definitions for terms utilized in the Contract Documents:
1. "As necessary," "as directed," "when directed," "satisfactory," "good and sufficient," "approved," or other general qualifying terms are used on the Drawings: These terms are deemed to be followed by the words, "in the opinion of the Architect," or "by the Architect," as the case may be."
 2. "Addenda": written or graphic instruments issued prior to the execution of the Contract which modify or interpret the Bidding Documents, including the Drawings and Specifications, by additions, deletions, clarifications or corrections.
 3. "Approval," "approved," "approved equal," "or equal," or "other approved" means as approved by the Architect."
 4. The terms "Contractor", "General Contractor", and "Construction Manager" as used in the Project Manual have the same meaning and are interchangeable in Contract Documents. These terms refer to the same entity.
 5. The term "Day": is defined as the following:
 - a. The term "calendar day" is a full 24 hour period, starting from 12 AM (midnight), and includes all weekends and legal holidays.
 - b. The term "working day" shall mean any calendar day except Saturdays, Sundays, and legal holidays at the place of the building.
 - c. Where the term "day" is used without the adjective of "calendar" or "working", it shall mean "calendar day".
 6. The terms "Architect", and "Architect/Engineer" as used in the Project Manual have the same meaning and are interchangeable in Contract Documents. These terms refer to the same entity.
 7. "Furnish and Install" or "Provide": items identified shall be furnished and installed under this Contract. The term "Furnish", when used separately, shall mean that the items referred to shall be furnished, only. Similarly the term "install", when used separately, shall mean that the items referred to shall be installed, only.
 8. "Knowledge," "recognize" and "discover," their respective derivatives and similar terms in the Contract Documents, as used in reference to the Contractor, shall be interpreted to mean that which the Contractor knows (or should know), recognizes (or should recognize) and discovers (or should discover) in exercising the care, skill and diligence required by the Contract Documents. Analogously, the expression "reasonably inferable" and similar terms in the Contract Documents shall be interpreted to mean reasonably inferable by a Contractor familiar with the Project and exercising the care, skill and diligence required of the contractor by the Contract Documents.

9. "Not in Contract" or "N.I.C.": equipment, furnishings, or other materials not included as a part of this Contract.
10. "Product": materials, systems and equipment.

1.4 REFERENCE STANDARDS

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by DATE OF ISSUE for Contract Documents, current on date of Owner-Contractor Agreement.
- C. Obtain copies of standards when required by Contract Documents.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- E. The contractual relationship to the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

F. Schedule of References

1. Listed below are abbreviations for the names and titles of trade association names, federal government agencies and similar organizations which are referenced in the individual specification sections. The addresses and URL's (Uniform Resource Locators) provided are for the Contractor's convenience and are believed to be current and accurate, however addresses and URL's frequently change, and no assurance is made on their accuracy:

AA	Aluminum Association 1400 Crystal Dr #430, Arlington, VA 22202 www.aluminum.org
ABAA	Air Barrier Association of America 1600 Boston-Providence Highway Walpole, MA 02081 www.airbarrier.org
AAMA	Fenestration & Glazing Industry Alliance (FGIA) (formerly American Architectural Manufacturer's Association) 1900 E. Golf Road, Suite 1250, Schaumburg, IL 60173 https://fgiaonline.org
AASHTO	American Assoc. of State Highway & Transportation Officials 555 12th St NW, Suite 1000, Washington, DC, 20004 transportation.org
AATCC	American Association of Textile Chemists and Colorists PO Box 12215, One Davis Drive, Durham, NC 27709-2215 www.aatcc.org
ACA	Architectural Coatings Association 901 New York Avenue NW, Suite 300 West, Washington, DC 20001 https://www.paint.org/
ACI	American Concrete Institute 38800 Country Club Drive, Farmington Hills, MI, 48331-3439 https://www.concrete.org
ACPA	American Concrete Pipe Association 5605 N MacArthur Blvd, Suite #340, Irving, TX 75038 www.concretepipe.org
ADC	Air Diffusion Council 1901 N. Roselle Rd. Suite 800, Schaumburg, IL 60195 www.flexibleduct.org

AFPA	American Forest & Paper Association (Formerly NFPA National Forest Products Association) 1101 K Street, NW, Suite 700, Washington, DC 20005 www.afandpa.org
AGA	American Gas Association 400 North Capitol Street, NW, Suite 450, Washington, DC 20001 www.aga.org
AGAI	American Galvanizers Association 6881 South Holly Circle, Suite 108, Centennial, Colorado 80112 www.galvanizeit.org
AIA	American Institute of Architects 1735 New York Avenue, N.W., Washington, DC 20006-5292 www.aia.org
AIHA	American Industrial Hygiene Association 3120 Fairview Park Drive, Suite 360, Falls Church, VA 22042 www.aiha.org
AISC	American Institute of Steel Construction 130 East Randolph, Suite 2000, Chicago, IL, 60601 www.aisc.org
ISI	American Iron and Steel Institute 25 Massachusetts Avenue NW, Suite 800, Washington DC 20001 www.steel.org
AMCA	Air Movement and Control Association 30 W. University Drive, Arlington Heights, IL 60004-1893 www.amca.org
ANSI	American National Standards Institute 25 West 43rd Street, 4th Floor, New York, NY 10036 www.ansi.org
APA	APA - The Engineered Wood Association (formerly APA - American Plywood Association) P 7011 S. 19th Street, Tacoma, WA 98466-5333 www.apawood.org
AHRI	Air-Conditioning, Heating and Refrigeration Institute 2311 Wilson Blvd, Suite 400, Arlington, VA 22201 www.ahrinet.org
ASCE	American Society of Civil Engineers 1801 Alexander Bell Drive; Reston, VA 20191 www.asce.org
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers 180 Technology Parkway NW, Peachtree Corners, GA 30092 www.ashrae.org
ASME	American Society of Mechanical Engineers Two Park Avenue, New York, NY 10016-5990 www.asme.org
ASSE	American Society of Sanitary Engineering 18927 Hickory Creek Drive, Suite 220, Mokena, IL 60448 www.asse-plumbing.org
ASTM	ASTM International (<i>formerly American Society for Testing and Materials</i>) 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 www.astm.org
AWPA	American Wood Preservers' Association 2430 U.S. Highway 27, Suite 330-223, Clermont, FL 34714 www.awpa.com

AWS	American Welding Society 8669 NW 36 Street, #130 Miami, Florida 33166-6672 www.aws.org
AWWA	American Water Works Association 6666 W. Quincy Ave., Denver, CO 80235 www.awwa.org
BHMA	Builders Hardware Manufacturers Association, Inc. 529 14th Street, NW, Suite 1280, Washington, DC 20045 www.buildershardware.com
CISCA	Ceilings & Interior Systems Construction Association 1010 Jorie Blvd, Suite 30, Oak Brook, IL 60523 www.cisca.org
CPSC	U.S. Consumer Product Safety Commission 4330 East-West Highway., Bethesda, MD 20814 www.cpsc.gov
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road, Schaumburg, IL 60173-4758 www.crsi.org
CSA	CSA Group Testing & Certification Inc. (formerly Canadian Standards Assoc. International, Forest Products Group) 8501 East Pleasant Valley Road, Independence, OH 44131-5516 https://www.csagroup.org/
DHI	Door and Hardware Institute 2001 K Street NW, 3rd Floor North, Washington, DC 20006 www.dhi.org
FGIA	Fenestration & Glazing Industry Alliance (formerly American Architectural Manufacturer's Association) 1900 E. Golf Road, Suite 1250, Schaumburg, IL 60173 https://fgiaonline.org
FM	Factory Mutual Engineering & Research Corp. 1151 Boston-Providence Turnpike, Norwood, MA 02062 www.fmglobal.com
FSC	Forest Stewardship Council (United States Chapter) 1441 Woodmont Ln NW, Suite #539, Atlanta, GA 30318 https://us.fsc.org
GA	Gypsum Association 962 Wayne Ave., Suite 620, Silver Spring, MD 20910 www.gypsum.org
NGA/GANA	National Glass Association with GANA 1945 Old Gallows Road, Suite 650, Vienna, VA 22182 www.glass.org
IGCC	Insulating Glass Certification Council PO Box 730, Sackets Harbor, NY 13685 www.igcc.org
IGMA	Fenestration & Glazing Industry Alliance (FGIA) (formerly Insulating Glass Manufacturers Alliance) 1900 E. Golf Road, Suite 1250, Schaumburg, IL 60173 https://fgiaonline.org
ISO	International Standards Organization Geneva, Switzerland. www.iso.org
IPCI	International Polished Concrete Institute LLC 184 Cedar Pl, Norris, TN 37828 www.ipcionline.org

MIL-STD MIL-SPEC	Military Specifications and Standards Defense Logistics Agency, 725 John J. Kingman Road, Fort Belvoir, VA 22060 www.dia.mil
MSS	Manufacturers Standardization Society 127 Park St. NE., Vienna, VA 22180 http://msshq.org/
NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt Rd. Bldg. C, Suite 312, Glen Ellyn, IL 60137 www.naamm.org
NEBB	National Environmental Balancing Bureau 8575 Government Circle, Gaithersburg, MD 20877-4121 www.nebb.org
NEMA	National Electrical Manufacturers' Association 1300 N. 17 th St., Suite 900, Arlington, VA 22209 www.nema.org
NFPA	National Fire Protection Association 1 Batterymarch Park, PO Box 9101, Quincy, MA 02169 www.nfpa.org
NFRC	National Fenestration Rating Council 6305 Ivy Lane, Suite 410, Greenbelt MD 20770 www.nfrc.org
NRCA	National Roofing Contractors Association 10255 W. Higgins Road, Suite 600, Rosemont, IL 60018-5607 www.nrca.net
PCA	Portland Cement Association 5420 Old Orchard Road, Skokie, IL 60077-1083 www.cement.org
PS	Product Standard U. S. Department of Commerce www.omg.org
SDI	Steel Deck Institute 140 W. Evans Street. Suite 203. Florence, SC 29501 www.sdi.org
SGCC	Safety Glass Certification Council RMS, P.O. Box 9 Henderson Harbor, NY 13651 www.sgcc.org
SJI	Steel Joist Institute 140 W. Evans Street Suite 203. Florence, SC 29501 www.steeljoist.org
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Dr., Chantilly, VA 20151-1219 www.smacna.org
SPIB	Southern Pine Inspection Bureau 4555 Spanish Trail, Pensacola, FL 32504 www.spib.org
SSMA	Steel Stud Manufacturer's Association 8 South Michigan Avenue, Chicago IL 60603 www.ssma.com
SSPC	The Society for Protective Coatings 800 Trumbull Drive, Pittsburgh, PA 15205 www.sspc.org

SWRI	Sealant, Waterproofing & Restoration Institute 400 Admiral Blvd, Kansas City MO 64106 www.swrionline.org
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road, Northbrook, IL 60062 www.ul.com
UNI	Uni-Bell PVC Pipe Association 201 E. John Carpenter Freeway, Suite 750, Irving, TX., 75062 www.uni-bell.org
WDMA	Window & Door Manufacturers Association (formerly National Wood Window & Door Association, NWWDA) 2001 K Street NW, 3rd Floor North, Washington, D.C. 20006 www.nwwda.org

PART 2 - PRODUCTS (Not Used)**PART 3 - EXECUTION** (Not Used)

End of Section

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Section 01 55 32

MAINTENANCE OF AIRCRAFT OPERATIONS AREA (AOA) TRAFFIC

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

- A. The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and applicable parts of other Sections of Division 1 - GENERAL REQUIREMENTS, shall be included in and made part of this Section.

1.2 DESCRIPTION

- A. This Section is intended to include basic requirements for the maintenance of Aircraft Operations Area (AOA) traffic whenever work is to be performed within the AOA. The work under this Section consists of furnishing all means and measures required to maintain the safe and orderly movement of AOA traffic in and around the construction areas as shown on the Drawings.

1.3 GENERAL

- A. Comply with the requirements of the Maintenance of Traffic (MOT) shown on the Contract Drawings.
- B. Comply with the Safety Plan Compliance Document (SPCD).
- C. General Contractor is responsible for maintaining the optimum level of safety and operating efficiency of ground equipment and aircraft on the airport during construction. These responsibilities are based on the rules and regulations of Auburn-Lewiston Municipal Airport and the criteria contained in the current edition of the following Federal Aviation Administration (FAA) Advisory Circulars (AC):
 - 1. 150/5370-2, Operational Safety on Airports During Construction;
 - 2. 150/5370-10, Standards for Specifying Construction of Airports
 - 3. 150/5300-13, Airport Design.

1.4 RELATED REQUIREMENTS

- A. The Contract Documents contain several other provisions relating to safety for which Contractor's adherence is required.

1.5 SAFETY REQUIREMENTS DURING CONSTRUCTION

- A. The Contractor shall be responsible to comply with all prevailing Auburn-Lewiston Municipal Airport rules, regulations and requirements and the applicable FAA Advisory Circulars concerning construction operations and safety on an airport. The Contractor is cautioned about construction work to be performed within the proximity of all active runways, taxiways, taxi lanes and aprons. No work shall commence in these areas without first advising the RPR and obtaining the requisite approvals.
- B. Runways.

1. No construction equipment shall be permitted at the end of any active runway where the height of such equipment penetrates the 20:1 slope in the approach surface of the runway.
 2. No Construction equipment and/or activities shall be permitted within two hundred-fifty (250) lineal feet of the runway centerline (Aircraft Design Group (ADG) III). Prior approval from the Auburn-Lewiston Municipal Airport, the FAA and the RPR must be obtained should it be necessary to perform work within a lesser distance. All cranes, backhoes and other construction equipment working within four hundred (400) lineal feet of the centerline of a runway (ADG III) shall display a safety flag of the color, size and shape required by the Auburn-Lewiston Municipal Airport, FAA. All crane booms shall be lowered when not in use.
- C. Taxiways, Taxi lanes, Aprons.
1. Under no circumstance shall material, equipment and/or vehicles be stored in such a place as to create an obstruction to air navigation, nor shall they interfere with the free unobstructed movement of aircraft. No storage of equipment and/or material shall be permitted within the AOA. All storage of equipment and material shall be limited to the area(s) designated on the Contract Drawings. Stockpiled material shall be constrained in a manner to prevent movement resulting from aircraft jet blast or prop wash, or wind conditions in excess of ten (10) knots. Loose materials capable of causing damage to aircraft landing gears, propellers, or being ingested in jet engines shall not be stored anywhere in the vicinity of any active runway, taxiway, taxi lane or apron.
- D. Daily inspections.
1. At the start (within the first hour) and close of construction activity for the day, the site must be inspected by the contractor and Airport personnel to ensure compliance with FAA rules and regulations before the contractor leaves for the day. The contractor cannot vacate site until the inspection is complete and site secured for the evening. See Appendix B – CSPP daily checklist.
- E.

PART 2 - PRODUCTS

2.1 MARKING AND LIGHTING OF CONSTRUCTION AREAS

- A. The Contractor shall be responsible to install and maintain all signage, marking, lighting and barricades as shown on the Contract Drawings delineating limits of construction including closed and hazardous areas. Provide a person, on a 24-hour basis, for emergency maintenance of all signage, marking, lighting and barricades required to be provided and installed.

2.2 BARREL/BARRICADES

- A. All construction areas, including closed and hazardous areas shall be identified by the use of barricades with alternate orange and white markings. The barricades shall be supplemented with orange flags at least 20 by 20 inches square, made and installed so that they are always in the extended position and properly oriented. During nighttime construction operations of the barricades shall be supplemented with flashing yellow lights. The intensity of the lights and spacing for barricades, flags and lights must be such as to clearly and adequately delineate the

construction areas including closed and hazardous areas. The location of such signage, marking, lighting and barricades shall be consistent with the requirements stated in the aforementioned paragraphs relevant to runways, taxiways, taxi lanes and aprons.

2.3 PLASTIC CHANNELIZER CONES

- A. Furnish, install and maintain temporary plastic channelizer cones in the locations shown on the Drawings, in accordance with the approved layout for each construction area and as directed by RPR.
- B. Plastic barricades, meeting the following requirements, shall only be used when specifically shown on the Drawings or ordered by the RPR.
- C. Plastic channelizer cones shall consist of a molded plastic cone. The assembly shall be designed to remain usable following vehicular impact.
 - 1. The cone shall consist of a stem and a base. The base shall be of sufficient weight to ensure stability of the cones when subjected to 100 mph jet blast.
 - 2. The dimensions of the various elements of the plastic barricade system shall be as follows:
 - a. Cones: Overall Height: 42"
- D. The top of the cones shall be designed to allow the mounting of portable solar powered barricade lights.

2.4 PLASTIC PROTECTIVE BARRIERS (WATER FILLED)

- A. Furnish, install and maintain temporary plastic protective barriers (water filled) in the locations shown on the Drawings, in accordance with the approved layout for each construction area and as directed by Owner.
- B. Plastic barricades, meeting the following requirements, shall only be used when specifically shown on the Drawings or ordered by the Owner.
- C. Plastic protective barriers shall consist of a molded plastic cone. The assembly shall be designed to remain usable following vehicular impact.
 - 1. The barrier shall be of sufficient weight to ensure stability of the barrier when subjected to 100 mph jet blast.
 - 2. The dimensions of the various elements of the plastic barricade system shall be as follows:
 - 3. Barrier: Overall Length: 8' and interlock with adjacent barrier
Overall Height: 10" without lights
- D. The top of the barriers shall be designed to allow the mounting of portable solar powered barricade lights.

1.2 TEMPORARY SITE ENCLOSURE FENCES

- A. Construction fence: Provide an 8 foot high commercial grade chain link fence set in Plastic Protective Barriers (Water-Filled) around construction site; equip with vehicular and pedestrian gates and locks.
 - 1. Relocation of all fences and gates as required due to construction phasing. Relocations shall be provided at no additional cost to the Owner.

2. Vehicular and Pedestrian Gates: Build into fence at approved locations. Provide gates with cross-bracing, and hung on heavy strap hinges with post and hook for double gates. Provide heavy hasps and padlocks.
 - a. Provide a set of keys to Project Resident Engineer to facilitate emergency access.
- B. Emergency Key Cabinet: Provide emergency access key cabinet ("Knox Box"): medium duty, surface mounted. Locate emergency key cabinet in readily-accessible location outside of fence line. Provide keys for emergency key cabinet to Owner's designated representative(s).
 1. Inside emergency key cabinet maintain keys for fence entrance gates, and construction core keys for building, once it is closed in.
- C. Fence, General: Fence shall be industrial-grade, heavy-duty construction: Galvanized fabric with galvanized frame.
 1. Chain link fabric shall be made of coated-steel, 9 gage (0.148 inch) core wire woven in 2-inch uniform mesh, height (roll width) to suit fence height, with bottom selvage knuckled, top selvage twisted, with woven fabric having a minimum breaking strength of 1290 pounds.
 - a. Construction privacy and containment mesh: 80 to 85 percent privacy (15 to 20 percent open) 100 percent polyethylene mesh having weight of approximately 5.1 ounces per square yard, color green. Provide with four-ply sewn hems, reinforced with 2 inch wide 18 ounce vinyl-coated UV resistant polyester tape. Finish hem width is 1 inch. Furnish with number 2 size brass grommets at 12 to 18 inches on-center, along hemmed edges.
 - 1) No advertising signage, logos or graphics are permitted on screening.
 2. Framework: Type 1 seamless steel pipe, ASTM A-120, standard weight schedule 40, hydrostatic testing waived.
 3. Gate Posts: Standard weight pipe 2-7/8 inches OD nominal weight, 5.79 pounds per foot.
 4. Gate Frames: 2 inches OD standard weight pipe, 2.73 pounds. per foot with heavy malleable iron or pressed steel corner fittings securely riveted. Fabric to match the fence shall be installed in the frame by means of tension bars and hook bolts. Each frame to be equipped with 3/8 inches diameter adjustable truss rods.
 5. Bottom hinges to be ball and socket type designed to carry the weight of the gate on the post footing. Upper hinge to be wrap around adjustable type. All gates to be equipped for padlocking and with semi-automatic outer catches to secure gates in opened position.
 6. Fittings: Pressed steel or malleable iron, hot-dipped galvanized conforming to the requirements of ASTM A153. Tie wires shall be minimum nine-gage galvanized wire,. Attachment bolts shall be galvanized.
 7. Post Settings: Temporary Plastic Protective Barriers (Water-Filled) bases are to be installed at all fence locations except perimeter Security Fences for relocation.
 8. Plastic Protective Barrier for fencing.

- a. Furnish, install and maintain temporary plastic protective barriers (water filled) in the locations shown on the Drawings, in accordance with the approved layout for each construction area and as directed by Owner.
- b. Plastic barricades, meeting the following requirements, shall only be used when specifically shown on the Drawings or ordered by the Owner.
- c. Plastic protective barriers shall consist of a molded plastic cone. The assembly shall be designed to remain usable following vehicular impact.
 - 1) The barrier shall be of sufficient weight to ensure stability of the barrier when subjected to 100 mph jet blast.
 - 2) The dimensions of the various elements of the plastic barricade system shall be as follows:
 - 3) Barrier: Overall Length: 8' and interlock with adjacent barrier
Overall Height: 32" without lights
- d. The top of the barriers shall be designed to allow the mounting of portable solar powered barricade lights.

D. TEMPORARY PERIMETER SECURITY FENCES.

1. Temporary Fence on Barricade with barb wire, refer to Item F-162-5.4

PART 3 - EXECUTION

3.1 LOOSE MATERIALS AND DEBRIS.

- A. Loose materials shall be removed from the active portion of the AOA, placed in protected areas or otherwise secured to prevent dispersal into active portions of the AOA. The AOA is defined as all areas used or intended to be used for aircraft operations including active runways, aprons, taxiways, taxi lanes, etc. Debris shall be promptly removed from the AOA. Exercise care in the transportation of materials within the AOA. Materials tracked or spilled in the AOA shall be removed immediately. When hauling, loading, grading, or when any of the activities are likely to cause the deposit of loose materials in the AOA, it shall be immediately removed using powered vacuum sweepers, which shall continuously patrol the affected areas. The sweepers shall be supplemented by hand sweepers, loaders, trucks, etc., as necessary.

3.2 VEHICLES AND MOBILE EQUIPMENT

- A. All vehicles and mobile equipment operating in the AOA shall be identified by three foot (3') square orange and white flags whenever such vehicle and equipment is operating on or about the AOA. In addition, such vehicles and equipment shall have the Contractor's name clearly affixed on each side of such vehicles and equipment, all in accordance with current Auburn-Lewiston Municipal Airport, FAA requirements. Revolving yellow beacon light mounted on the top of the vehicle or equipment shall be used during the period between 30 minutes before sunset and 30 minutes after sunrise. Beacon lights shall provide:
 1. Three hundred sixty degree (360°) azimuth coverage.
 2. Effective intensity in the horizontal plane not less than 40 or more than 400 candelas.
 3. Beam spread measured to 1/10 peak intensity extending from 10 degrees to 15 degrees above the horizontal.
 4. Sixty to ninety flashes per minute.

- B. All vehicles and mobile equipment not individually authorized by the Auburn-Lewiston Municipal Airport for independent operation in the AOA shall be operated under escort while in the AOA. The escort vehicle and its driver must be authorized by the Auburn-Lewiston Municipal Airport for escort duty and for operation within the AOA. If access to the construction, staging or storage sites requires the crossing of an active runway or taxiway, all vehicles shall be escorted across said runway or taxiway by either a Auburn-Lewiston Municipal Airport escort vehicle or a vehicle equipped with a VHF-AM Transceiver specifically authorized by the Auburn-Lewiston Municipal Airport to cross these operational pavements. No crossing of active taxiways or runways by vehicles so equipped shall be made without first obtaining specific clearance from the FAA Air Traffic Control Tower.
- C. No crane shall be allowed on the work site until the equipment and its intended operation is approved by the Auburn-Lewiston Municipal Airport Airside Operations in accordance with the prevailing requirements, including but not limited to FAA form 7460. The FAA Form 7460 can take more than 90 days to acquire. If a crane is required by the Contractor, provisions must be made within the first month of NTP.. Provide the Auburn-Lewiston Municipal Airport designated Project Representative with not less than 24- hour advance written notice requesting crane access to the AOA.
- D. The Contractor shall notify HYA personnel one week before any crane necessary for T-Hangar Installation is scheduled to arrive. HYA personnel shall notify the ATCT of the upcoming crane activity. HYA Operations will coordinate the NOTAM issuance and cancellation with the Hyannis ATCT for all crane activities associated with T-Hangar. Refer to Section 00 08 13 CSPP.
- E. When access is approved by the Auburn-Lewiston Municipal Airport, the tip of the crane boom shall be identified by the orange and white flag mentioned above and, if appropriate, by red obstruction lights.

3.3 CLOSURES

- A. Prior to the commencement of any demolition or other work, which will cause an interruption or modification to existing aircraft operations, confer with, and obtain written authorization from the Auburn-Lewiston Municipal Airport Director of Operations and the Owner or its designated agent.
- B. When the construction operations require the closure of any runway, taxiway, apron, roadway, service gate, walkway, etc., notify the Owner or its designated agent not less than seventy-two (72) hours prior to need. No runway, taxiway, apron, roadway, service gate, walkway, etc., shall be closed without prior written authorization from the Auburn-Lewiston Municipal Airport Director of Operations and the Owner or its designated agent.
- C. If the Contractor requires access to operational areas not delineated on the Construction Safety & Phasing Plan Drawing(s), the Contractor shall participate in negotiations leading to the imposition of restrictions on airport operations in the affected areas; the Contractor shall strictly abide by all conditions imposed by the Auburn-Lewiston Municipal Airport relating to its entry and use of such areas and the Contractor shall not enter these areas until granted temporary, conditional entry clearance by the Auburn-Lewiston Municipal Airport Director of Operations.
- D. Trenching, excavation and other work requiring temporary runway or taxiway closure shall be limited to that amount of work that can be completed within the

hours of minimal operation. All ditches, excavations, etc., shall be restored prior to the end of the work period and affected pavement areas returned to service. This work shall be scheduled during hours of minimal operations. Unless otherwise noted in the Contract Documents, hours of minimal operation shall be defined as the hours between 11:00 P.M. and 7:00 A.M. daily. All other hours are considered hours of normal operation.

- E. Contractor may be required to pursue affected portions of the work on a continuous 24 hour per day basis during construction of the various phases and sub-phases shown on the Drawings and described in the Contract Documents (such as when runways or taxiways, aprons, service or access roadways or service gates are closed for operation or when hazards of any kind arise).

3.4 LIGHTS, LIGHT LINES, SIGNS AND PAVEMENT MARKINGS

- A. Red and blue lens, ground-mounted, taxiway marker lights, pavement markings, signs, lighted barricades and other measures shall be installed and maintained (except as provided herein below) on a 24-hour basis to delineate construction areas available to the Contractor and limits of aircraft operational areas. At the conclusion of each working day, the Contractor shall verify that the temporary lighting systems are in proper operation condition. The Contractor prior to leaving the site shall perform any necessary maintenance repairs. The detailed layout of marking, lights, signs and barricades and other measures for each construction area are shown on the Plans. The actual field installation of markings, lighting, barricades, signs, and other measures and attendant operational procedures shall be inspected by the Auburn-Lewiston Municipal Airport Airside Operations and any necessary changes or modifications will be promptly implemented by the Contractor as directed. The revised installation will be reinspected and approved by the RPR and the Auburn-Lewiston Municipal Airport before the Contractor may commence any construction or any other work, which revises operational procedures in each affected area.
- B. Provide all materials for installing pavement marking, marker lights, and lighted barricades.
- C. Connections to power supply for all temporary lighting systems shall be performed by the Contractor under the direction of the Auburn-Lewiston Municipal Airport Airfield Operations and Facilities Department.
- D. Maintenance of all temporary lighting systems shall be performed by the Contractor except the nighttime trouble shooting of temporary lighting connected to any airfield lighting system, which will be provided by the Auburn-Lewiston Municipal Airport Airfield Operations and Facilities Department.
- E. Install the temporary marker lights in the location shown on the Drawings or as directed by the Owner or its designated agent; provide cable connections to existing circuits and decommission or mask existing lights as shown on the Drawings. If no existing taxiway circuits are available, provide and install a constant current transformer including connections and cable runs as necessary to energize the temporary light units. All cable runs installed across pavement shall be made along existing pavement joints. Saw kerfs shall be sealed, using approved suitable sealant, after cable installation. Demonstrate the functional integrity of the temporary marker light system by field test before the system is approved by the Auburn-Lewiston Municipal Airport Airfield Operations and Facilities Department and the Owner or its designated agent for operational use.

- F. Maintain the temporary marker light system in full operational capability during the term of use. Each day at the close of work shift, test and repair the system as necessary to restore full operational capability. Provide 24-hour, 7 day per week maintenance service. Trained maintenance technicians shall be available and "On Call" at all times; provide the Owner or its designated agent with address and telephone numbers of the technicians so that they may be contacted at any time.
- G. Relocate and modify the temporary lightning systems as required to accommodate the progress of the construction.
- H. Upon completion of the work within an AOA, and temporary marker lights are no longer needed, remove all such temporary installation and restore the site prior to opening it to aircraft traffic. In particular all temporary pavement markings are to be removed. Final Approval and arbiter of removal of pavement markings by RE and Airport Operations.

3.5 OPERATIONS SAFETY INSPECTION

- A. The entire work site shall be inspected daily and more frequently if construction activities are of a nature that debris may be expected to accumulate on AOA pavements. Special inspections shall be conducted for each work area prior to return to service for aircraft service to verify that they are in satisfactory condition and that the overall work site and its activities are within the safety criteria set forth in the Contract Documents. Representatives of the Contractor, the Auburn-Lewiston Municipal Airport Operations, and Facilities Department, the Owner or its designated agent and the affected airlines shall conduct inspections jointly. These inspections shall cover the several safety items noted in and referred to by this Section the report of such inspections shall be filed with the Owner and its designated agent, using forms acceptable to the Owner or its designated agent.
- B. Any violations of the Safety Criteria found during these inspections shall be rectified immediately. If the Contractor cannot correct a violation on an immediate basis, the Contractor shall immediately notify the Owner or its designated agent. No area shall be approved for aircraft operations while it is in violation unless specifically authorized by the Auburn-Lewiston Municipal Airport Operations and Facilities Department, the Owner or its designated agent and the designated airline representative.

3.6 OPERATIONAL EMERGENCIES

- A. During periods of severe weather conditions or other operational emergencies, the Auburn-Lewiston Municipal Airport may direct the Contractor to relinquish areas under construction and to prepare the areas for aircraft operations. In this event the Owner or its designated agent will so direct the Contractor to evacuate the area and further, will specify the limits of the area to be evacuated, the term of evacuation and the conditions governing the restoration work necessary to prepare the area for aircraft operation. The Contractor shall promptly and fully comply with the Owner or its designated agent directive.

3.7 FINAL CLEANUP

- A. After work in any work area has been completed and before opening it to traffic, remove all temporary traffic control devices, temporary pavements, and other temporary work and devices installed for traffic control. Restore the site to its original condition or to the revised condition shown on the Drawings.

End of Section

Section 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL**1.1 SUMMARY**

- A. Definition of Terms
- B. Basic product requirements.
- C. General environmental requirements for products.
- D. Owner furnished products.
- E. Product delivery and handling requirements.
- F. Product storage and protection requirements.
- G. Construction waste management.

1.2 DEFINITION OF TERMS

- A. "Products" is defined as new material, machinery, components, equipment, fixtures, and systems used in the Work. Products do not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for re-use.
- B. "Materials" are products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
- C. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.
- D. "Fasteners" include all products required for mechanical connections and include, but are not limited to: nails, screws, bolts, expansion bolts, chemical bolts, epoxy anchors, pins, powder-actuated devices, and similar fasteners, anchors, and connections.
- E. Definitions in this article are not intended to negate the meaning of other terms used in Contract Documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

1.3 BASIC PRODUCT REQUIREMENTS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
 - 1. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B. To the fullest extent possible, provide products of the same kind, from a single source.

- C. Provide interchangeable components of the same manufacturer, for similar components.
- D. When the Contractor has the option of selecting two or more products, ensure that products selected shall be compatible with products previously installed or approved.
- E. Provide all products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
- F. Galvanic Corrosion: Install materials in manner which will effectively isolate dissimilar metals which may potential for galvanic corrosion. Use non-absorptive dielectric material, isolation coatings, or other protective isolator approved by Architect.
 - 1. For non-humidity controlled environments, and all building shell components, the following applies:
 - a. For all fasteners, anchors, and connections, provide types of metal to prevent galvanic corrosion. Small anodic areas (fasteners) relative to the cathodic areas (field) should be avoided. Utilize same metal or more noble metals (cathodic) for fasteners and bolts.
 - 1) Apply corrosion-inhibiting pastes or compounds under heads of screws or bolts inserted into dissimilar metal surfaces whether or not the fasteners had been previously plated.
 - b. Use non-absorptive dielectric material, isolation coatings, or other protective isolator approved by Architect.
 - c. Seal faying edges to preclude the entrance of liquids.
- G. Fasteners, Anchors, and Connections: Provide all fasteners, anchors, and connections needed to safely, securely, and appropriately secure all Work permanently in place.
 - 1. General: The Contractor is solely responsible for the capacity, suitability, adequacy, and safety of all welded, fastened and anchored connections.
 - a. Comply with applicable code requirements regarding fastener selection and installation.
 - b. Provide at least two fasteners for each individual item being fastened.
 - c. Utilize fastener manufacturer's published load tables for working loads to assist in determining fastener size and space. Do not use ultimate load capacity in determining fastener selections.
 - d. Provide a minimum safety factor of 4.
 - e. Select and utilize fasteners having minimum galvanic corrosion factor (refer to above Paragraph F.)
 - f. Hydrogen embrittlement prevention:
 - 1) Do not use high-strength and low-alloy fasteners which have been subjected to an acid pre-treatment (because they can become brittle and fail), utilize instead equivalent capacity and size bi-metal, stainless steel or high strength aluminum fasteners, as appropriate to the conditions and materials where being used.
 - 2) Utilize low-hydrogen electrodes for welding high-strength steels to prevent hydrogen embrittlement.

2. To permit the Contractor control over means and methods, some fastener conditions may not be fully defined in the Contract Documents. In particular, individual specification sections that require delegated independent engineering. In such instances the Contractor is fully responsible to determine method of fastening appropriate for each condition. The Contractor shall take into consideration substrate material(s) and product(s) being fastened, live and dead loading, and both atmospheric and visual exposure considerations. Contractor is responsible to determine fastener type, material, finish, size, diameter, length and spacing.
3. Torque structural fasteners as recommended by fastener manufacturer, or as otherwise specified in the Contract Documents.

H. Permanent Labels and Nameplates:

1. Restrictions:
 - a. Do not provide exposed-to-view labels, nameplates, or trademarks which are not required by code, or regulations.
 - b. Do not expose manufacturers, suppliers, or installer's name, logo, or trade names on normally visible surfaces.
 - c. Do not provide labels, nameplates or trademarks when individual specification sections specifically exclude them.
 - d. All exposed-to-view advertising and name-brand labels shall be fully removed without damage to substrate finish.
2. Location for required labels: Required labels, approval plates and stamps shall be located on a concealed surface, or where required for observation after installation on accessible non-conspicuous surface.
3. Data Plates: Provide permanent data plate on each item of service-connected or power-operated equipment.
 - a. Data Plate Information: Include manufacturer, model, serial number, date of manufacture, capacity, ratings, power requirements, and all other similar essential data.
 - b. Locate data plates on easily accessible surface that is inconspicuous in occupied spaces.

1.4 GENERAL ENVIRONMENTAL REQUIREMENTS FOR PRODUCTS

- A. General: Prohibit the use of or incorporation into the work of materials which contain toxic, hazardous and harmful materials.
1. Hazardous materials: Defined as pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA), the International Agency for Research on Cancer (IARC) or regulated under OSHA Hazard Communication Standard, 29 CFR 1910.1200.
 2. Harmful materials: Defined as materials which contain the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade the utility of the environment for aesthetic, cultural, or historical purposes.
 3. Owner restricted materials: Defined as all products to which the Owner has a reasonable objection because of its content, composition, properties, or characteristics.
- B. Vapors, Gases, Fumes, Odors:

1. General: Comply with all state and federal VOC requirements. Where ever possible use non-VOC materials.
 - a. Limit use of products to the greatest extent possible which have "off-gassing", fumes, flammability, and other harmful characteristics.
 - 1) Prohibit use of products which contain substances that contribute significantly to the production of photochemical smog, tropospheric ozone, or poor indoor-air quality.
 - b. Limit use of ozone-depleting compounds to the greatest extent possible. An ozone-depleting compound is any compound with an ozone-depletion potential greater than 0.01 (CFC 11 = 1).
 - c. Use organic and biodegradable cleaners to the greatest extent possible.
 2. Do not install, use for installation, and use for cleaning those materials which may produce objectionable (to Owner and public) vapors, gases, fumes, odors, or similar conditions.
 3. Do not install or use products which may have possible chemical or biological reactions with other on-site materials.
- C. Toxicity of prefabricated wood products (composite wood and agrifiber products): Products shall contain no added urea-formaldehyde resins.
1. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins.
- D. Adhesives: Provide adhesives approved by the manufacturers of the products being adhered which are Low-VOC or non-VOC, non-flammable, water-proof after cured, odor free.
1. Comply with Commonwealth of Massachusetts Adhesives and Sealants Regulations 310 CMR 7.18 (30).
 - a. Architectural Applications VOC Limit [g/L less water]
 - 1) Outdoor floor covering adhesives 250
 - 2) Non-membrane Roof Installation and Repair Adhesive 300
 - 3) Single-ply Roof Membrane Roof Installation and Repair Adhesive 250
 - b. Specialty Applications VOC Limit [g/L less water]
 - 1) Thin-Metal Laminating 780
 - 2) Waterproof Resorcinol Glue 170
 - c. Substrate Specific Applications VOC Limit [g/L less water]
 - 1) Flexible Vinyl 250
 - 2) Rubber 250
 - 3) Other Substrates 250
 - d. Adhesive Primers VOC Limit [g/L less water]
 - 1) Plastic Cement Welding 650
 - 2) Single-ply Roof Membrane 250
 - 3) Traffic Marking Tape 150
 - 4) Other 250
- E. Interior Paints: Provide products that comply with specified VOC limits, refer to Section 09 91 00 – PAINTING for additional requirements.

1. For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the following chemical restrictions:
 - a. Flat Paints and Coatings: VOC not more than 50 g/L.
 - b. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
 - c. Anti-Corrosive Coatings: VOC not more than 250 g/L.
 - d. Clear wood finishes:
 - 1) Varnishes: VOC not more than 350 g/L.
 - 2) Lacquer: VOC not more than 550 g/L.
 - e. Floor coatings: VOC not more than 100 g/L.
 - f. Sealers:
 - 1) Waterproofing sealers: VOC not more than 250 g/L.
 - 2) Sanding sealers: VOC not more than 275 g/L.
 - 3) All other sealers: VOC not more than 200 g/L.
 - g. Stains: VOC not more than 250 g/L.
- F. Sealants: Provide products that comply with specified VOC limits. Comply with Commonwealth of Massachusetts Adhesives and Sealants Regulations 310 CMR 7.18 (30). Refer to Section 07 92 00 – JOINT SEALANTS, and as specified herein, for additional requirements.
 1. Only use sealants and primers that comply with the following limits for VOC content:

a. Sealants	VOC Limit [g/L less water]
1) Architectural	250
2) Single-Ply Roof Membrane	450
3) Non-membrane Roof	300
4) Roadway	250
5) Marine Deck	760
6) Other	420

a. Sealant Primers	VOC Limit [g/L less water]
1) Architectural Non Porous	250
2) Architectural Porous	775
3) Marine Deck	760
4) Other	750
- G. Safety Data Sheets (SDS) {formerly Material Safety Data Sheets, MSDS}: Obtain and maintain on-site record data sheets for each product brought onto the Site.
 1. Maintain an organized file of Material Safety Data Sheets at the job-site for quick reference.
 2. Furnish SDS for all finishes, paints, coatings, curing compounds, sealers, adhesives, mastics, waterproofing, dampproofing, sealants, cleaning chemicals, carpets, upholstery, fabrics and all similar products.
- H. Cleaning and maintenance products:
 1. Provide data on manufacturers' recommended maintenance, cleaning, refinishing and disposal procedures for materials and products utilized. These procedures are for final Contractor cleaning of the project prior to substantial

completion and for provided materials and products as required by the specific specification sections.

- a. Where chemical products are recommended for these procedures, provide documentation to indicate that no component present in the cleaning product at more than 1% of the total mass of the cleaning product is a carcinogen or reproductive toxicant as defined in the lists in this specification section.
 - b. For purposes of reporting, identification of product VOC contents shall not be limited to those regulated.
 2. Avoid cleaning products containing alpha-pinene, d-limonene or other unsaturated carbon double bond alkenes due to chemical reactions with ozone to form aldehydes, acidic aerosols, and ultra fine particulate matter in indoor air.
- I. Establish written Contractor's safety and emergency response procedures for safety precautions, accidents, emergency conditions, and clean-up methods.

1.5 OWNER FURNISHED PRODUCTS

- A. Owner Furnished Products: As provided in the General Conditions, the Owner will provide products by others under a separate agreements.
1. Owner's responsibilities regarding Owner furnished products:
 - a. Arrange for and deliver Owner reviewed shop drawings, product data, and samples to Contractor.
 - b. Coordinate delivery dates with Contractor
 - c. Arrange and pay for product delivery to site. Notify Contractor not less than 48 hours prior to scheduled delivery date.
 - 1) Deliver materials during Contractor's normal working hours.
 - d. On delivery, inspect products jointly with Contractor.
 - e. Submit claims for transportation damage, and replace damaged, defective, or deficient items.
 - f. Arrange for manufacturers' warranties, inspections, and service agreements.
 2. Contractor's responsibilities regarding Owner furnished products:
 - a. Scheduling of all Owner-furnished products.
 - 1) Periodically review with Owner throughout term of construction intended schedule of Owner-furnished items. Notify Owner, not less than 30 days prior to date when Owner furnished products are due on site.
 - b. Review Owner reviewed shop drawings, product data, and samples to Contractor.
 - 1) Obtain from Owner's vendors rough-in information.
 - 2) Coordinate all rough-in, blocking, and utility services required for Owner's furnished products.
 - c. Handle, store, and provide temporary protection.
 - d. Repair or replace items which are damaged after receipt.
 - e. Provide protection of installed work.

- 1) Touch up and repair minor damage in manner satisfactory to Owner and Architect.
 - f. Package and label spare parts, and deliver to Owner.
 - g. When not installed under this Contract, the Contractor shall coordinate Owner installed work with interfacing work of this Contract. The Contractor shall provide temporary protection and final cleaning of Owner installed products, except as directed otherwise.
 3. Items noted in Drawings as "Not in Contract" or "N.I.C.", identify work or products which either exist, or are furnished by Owner; such work requires coordination with the Work of this Contract and may even require installation by this Contractor.
- B. The Contractor has coordinating responsibility for Testing laboratory services as identified under Section 01 45 00 – QUALITY CONTROL and as specified under individual specification sections.

1.6 PRODUCT DELIVERY AND HANDLING REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions and as specified in individual specification sections.
1. Packing: Arrange for the return of packing materials, such as wood pallets, where economically feasible.
 2. Ductwork: All ductwork shall be sealed from time of manufacture, with seals intact upon delivery to construction site, and remain so, until ready for installation. Contractor is jointly responsible with HVAC subcontractor to ensure ducts are properly sealed and maintained.
 - a. Store ductwork in clean dry conditions and keep sealed while it is stored.
- B. Packaging: Deliver materials in recyclable or in reusable packaging such as cardboard, wood, paper, or reusable blankets, which will be reclaimed by supplier or manufacturer for recycling.
1. General: Minimize packaging materials to maximum extent possible while still ensuring protection of materials during delivery, storage, and handling.
 - a. Unacceptable Packaging Materials: Polyurethane, polyisocyanurate, polystyrene, polyethylene, and similar plastic materials such as "foam" plastics and "shrink-fit" plastics.
 - b. Reusable Blankets: Deliver and store materials in reusable blankets and mats reclaimed by manufacturers or suppliers for reuse where program exists or where program can be developed for such reuse.
 - 1) Non-returnable containers should be donated to local and community organizations to the greatest extent possible to reduce quantity of disposed materials.
 - c. Pallets: Where pallets are used, suppliers shall be responsible to ensure pallets are removed from site for reuse or for recycling. Avoid use of virgin wood pallets whenever possible. It is preferable that pallets be manufactured from recycled wood and recycled plastic.
 - d. Corrugated Cardboard and Paper: Where paper products are used, recycle as part of construction waste management recycling program, or return to material's manufacturer for use by manufacturer or supplier.

- e. Sealants, Paint, Primers, Adhesives, and Coating Containers: Return to supplier or manufacturer for reuse where such program is available.
- 2. Purchase materials in bulk where possible. Take measures to avoid individual packaging for volume purchases.
- C. Labeling of plastics used for packaging: Plastic is marked by manufacturers for type of plastic material in accordance with the Society of Plastic resin codes. Maintain marks, or sort by manufacturer's resin codes for recycling purposes.
 - 1. Type 1: Polyethylene Terephthalate (PET, PETE).
 - 2. Type 2: High Density Polyethylene (HDPE).
 - 3. Type 3: Vinyl (Polyvinyl Chloride or PVC).
 - 4. Type 4: Low Density Polyethylene (LDPE).
 - 5. Type 5: Polypropylene (PP).
 - 6. Type 6: Polystyrene (PS).
 - 7. Type 7: Other. Use of this code indicates that the package in question is made with a resin other than the six listed above, or is made of more than one resin listed above, and used in a multi-layer combination.
- D. Deliveries: Schedule deliveries to avoid delays in installation of products, to minimize long-term storage, to prevent overcrowding of construction spaces and to limit potential damage to stored materials. Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
 - 1. Contractor is responsible to ensure that delivery trucks are unloaded quickly to prevent encumbering loading facilities for extended periods of time.
 - 2. Schedule deliveries with Owner when unloading of materials which may interfere with normal business of Owner.
 - 3. Coordinate with Owner deliveries which require heavy equipment rigging or crane services.
- E. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- F. Provide equipment and personnel to handle and store products by methods to prevent soiling, disfigurement, or damage.

1.7 PRODUCT STORAGE AND PROTECTION REQUIREMENTS

- A. Store and protect products in accordance with manufacturer's instructions and as specified in individual specification sections.
 - 1. Provide all necessary equipment and personnel to store products by methods to prevent soiling, disfigurement and damage.
 - 2. Avoid excessive material handling and potential product damage, locate storage areas convenient to work areas.
 - 3. Store and protect products with seals and labels intact and legible.
 - 4. Store and handle materials in a manner as to prevent loss from weather and other damage.
- B. For exterior storage of fabricated products, place on sloped supports, above ground.

- C. Provide off-site storage and protection when site does not permit on-site storage or protection.
 - 1. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
 - 2. Store sensitive products in weather-tight, climate controlled enclosures.
 - 3. Prevent contact with material that may cause corrosion, discoloration, or staining.
- D. Store loose granular materials on solid flat surfaces in a well-drained area; prevent mixing with foreign matter.
- E. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
- F. Store heavy materials in locations and in a manner that will not damage or disfigure existing, or new construction.

1.8 MOLD PROTECTION OF PRODUCTS PRIOR TO INSTALLATION

- A. General:
 - 1. Keep building materials dry to prevent the growth of mold and bacteria, including, but not limited to: gypsum wallboard, wood, porous insulation, paper, and fabric.
 - 2. Cover materials to prevent rain damage, and if resting on the ground, use spacers to allow air to circulate between the ground and the materials.
 - 3. Thoroughly dry all water damaged materials within 24 hours from time of moisture damage. Materials that have been damp or wet for more than 24 hours shall not be incorporated into the Work.
 - a. Review moisture damaged materials for signs of mold and mildew, including any with moisture stains, from the site and properly dispose of them.
 - b. Replace water damaged and moldy materials with new, undamaged materials.

1.9 CONSTRUCTION WASTE MANAGEMENT

- A. Source separation: Separate, store, protect, and handle at the site identified recyclable and salvageable waste products in order to prevent contamination of materials and to maximize recyclability and salvaging of identified materials. Refer to the Waste Management Requirements Plan specified under Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- B. Return: Set aside and protect misdelivered and substandard products and materials and return to supplier for credit.
- C. Reuse and Salvage: Set aside, sort, and protect separated products and materials for collection, re-use by Owner, as designed for re-use on-site or designated for salvage by Owner's separate waste recycling contractor.
- D. Recycling: Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials. Refer to the Waste Management Requirements and Plan specified under Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section
n

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Cutting and patching, and alterations work.
- D. Cleaning and protection.
- E. Starting of systems and equipment.
- F. Demonstration and instruction of Owner personnel.
- G. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.2 PROJECT CONDITIONS

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.
- C. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- D. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.3 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel

with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.1 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or mis fabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.

- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.4 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.5 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as indicated.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new

- finish; remove existing finish if necessary, for successful application of new finish.
4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to Electrical): Remove, relocate, and extend existing systems to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - b. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- D. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
 2. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- G. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.

2. If mechanical or electrical work is exposed accidentally during the work, recover and refinish to match.
- H. Clean existing systems and equipment.
- I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- J. Do not begin new construction in alterations areas before demolition is complete.
- K. Comply with all other applicable requirements of this section.

3.6 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of mechanical, electrical, and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-complying work.
- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.
- J. Patching:
 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 2. Match color, texture, and appearance.

3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.7 PROGRESS CLEANING

- A. P.
- B. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- D. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- E. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.8 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.9 SYSTEM STARTUP

- A. Coordinate schedule for start-up of hangar doors.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

- A. Use cleaning materials that are nonhazardous.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- E. Clean filters of operating equipment.
- F. Clean debris from area drains, drainage systems, and Construction Area.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
- B. Provide copies to Architect and Owner.
- C. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.
- D. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

- E. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.
- F. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
- G. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- H. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.
- I. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

END OF SECTION

Section 01 73 29
CUTTING AND PATCHING

PART 1 - GENERAL**1.1 SUMMARY**

- A. Examination of existing conditions and acceptance of conditions.
- B. Administrative and procedural requirements for cutting and patching, including attendant excavation and backfill as required to complete the Work. General Contractor is responsible for all cutting and patching work, including but not limited to:
 - 1. Perform all cutting, altering, patching, and fitting of the Work (new and existing) as necessary for the Work and the existing improvements. Fully integrate with existing and new construction, all cutting, alterations and patching, to present the visual appearance of an entire, completed, and unified project.
 - a. Make all products and their components of the work fit together properly.
 - 2. Provide openings in elements of the Work, and the patching of same, for penetrations required by all trades, including but not limited to mechanical, plumbing, fire protection and electrical work.
 - a. Individual Filed Subcontract trades are responsible for designated types of coring and drilling penetrations for piping, conduit, ducts and other penetrations as defined elsewhere in this Section.
 - 3. Uncover work to provide for installing, inspecting, or both, of ill-timed work;
 - 4. Remove and replace work not conforming to requirements of the Contract Documents or as otherwise determined to be defective.
 - 5. Patch and match all surfaces and products disturbed or damaged by the Work.
 - 6. Remove samples of installed work as specified for testing.

1.2 RELATED REQUIREMENTS

- A. Section 02 41 19 - SELECTIVE DEMOLITION: Demolition of selected portions of the building for new construction.
- B. Individual product specification Sections:
 - 1. Cutting and patching of not-exposed-to-view materials incidental to work of the Section.
 - 2. Core drilling (up to 8 inches in diameter) of interior building components, incidental to work of individual Sections.
 - 3. Cutting and Patching work of particular exposed-to-view finish work, performed by trades as specified herein.

1.3 SUBMITTALS

- A. Submit written proposals to perform cutting and patching under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES. Describe cutting and patching procedures in advance of the time cutting and patching.
 - 1. Submit a written request when cutting work affects the following:

- a. Structural integrity of any element in the project.
 - b. Integrity of weather-exposed or moisture-resistant elements.
 - c. Integrity of any fire suppression, fire alarm, or life safety system.
 - d. Interruption or disturbance of utilities service. List utilities that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - e. Efficiency, maintenance, or safety of operational elements and systems.
 - f. Aesthetic and visual qualities of exposed-to-view elements.
 - g. Efficiency, operational life, maintenance, or safety of operational elements.
 - h. Work of Owner or work performed under separate Contract.
 - i. Owners on-going operations or schedule.
2. Include in the request:
 - a. Identification of project.
 - b. Location and description of affected work.
 - c. Necessity for cutting or alteration.
 - d. Alternatives to cutting and patching.
 - e. Scope of proposed cutting, patching, alteration or excavation.
 - f. List of tradespeople who will execute the work.
 - g. Description of products to be used.
 - h. Extent of refinishing and cleaning to be performed.
 - i. Effect on work by Owner or work performed under separate Contract, and written permission of affected party.
 - j. Date and time cutting and patching is scheduled to be executed.
 - k. Cost proposal, when applicable.
 - l. Written permission of separate contractor(s) whose work will be affected.
 3. Review by the Architect does not waive the Architect's right to later require complete removal and replacement of Work found to be unsatisfactory.
 4. Should conditions of Work or the schedule indicate a change of products from original installation, Contractor shall submit a request for substitution in accordance with Section 01 25 13 - PRODUCT SUBSTITUTION PROCEDURES.

1.4 QUALITY ASSURANCE

- A. Only tradespersons skilled and experienced in cutting and patching shall perform such Work.
- B. In performing Work which requires cutting, fixing, or patching, Contractor and subcontractors shall utilize best efforts to protect and preserve the visual appearance and aesthetics of the Project to the reasonable satisfaction of both Owner and Architect.

1.5 PERFORMANCE REQUIREMENTS

- A. General performance requirements: Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

- B. Structural elements: Do not cut and patch structural elements in a manner that would reduce the load-carrying capacity or load deflection ratio. Always obtain written approval of the cutting and patching proposal before cutting and patching structural elements.
 - 1. Do not drill through structural beams, slabs or columns. Core drilling through concrete block walls and stair platforms must be approved by the Architect.
 - 2. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
- C. Exposed elements:
 - 1. Employ original installer of new construction to perform cutting and patching for weather exposed and moisture resistant elements, and sight exposed surfaces.
 - 2. Employ an appropriate tradesperson to perform cutting and patching of existing weather-exposed and moisture-resistant construction, and exposed-to-view surfaces.
- D. Penetrating elements: Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with fire rated materials in accordance to applicable codes and regulations, and compatible to surrounding construction.
- E. Visual requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.
 - 1. General: Restore work with new products in accordance with the requirements of the Contract Documents.
 - 2. Engage a firm recognized and experienced in the trade or specialty operation required to cut and patch the exposed-to-view work listed below.
 - a. Concrete masonry and brick masonry concrete, (Masonry Filed Subcontractor, refer to Section 04 00 01).
 - b. HVAC enclosures, cabinets, or covers (HVAC Filed Subcontractor, refer to Section 23 00 01).
 - 3. Engage a firm recognized and experienced in firestopping for patching of existing firestopping, smoke seals and firesafing in compliance with applicable codes and as additionally required by authorities having jurisdiction. Comply with requirements of Section 07 84 00 - FIRESTOPPING.
- F. Operational and safety limitations: Do not cut and patch operating elements or safety components in a manner that would reduce their capacity to perform as intended, or would increase maintenance, or decrease operational life or safety.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems.

1.6 WARRANTY

- A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void existing applicable warranties.

PART 2 - PRODUCTS**2.1 MATERIALS**

- A. Patching Materials: Use patching materials identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible. Use materials whose installed performance will equal or surpass that of the existing materials. Comply with specifications and standards for each specific product involved.
 - 1. All materials used shall be approved by the Architect for consistency with the existing surfaces.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Pre-bid examination: General Contractor and Filed Subcontractors shall inform themselves of existing conditions before submitting bids, and are fully responsible for carrying out all work required to completely and properly execute the work of the Contract, regardless of the conditions encountered in the actual work. No claim for extra compensation or extension of time will be allowed on account of actual conditions which are inconsistent with those assumed, except for fully concealed conditions.
- B. Examination - General: Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, inspect conditions affecting performance of work. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
- C. Layout of cutting and patching in masonry construction. After General Contractor identifies areas requiring cutting and patching work. Masonry Filed-Sub-contractor shall indicate on walls the extent of masonry cutting work which will be performed by the General Contractor. Necessary patching of openings will be performed by the Masonry Filed-Sub-contractor.

3.2 PREPARATION

- A. Protection:
 - 1. Provide temporary supports to ensure structural integrity of the Work.
 - 2. Protect existing construction during cutting and patching to prevent damage.
 - 3. Provide protection from adverse weather conditions.
 - 4. Provide protection from elements for areas which may be exposed by uncovering work.

3.3 GENERAL CUTTING AND PATCHING

- A. Performance: Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive repairs, patching, and finishing.
- B. Execute cutting, fitting, and patching, including excavation and fill, to complete the work.

1. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not permitted without prior approval, from Architect
 2. Fit products together, to integrate with other work.
 3. Uncover work to install ill-timed work.
 4. Remove and replace defective or non-conforming work.
 5. Remove samples of installed work for testing, when requested.
 6. Provide openings in the work for penetration of mechanical and electrical work.
- C. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 3. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill.
 4. Comply with requirements of applicable Division 31 - EARTHWORK Sections where cutting and patching requires excavating and backfilling.
 5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

3.4 FINISHING OF PATCHED AREAS:

- A. General: Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break; for assemblies, refinish entire unit.
1. Patching: Patch with durable seams that are as invisible as possible, showing no evidence of patching and refinishing. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction. Comply with specified tolerances.
 - a. At penetrations of fire rated walls, partitions, ceiling or floor construction, completely seal voids with fire rated materials in accordance to applicable codes and regulations, and compatible to surrounding construction.
 - b. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Provide vapor and air seal when penetrating existing vapor and air seals.
 - c. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 2. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall

coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

- a. Where patching occurs in a painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat. Extend re-painting to entire surface plane up to where plane changes direction.
3. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

3.5 CORING AND DRILLING

- A. Coring and Drilling of holes incidental to work of individual sections shall be performed by the trade requiring the penetration, except as follows:
 1. Coring and Drilling of holes greater than 8 inches in diameter in concrete decks and slabs.
 2. Coring and drilling requiring patching of the following existing surfaces shall be performed by the General Contractor with patching performed by the appropriate trade or subcontractor.
 3. The General Contractor is responsible for performing core drilling in wall and roof surfaces leading to, or from, the outside of the Building.
 4. The General Contractor is responsible for coordination of all coring and drilling and resultant patches necessary for the completion of this Contract and for the quality and appearance of all patch Work in exposed-to-view finished materials.

3.6 CLEANING

- A. Cleaning patched areas: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove paint, mortar, oils, putty and similar items.

End of Section

Section 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Special administrative and procedural requirements for the General Contractor and Filled-subcontractors as required for the Project waste management and recycling activities and as described herein.
 - 1. Recycling goals and waste management program intent.
 - 2. List of recyclable materials.
 - 3. Resources
 - 4. Waste management plan.
 - 5. Waste management plan implementation.
 - 6. Waste management reporting.

1.2 RECYCLING GOALS AND WASTE MANAGEMENT PROGRAM INTENT

- A. Waste Stream Diversion Program Goal: It is the Owner's determination that this Project shall generate the least amount of construction waste possible, and to salvage and recycle as much nonhazardous demolition waste as possible. This program goal shall be accomplished by the following processes:
 - 1. Demolition and Construction Waste Diversion Requirement: **Minimum 50% waste diversion for this project.**
 - 2. Efficiently use demolition waste materials to the maximum extent as economically feasible:
 - a. Reuse and renovation of existing structures in lieu of demolition as shown in the Contract Documents.
 - b. Segregate and salvage existing materials and items for salvage and reuse on site where possible.
 - c. Segregate demolished materials for salvage and recycling, or to be recycled as mixed debris.
 - 3. Ensure the reduction of waste generated due to errors, poor planning, breakage, mishandling, contamination, or other factors shall be employed.
 - 4. Efficiently use waste material to the fullest extent possible in the completion of this Project, including the following.
 - a. Reuse of materials on site where possible.
 - b. Recycling of waste generated during the construction processes.
 - 5. The Contractor is encouraged to include additional resource efficient methods in the Project.
 - 6. In the management of waste consideration shall be given to the availability of viable markets, the condition of the material, the ability to provide the material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates.

- B. Contractor Participation: The Contractor shall take a pro-active, responsible role in the management of construction and demolition waste and require all subcontractors, vendors, and suppliers to participate in the effort.
 - 1. The Contractor is responsible for implementation of special programs involving rebates or similar incentives related to recycling of waste.
 - 2. Revenues or other savings obtained for salvage, or recycling shall accrue to the Contractor. Firms and facilities used for recycling, reuse, and disposal shall be appropriately permitted for the intended use to the extent required by federal, state, and local regulations.
- C. Waste disposal: In no case shall material be disposed of in a landfill or incinerator where an approved and less costly recycling or reuse alternative exists. Waste disposal in landfills and incinerators shall be minimized and shall be considered the alternative of last resort.

1.3 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Commingled: Materials of varied types deposited into the same receptacle or pile, or mixed together during demolition.
- C. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
 - 1. Construction and demolition waste includes excess or otherwise unusable construction materials, packaging materials for construction products, and other materials generated during the construction process but not incorporated into the work.
- D. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitability, corrosiveness, toxicity or reactivity.
- E. Hazardous Waste: Any material or byproduct of construction whose handling, storage and disposal is regulated by the Environmental Protection Agency.
- F. Non-hazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitability, corrosiveness, toxicity, or reactivity.
- G. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.
- H. Off-Site Separation: Sorting and separating commingled waste at a location other than the construction jobsite, that location having been established for the purpose of recycling.
- I. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- J. Recycle: To remove a waste material from the Project site to another site for remanufacture into a new product for reuse by others.

- K. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- L. Return: To give back reusable items or unused products to vendors for credit.
- M. Reuse: To reuse a construction waste material in some manner on the Project site.
- N. Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.
- O. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- P. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- Q. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- R. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- S. Volatile Organic Compounds (VOCs): Chemical compounds common in and emitted by many building products over time through outgassing; solvents in paints and other coatings; wood preservatives; strippers and household cleaners; adhesives in particleboard, fiberboard, and some plywoods; and foam insulation.
- T. Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material being landfilled.
- U. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.4 LIST OF RECYCLABLE MATERIALS.

- A. Materials to be recycled, salvaged, or reused during this project include, but are not limited to, the following:
 - 1. Asphaltic paving.
 - 2. Asphalt / bituminous roofing.
 - 3. Beverage containers.
 - 4. Brick.
 - 5. Carpet and carpet pad trim.
 - 6. Cement fiber products, including shingles, panels, siding.
 - 7. Concrete, concrete block, concrete masonry units (CMU), slump stone (decorative concrete block), and rocks.
 - 8. Fluorescent light tubes, per local regulatory requirements.
 - 9. Furnishings.
 - 10. Glass.
 - 11. Green materials (i.e. tree trimmings and land clearing debris).

12. Gypsum wallboard.
 13. Insulation.
 14. Metals including, but not limited to: stud trim, ductwork, piping, reinforcing steel (rebar), roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze. (ferrous and non-ferrous).
 15. Paint.
 16. Paper, including bond, newsprint, cardboard, mixed paper, packing materials, and packaging.
 17. Plastics, plastic buckets and plastic sheeting.
 18. Porcelain plumbing fixtures.
 19. Rigid foam insulation and packing materials.
 20. Soils and land clearing debris.
 21. Wood, including clean dimensional wood, pallet wood, plywood, oriented strand board (OSB), particle board.
- B. The Contractor should be aware that the Commonwealth of Massachusetts has banned the following waste streams from incineration or landfill disposal. These items may not be included in waste destined for incineration or landfills:
1. Lead-acid batteries
 2. Leaves and Yard Waste
 3. Whole Tires
 4. White Goods (Appliances)
 5. Cathode Ray Tubes (CRTs) including computer monitors
 6. Metal, Plastic and Glass Containers
 7. Recyclable Paper
- C. The Contractor should be aware that the Commonwealth of Massachusetts has enacted a law, and implemented regulations effective December 31, 2008 that prohibits disposal of mercury-added products in any manner other than recycling, disposing as hazardous waste, or a method approved by the State Department of Environmental Protection. Certain provisions of the law focus on mercury-containing lamps (which include fluorescent, HID and energy-efficient lamps).

1.5 RESOURCES

- A. Resources: The following sources may be useful in development of the specified Waste Management Plan:
1. Recycling Haulers and Markets. A list of Massachusetts haulers and markets for recyclable materials is available on-line at the following URL:
<http://www.STATE.MA.US/DEP/recycle/files/rsd.pdf>.
 - a. This list is provided for information only and may not be comprehensive; other haulers and markets may also be available.

1.6 SUBMITTALS

- A. Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:

1. Waste Management Plan: Submit draft(s) and Final Waste Management Plan, as specified herein under the Article entitled "Waste Management Plan".
 2. Recycling Facilities List: Submit list of names, addresses, and telephone numbers for all proposed recycling facilities and obtain Architect's acceptance prior to use of recycling facilities. Additionally, with submittal, include for each recycling facility a certification letter on recycling facility letterhead which is signed by responsible party at recycling facility containing the following information:
 - a. End use of each recycled material handled by facility.
 - b. Recycling rate of the recycling facility.
 - c. Facility Permitting Information: For ABC rubble crushing and/or recycling facilities, provide a statement from the facility that references its specific exemption from the solid waste regulations (per 310 CMR 16.05 (3) (e) or provide a copy of the facility's current solid waste management facility permit in accordance with 310 CMR 19.000.
 3. Monthly recycling analysis reports: Submit monthly with each Application for Payment, recycling analysis report. Include separate reports for demolition and construction waste. Include the following information:
 - a. Material category.
 - b. Generation point of waste.
 - c. Total quantity of waste in tons).
 - d. Quantity of waste salvaged, both estimated and actual in tons.
 - e. Quantity of waste recycled, both estimated and actual in tons.
 - f. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - g. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
 - h. Tracking Report and Projections: Monthly recycling analysis reports shall additionally include updated projections for end-of-project recycling rates, salvage rates, and landfill rates demonstrating that the specified mandatory percentage of the construction waste will be diverted (recycled or salvaged) by date of Substantial Completion.
- B. Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
1. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
 - a. Record Keeping for Donations, Recycling and Landfill Disposal: Submit a complete materials audit and include the additional information specified following:
 - 1) Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
 - 2) Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
 - 3) Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets,

receipts, and invoices. Include documentation for backcharge fees, if any, for improperly segregated waste.

- 4) Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.7 WASTE MANAGEMENT PLAN

- A. Draft Waste Management Plan: Within 14 calendar days after receipt of Notice of Award of Bid, and prior to any waste removal, the Contractor shall submit a Draft Waste Management Plan to both Architect and Owner. Submit draft Waste Management Plan and obtain approval from Architect and Owner prior to engagement of waste or recycling subcontractors. The Draft Waste Management Plan shall include as a minimum the following:
 1. Analysis of the jobsite waste expected to be generated, categorized by material types and approximate quantities.
 - a. List specific waste materials that will be salvaged for resale, salvaged and reused, or recycled.
 - b. Estimated percentage of waste diverted by this Plan.
 - c. Identification of materials that cannot be recycled or reused
 2. Disposal options: The name of all landfills and incinerators proposed for trash disposal, the respective tipping fees for each of these disposal options including transportation costs, and the projected cost of disposing of all Project waste in the landfills.
 3. Alternatives to Incineration or Landfill Disposal: A list of each material proposed to be salvaged, reused, or recycled during the course of the Project. Include the following information:
 - a. The proposed end use or market for each material.
 - b. The respective tipping fees for each end use or market (including transportation costs).
 - c. The estimated net cost savings or additional costs resulting from separating and recycling each material (versus landfilling or other disposal).
 - 1) "Net" means that the following have been subtracted from the cost of separating and recycling: (a) revenue from the sale of recycled or salvaged materials and (b) landfill tipping fees saved due to diversion of materials from the landfill.
- B. Final Waste Management Plan: Once the Owner has reviewed the draft Waste Management Plan and made appropriate suggested modifications, the Contractor shall submit, within 14 calendar days of receiving such suggested modifications, a Final Waste Management Plan, incorporating Owner's input. The Final Waste Management Plan shall contain the following:
 1. Analysis of the jobsite waste expected to be generated, categorized by material types and approximate quantities.
 - a. List specific waste materials that will be salvaged for resale, salvaged and reused, or recycled.
 2. Materials Handling Procedures: A description of the means by which any waste materials identified to be salvaged, reused, or recycled, will be

protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

3. Markets: A list of the markets or other on-site or off-site end uses that will be used for each material that will be separated for reuse, salvage, or recycling.
 - a. Identify (and utilize) local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and organizations that accept used materials such as materials exchange networks, and Habitat for Humanity.
4. Transportation: Describe the means of transportation of the recyclable materials and destination of all waste materials.
 - a. Transported materials includes:
 - 1) Materials that will be site-separated and hauled to designated centers
 - 2) Mixed materials will be collected by a waste hauler and removed from the site).
 - 3) Mixed materials that will be removed from site and later separated for recycling.
5. Disposal options: The name of all landfills and incinerators proposed for trash disposal, the respective tipping fees for each of these disposal options including transportation costs, and the projected cost of disposing of all Project waste in the landfill(s).
 - a. Alternatives to Incineration or Landfill Disposal: A list of each material proposed to be salvaged, reused, or recycled during the course of the Project.
6. Cost of Reuse, Salvage, or Recycling. An estimate of the cost, including separation, transportation, and marketing, to reuse, salvage, or recycle the materials identified.
7. Schedule of special meetings to required to address waste management implementation.

1.8 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: The Contractor shall designate a specific party (or parties) responsible for instructing workers in recycling and overseeing and documenting results of the Waste Management Plan for the Project.
- B. Distribution: The Contractor shall distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, the Owner, and the Architect.
- C. Instruction: The Contractor or his designated waste manager shall provide on-site instruction regarding appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all involved parties at the appropriate stages of the Project.
- D. Separation facilities: As appropriate during each stage of the Project, the Contractor shall lay out and label a specific area(s) to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

- E. Hazardous wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations.

1.9 WASTE MANAGEMENT REPORTING

- A. Application for Progress Payments: The Contractor shall submit with each Application for Progress Payment, a Summary of Waste generated by the Project. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment. The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information:
 - 1. The amount (in tons or cubic yards) of material landfilled from the Project, the identity of the landfill, the total amount of tipping fees paid, transportation costs (if separate) and the total disposal cost. Include manifests, weight tickets, receipt, and invoices.
 - 2. For each material recycled, reused, or salvaged from the Project, the amount (in tons or cubic yards), the date removed from the jobsite, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of salvage or recycling each material. Attach manifests, weight tickets, receipts, and invoices.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 GENERAL WASTE MANAGEMENT

- A. Use detailed material estimates to reduce risk of unplanned and potentially wasteful cuts.
- B. Arrange for vendors and material suppliers is to take back shipping and packing materials for re-use or recycling to the maximum extent economically feasible.
 - 1. Include in material purchasing agreements a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable material, that they reduce the amount of packaging, that packaging be taken back for reuse or recycling, and to take back all unused product. Insure that subcontractors require the same provisions in their purchase agreements.
- C. Provide clearly labeled containers for recycled waste that is to be recycled, with a list of acceptable and unacceptable materials. The list of acceptable materials must be the same as the materials recycled at the receiving material recovery facility or recycling processor.
 - 1. Separate corrugated cardboard in accordance with the Waste Management Plan and place in designated areas for recycling.
 - 2. Separate and recycle waste materials in accordance with the Waste Management Plan and to the maximum extent economically feasible.
 - 3. Place materials defined as hazardous or toxic waste in designated containers.
- D. Provide labeled containers for all recycled waste that is to be disposed in a landfill.
- E. Handle and transport recyclable materials in manner to prevent contamination of materials from incompatible products and materials.

- F. Conduct regular visual inspections of dumpsters and recycling bins to remove contaminants.

3.2 SOURCE SEPARATION

- A. General: Separate recyclable materials from general construction waste. Separate recyclable materials by type.
 - 1. Provide containers, clearly labeled, by type of separated materials or provide other storage method for managing recyclable materials until they are removed from Project site.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from demolition area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from weather.
- B. Source Separation Methods:
 - 1. Waste products and materials that are recyclable shall be separated from trash and sorted into appropriately marked separate containers and then transported to the respective recycling facility for further processing.
 - 2. Comingled Method: Recyclable materials shall be placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed.
 - a. Do not put recycled waste that will be disposed in a landfill into a comingled waste recycling container.
 - 3. Other Methods: Other methods proposed by the Contractor may be used when approved by the Architect and Owner.
- C. Waste materials not suitable for reuse, but having value as being recyclable, shall be made available for recycling whenever economically feasible.

3.3 REMOVAL OF CONSTRUCTION AND DEMOLITION WASTE MATERIALS

- A. Remove recycled waste materials from project site on a regular basis. Do not allow recycled waste to accumulate on-site.
- B. Transport recycled waste materials off Owner's property and legally dispose of them.
 - 1. Materials with no practical use or economic benefit shall be disposed at a landfill or incinerator.

End of Section

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL**1.1 SECTION INCLUDES**

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

1.2 RELATED REQUIREMENTS

- A. Section 01 30 00 - ADMINISTRATIVE REQUIREMENTS: Submittal's procedures, shop drawings, product data, and samples.
- B. Section 01 70 00 - EXECUTION AND CLOSEOUT REQUIREMENTS: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.3 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit two sets of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- A. Refer to 00 16 Invitation to Bid Project Manual, SECTION 3.15 DOCUMENTS AND SAMPLES AT THE SITE.
- B. Maintain on site one set of the following record documents; record actual revisions to the Work:
 1. Drawings.
 2. Addenda.
 3. Change Orders and other modifications to the Contract.
- C. Ensure entries are complete and accurate, enabling future reference by Owner.
- D. Store record documents separate from documents used for construction.
- E. Record information concurrent with construction progress.
- F. Record Drawings: Legibly mark each item to record actual construction including:
 1. Field changes of dimension and detail.
 2. Details not on original Contract drawings.
- G. Refer to 00 16 Invitation to Bid Project Manual, SECTION 3.22 AS BUILT DRAWINGS.
 1. Record Drawings shall be submitted to Owner in both AutoCAD2014 and paper formats.
 2. Record Drawings to include the Item 150 the Field Survey and Record Drawings.

3.2 OPERATION AND MAINTENANCE DATA

- A. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- B. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- C. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.3 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 1. Product data, with catalog number, size, composition, and color and texture designations.

- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.4 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Provide servicing and lubrication schedule, and list of lubricants required.
- D. Include manufacturer's printed operation and maintenance instructions.
- E. Include sequence of operation by controls manufacturer.
- F. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- G. Provide a checklist for monthly, quarterly, and annual maintenance of the Hangar doors.

3.5 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11-inch three D side ring binders with durable plastic covers; 2-inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all

volumes Tables of Contents in each volume, with the current volume clearly identified.

- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20-pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

3.6 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

Section 01 79 00
DEMONSTRATION AND TRAINING

PART 1 - GENERAL**1.1 SUMMARY**

- A. Demonstrating equipment.
- B. Instruction and training of Owner's personnel.

1.2 DEMONSTRATING EQUIPMENT

- A. Demonstrate operation and maintenance of Products to Owner's personnel 2 weeks prior to date of Substantial Completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months from date of Substantial Completion.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
- E. Prepare and insert additional data in operations and maintenance manuals specified under Section 01 78 00 - CLOSEOUT SUBMITTALS when need for additional data becomes apparent during instruction.

1.3 INSTRUCTION AND TRAINING OF OWNER'S PERSONNEL

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.
- B. For equipment requiring seasonal operation, perform instructions for other seasons within six months .
- C. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.
- E. Provide sufficient formal instructional time for training Owner's personnel, so that the Owner's personnel will fully comprehend operation and maintenance of the facility's equipment and systems. Contractor's personnel designated for Owner training shall be competent and knowledgeable and have good communication skills.
 - 1. Training sessions shall be pre-arranged directly with the Owner.
 - a. Instructors shall arrive at pre-scheduled training sessions on-time and be fully prepared to teach using a preplanned training program.

- b. All instructors are subject to the Owner's approval. Replace unacceptable instructors and reschedule training as directed by the Owner at no increased cost to the Owner.
- 2. Training shall include the following:
 - a. General overview of Record Documents:
 - 1) Record Drawings.
 - 2) Record Project Manual.
 - 3) Operation and Maintenance Manuals.
 - 4) Finishes.
 - 5) Warranty and maintenance agreements.
 - 6) Test reports and inspections.
 - b. Fire suppression systems and equipment.
 - c. Fire alarm systems and equipment.
 - d. HVAC systems and equipment.
 - e. Plumbing systems and equipment.
 - f. Electrical systems and equipment.
- F. Training Personnel:
 - 1. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.
 - a. Designated personnel for Owner training shall be competent and knowledgeable and have good communication skills.
 - 2. Instructors shall arrive at scheduled training sessions on-time and be fully prepared to teach using a preplanned training program.
 - 3. All instructors are subject to the Owner's approval. Replace unacceptable instructors and reschedule training as directed by the Owner at no increase cost to the Owner.
- G. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Operations manuals.

- c. Maintenance manuals.
 - d. Project record documents.
 - e. Identification systems.
 - f. Warranties and bonds.
 - g. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
- a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
- a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.

- f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
- 8. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

End of Section

Section 03 0513
CONCRETE SEALERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish and install concrete sealers/coatings on exposed-to-view concrete floors, where shown and as scheduled on the Drawings.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - CAST-IN-PLACE CONCRETE: Placing and finishing concrete slabs.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.

1.1 ADMINISTRATIVE REQUIREMENTS

- A. Pre-construction Conference:
 - 1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.2 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
 - 1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties, material compositions, and application instructions for all finishing products to be applied hereunder.
 - a. Include certification of data indicating Volatile Organic Compound (VOC) content of all coatings.

2. Samples of each level of slip resistance, aggregate, and pattern available in the specified products from the proposed manufacturer.
3. Qualification Submittals.

1.3 QUALITY ASSURANCE

- A. Use an applicator approved by the manufacturer, experienced in the approved materials, and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.4 ENVIRONMENTAL CONDITIONS

- A. Work shall be done only under optimum conditions as recommended by manufacturer. Surfaces over which sealer is to be applied shall be completely dry (minimum 30 days since concrete placement) and thoroughly clean. Maximum moisture content is 8 percent. Substrate and ambient temperature shall be between 60 and 90 degrees Fahrenheit (15 to 32 degrees Celsius).

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
 2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.
- B. Storage and Handling Requirements:
 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
 2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Transparent single component water and chloride-ion repellent penetrating sealer having a 40 percent solids, Alkyltrialkoxo Silane resin base, forming a permanent chemically bonded layer within the concrete.
 1. BASF Construction Chemicals, LLC. (Master Builders Brand), Shakopee MN, product "MasterProtect H 400".
 2. Dayton-Superior, Miamisburg OH., product: "Weather Worker 40% (J-29)".
 3. Euclid Chemical Company, Cleveland OH., product "Baracade Silane 40."
 4. Sika Corporation, Lyndhurst, NJ, product "Sikagard 740W."
 5. Symons Corporation, Des Plaines, IL, product "Silane 40".
 6. Textured Coatings of America, Inc., Ft. Lauderdale, FL, product "Tex-Cote Rainstopper 140".
 7. Tnemec, Kansas City, MO., product Series 664 "Dur-a-Pell 40".

PART 3 - EXECUTION**3.1 SURFACE PREPARATION**

- A. Upon acceptance of completed substrate surfaces, thoroughly remove all dust and debris by sweeping or vacuum cleaning.
- B. Remove laitance, curing sealers, and other foreign matter from concrete surfaces with necessary techniques such as shot blasting, Muriatic acid etching, surface freezing and power scarification.
- C. Surface preparation required if a curing compound has been applied to substrate surfaces.
 - 1. Thoroughly etch concrete surfaces using well mixed solution consisting of two parts by volume water diluted with one part by volume 30 percent commercial grade hydrochloric acid at a rate of one quart per ten square feet. Apply evenly to thoroughly saturated areas and scrub into surfaces using stiff-bristled broom. Allow solution to activate undisturbed for not less than five minutes or for duration of boiling effect.
 - 2. Thoroughly remove etching solution by washing down surfaces with clean water; flooded at least three separate times at a rate of two gallons per ten square feet; thoroughly remove all contaminants that may be engrained or latent in surfaces.
 - 3. Perform a test application of a square foot in three locations, such as beneath casework. Allow to set for 72 hours, and test adhesion as recommended by the manufacturer.

3.2 APPLICATION

- A. Apply transparent water-repellent system to properly prepared surfaces indicated. Apply water repellent within time restrictions after surface preparation as recommended by manufacturer and as additionally specified herein.
 - 1. Apply water repellents as shipped by the manufacturer; do not dilute.
- B. Apply water-repellent by low pressure spray techniques recommended by manufacturer to achieve desired function and warrantable results. Apply water repellents evenly until surface is totally saturated. Coverage rates are dependent on surface material. Only one saturation coat is required
 - 1. Do not apply water repellents to surfaces below 40 degrees F (35 degrees C) or above 95 degrees F (4.4 degrees C) unless recommended by the manufacturer.
 - 2. Do not apply to wet substrate or substrate containing frozen water.
 - 3. Do not apply water repellents when rain is predicted within 48 hours or less than 5 days after surface has been wet.
 - 4. Do not apply water repellents in high or gusty winds.
- C. Apply water repellent material as demonstrated and approved at jobsite mock-up and not less than manufacturer's minimum recommended coverage rate.

End of Section

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SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Concrete formwork.
- B. Concrete building frame members.
- C. Floors and slabs on grade.
- D. Concrete shear walls, elevator shaft walls, and foundation walls.
- E. Concrete foundations and anchor bolts for pre-engineered building.
- F. Concrete reinforcement.
- G. Joint devices associated with concrete work.
- H. Miscellaneous concrete elements, including equipment pads, equipment pits, light pole bases, flagpole bases, thrust blocks, and manholes.
- I. Concrete curing.

1.02 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.03 REFERENCE STANDARDS

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).
- B. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.
- C. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.
- D. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- E. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.
- F. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.
- G. ACI PRC-308 - Guide to External Curing of Concrete; 2016.
- H. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).
- I. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
- J. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.
- L. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.
- M. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2023.
- N. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.
- O. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.
- P. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
- Q. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2020.

- R. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- S. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.
- T. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).
- U. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2023, with Editorial Revision.
- V. ASTM C845/C845M - Standard Specification for Expansive Hydraulic Cement; 2018.
- W. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.
- X. ASTM C1202 - Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration; 2019.
- Y. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2020.
- Z. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete; 2019.
- AA. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.
- AB. ASTM D2103 - Standard Specification for Polyethylene Film; 2023a.
- AC. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2018a.
- AD. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

1.04 SUBMITTALS

- A. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
 - 2. For membrane-forming, moisture emission-reducing, curing and sealing compound, provide manufacturer's installation instructions,.
- B. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI SPEC-301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI CODE-318, Chapter 5 - Concrete Quality, Mixing and Placing.
 - 3. Indicate proposed mix design complies with admixture manufacturer's written recommendations.
- C. Samples: Submit samples of underslab vapor retarder to be used.
- D. Test Reports: Submit report for each test or series of tests specified.
- E. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- F. Sustainable Design Submittal: If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace Portland cement, submit the total volume of concrete cast in place, mix design(s) used showing the quantity of portland

cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used.

- G. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.
- H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
- B. Follow recommendations of ACI PRC-305 when concreting during hot weather.
- C. Follow recommendations of ACI PRC-306 when concreting during cold weather.
- D. For slabs indicated to receive membrane-forming, moisture emission-reducing, curing and sealing compound, do not proceed with application unless manufacturer's representative is present for every day of placement.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI PRC-347 to provide formwork that will produce concrete complying with tolerances of ACI SPEC-117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
 - 2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 3. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches (38 mm) of concrete surface.

2.02 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Unfinished, unless otherwise indicated.
- B. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch (1.29 mm).
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
 - 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches (38 mm) of weathering surfaces.
 - 4. Coupler Systems: Mechanical devices for splicing reinforcing bars; capable of developing full steel reinforcing design strength in tension and compression.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I/II Portland type.
 - 1. Acquire cement for entire project from same source.
- B. Blended, Expansive Hydraulic Cement: ASTM C845/C845M, Type K.
- C. Hydraulic Cement with silica aggregate: ASTM C845/C845M, Type K.
- D. Fine and Coarse Aggregates: ASTM C33/C33M.
- E. Fly Ash: ASTM C618, Class C or F.
- F. Calcined Pozzolan: ASTM C618, Class N.

- G. Silica Fume: ASTM C1240, proportioned in accordance with ACI PRC-211.1.
- H. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
- F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- G. Accelerating Admixture: ASTM C494/C494M Type C.
- H. Retarding Admixture: ASTM C494/C494M Type B.
- I. Water Reducing Admixture: ASTM C494/C494M Type A.
- J. Integral Hardening Admixture: Dry powder added to concrete during batching.

2.05 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder:
 - 1. Sheet Material: ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single-ply polyethylene is prohibited.
 - 2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
- B. Non-Shrink Cementitious Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents.
- C. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, nonmetallic aggregate, and activator.

2.06 BONDING AND JOINTING PRODUCTS

- A. Epoxy Bonding System:
 - 1. Complying with ASTM C881/C881M and of Type required for specific application.
- B. Slab Isolation Joint Filler: 1/2-inch (13 mm) thick, height equal to slab thickness, with removable top section forming 1/2-inch (13 mm) deep sealant pocket after removal.
- C. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.
- D. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches (150 mm) on center; ribbed steel stakes for setting.
- E. Dowel Sleeves: Plastic sleeve for smooth, round, steel load-transfer dowels.
- F. Plate Dowel System: Steel plate dowel and plastic dowel sleeve; with integral fasteners for attachment to formwork.

2.07 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
- B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.

- C. Curing Agent, Water-Cure Equivalent Type: Clear, water-based, non-film-forming, liquid-water cure replacement agent.
 - 1. Comply with ASTM C309 standards for water retention.
 - 2. Compressive Strength of Treated Concrete: Equal to or greater than strength after 14-day water cure when tested in accordance with ASTM C39/C39M.
 - 3. VOC Content: Zero.
- D. Curing and Anti-Spalling Compound: Boiled linseed oil compound.
- E. Curing and Sealing Compound, Moisture Emission-Reducing, Membrane-Forming: Clear, liquid sealer for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
 - 1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
 - 2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
 - 3. VOC Content: Less than 100 g/L.
- F. Curing and Sealing Compound, Moisture Emission-Reducing, Penetrating: Clear, water-based, non-film-forming curing agent; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission, moisture vapor emission, and alkalinity.
 - 1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
 - 2. Compressive Strength of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C39/C39M.
 - 3. Chloride Ion Resistance of Treated Concrete: Equal to or greater than strength after 28-day water cure when tested according to ASTM C1202.
 - 4. Comply with ASTM C309 and ASTM C1315 Type I Class A.
- G. Curing Compound, Non-Dissipating: Liquid, membrane-forming, clear, nonyellowing acrylic; complying with ASTM C309.
- H. Moisture-Retaining Sheet: ASTM C171.
 - 1. Curing paper, regular.
 - 2. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch (0.102 mm).
 - 3. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard (1.71 kg/sq m).
- I. Polyethylene Film: ASTM D2103, 4 mil, 0.004 inch (0.102 mm) thick, clear.
- J. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.
 - 1. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with ACI recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.
- D. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.

2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
4. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
5. Water-Cement Ratio: Maximum 40 percent by weight.
6. Maximum Aggregate Size: 5/8 inch (16 mm).

2.09 MIXING

- A. Transit Mixers: Comply with ASTM C94/C94M.
- B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
- E. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches (150 mm). Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Comply with requirements of ACI SPEC-301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI PRC-304.
- B. Place concrete for floor slabs in accordance with ACI PRC-302.1.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

- G. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
- D. Load Transfer Construction and Contraction Joints: Install load transfer devices as indicated; saw cut joint at surface as indicated for contraction joints.
- E. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch (5 mm) thick blade and cut at least 1 inch (25 mm) deep but not less than one quarter (1/4) the depth of the slab.

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for compliance with specified tolerances.
- B. Maximum Variation of Surface Flatness:
 - 1. Exposed Concrete Floors: 1/4 inch (6 mm) in 10 feet (3 m).
 - 2. Under Seamless Resilient Flooring: 1/4 inch (6 mm) in 10 feet (3 m).
 - 3. Under Carpeting: 1/4 inch (6 mm) in 10 feet (3 m).
- C. Correct the slab surface if tolerances are less than specified.
- D. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch (6 mm) or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch (6 mm) or more in height. Provide finish as follows:
- D. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
 - 1. Other Surfaces to Be Left Exposed: Trowel as described in ACI PRC-302.1, minimizing burnish marks and other appearance defects.
- E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.08 CURING AND PROTECTION

- A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than seven days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than seven days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.

- a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 7 days.
 - b. Spraying: Spray water over floor slab areas and maintain wet.
 - c. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
2. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches (75 mm) and seal with waterproof tape or adhesive; secure at edges.
 - b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.09 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards (76 cu m) or less of each class of concrete placed.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.10 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.11 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

Section 05 4000
COLD-FORMED METAL FRAMING

PART 1 - GENERAL**1.1 SUMMARY**

- A. Design, engineer, furnish and install metal framing and support system for the following applications:
 - 1. Load bearing formed steel stud interior framing at walls (Wall type A31) and ceilings at Toilet Rooms.
 - 2. Metal plate blocking in conjunction with framing of this Section 05 4000.
 - 3. Include all connections, bracing, bridging and accessories.
 - 4. Sill sealer beneath metal framing base track at concrete slabs.
- B. Furnish the following products to be installed under the designated Sections:
 - 1. Placement of anchors securing the work of this section: Section 03 3000 - CAST-IN-PLACE CONCRETE.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - ROUGH CARPENTRY: Wood blocking and curbing.
- B. Section 07 2100 - THERMAL INSULATION: Insulation within framing members.
- C. Section 07 9200 - JOINT SEALANTS.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. AISI S211 – North American Standard for Cold-Formed Steel Framing, Wall Stud Design.
 - 2. AISI S212 - North American Standard for Cold-Formed Steel Framing, Header Design.
 - 3. AISI S213 - North American Standard for Cold-Formed Steel Framing, Lateral Design.
 - 4. AISI S902-02, Stub-Column Test Method for Effective Area of Cold-Formed Steel Columns, American Iron and Steel Institute, Washington, DC.
 - 5. AISI S905-02, Test Methods for Mechanically Fastened Cold-Formed Steel Connections, American Iron and Steel Institute, Washington, DC.
 - 6. ANSI - Cold-Formed Steel Design Manual.
 - 7. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
 - 8. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

9. ASTM A153/A153M – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
10. ASTM A645/A645M - Standard Specification for Pressure Vessel Plates, 5 % and 51 2 % Nickel Alloy Steels, Specially Heat Treated.
11. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
12. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
13. ASTM A792/A792M - Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
14. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
15. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.
16. ASTM C955 - Standard Specification for Cold-Formed Steel Structural Framing Members.
17. ASTM C1007 – Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
18. ASTM C1513 - Standard Specification for Steel Tapping Screws for Cold-Formed Steel Framing Connections.
19. ASTM D520 – Standard Specification for Zinc Dust Pigment.
20. ASTM E488/E488M – Standard Test Methods for Strength of Anchors in Concrete Elements.
21. ASTM E1190 – Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members.
22. ASTM F1554 – Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
23. ASTM G60 – Standard Practice for Conducting Cyclic Humidity Exposures.
24. ASTM G90 - Standard Practice for Performing Accelerated Outdoor Weathering of Materials Using Concentrated Natural Sunlight.
25. AWCI: Specifications Guide for Cold Formed Steel Structural Members.
26. AWS A 2.0 - Standard Welding Symbols.
27. AWS D 1.3 - Light Steel Welding Code.
28. SSPC Steel Structures Painting Manual.
29. SSMA: Cold Formed Steel Details.

B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:

1. AISI S100 – North American Specification for the Design of Cold-Formed Steel Structural Members.
2. ANSI S200 – North American Standard for Cold-Formed Steel Framing.
3. ANSI S202 – Code of Practice for Cold-Formed Structural Framing.

4. ANSI S220 – North American Standards for Cold-Formed Steel Framing – Non-Structural Members.
5. ASCE 7 (Including Supplements) - Minimum Design Loads for Buildings and Other Structures.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

C. Sequencing:

1. Field Measurements:
 - a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
 - b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties and limitations on standard framing members and other products furnished hereunder.
2. Engineering Calculations: Provide calculations for loadings and stresses for all framing under the Professional Structural Engineer's seal. Show how design load requirements and other performance requirements have been satisfied.
3. Manufacturer's installation instructions: Indicate special procedures, and conditions requiring special attention.

4. Shop drawings:
 - a. Large scale design details showing component details, framed openings, bearing, anchorage, loading, welds, type and location of fasteners, and accessories or items required of related work.
 - 1) Indicate all products which interface with framing. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
 - 2) Indicate resilient hangers, and imposed loading. Coordinate resilient hanger with framing design and imposed loading conditions.
 - b. Show profile, size and location of custom punches for MEP distribution.
 - c. Detail all conditions which deviate from Contract Documents.
 - d. Describe method for securing studs to tracks and for bolted and welded framing connections.
 - e. Show loads applied to framing, indicate differential of movement.
 - f. Provide elevations showing framing layout. Coordinate framing locations with cladding systems.
5. Prior to prefabrication of framing, submit fabrication and erection drawings for approval. All calculations and details are to be submitted for all members and connections.
6. Qualification Submittals:
 - B. Submit prior to request for Certificate of Occupancy, to both Architect and local Building Official having jurisdiction, under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS, the following
 1. All certifications, reports and programs required by Chapter 17 of the MAINE UNIFORM BUILDING AND ENERGY CODE for work engineered by Contractor's Profession Engineer under the requirements of this Section.

1.6 QUALITY ASSURANCE

- A. General:
 1. Calculate structural properties of framing members in accordance with AWCI, MF/SLA and AWS D 1.3 requirements.
 2. Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
- B. Qualifications:
 1. Manufacturers: Company specializing in manufacturing the products specified in this section with minimum 3 years documented experience.
 2. Installer/Applicator: Company with a minimum of 3 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.
 3. Welders Certificates: Utilize only qualified welders employed on the Work. Submit verification that Welder's are AWS D1.1 and D1.4 qualified within the previous 12 months.
 4. Professional Engineer Qualifications: Design structural elements under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of Maine

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 - 1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
 - 2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
 - 2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.
- C. Packaging Waste Management: Comply with packaging requirements specified under Section 01 6000 - PRODUCT REQUIREMENTS.
 - 1. Shipping materials: Manufacturer shall utilize to the greatest extent possible packaging materials which are biodegradable and recyclable.
 - 2. Jobsite packaging waste management: Recycle packaging materials coordinated with general construction waste management specified under Section 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
 - 1. ClarkDietrich Building Systems, LLC, West Chester, OH.
 - 2. Marino-Ware Industries Corp., South Plainfield NJ.
 - 3. Steel Elements, Gorham NH.
 - 4. The Steel Network (TSN), Las Vegas NV.
 - 5. Telling Industries, Willoughby, OH.
- B. Acceptable Substitutions: The products specified herein establish standards of quality, design and function desired. Other manufacturers will be considered for acceptance per the following:
 - 1. Contractor must provide appropriate product data with bid for the Architect to consider the substitutions as "equal" to the manufacturer and product specified. Submit supporting technical literature, samples, drawings and performance data in order for Architect/Engineer to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.
 - 2. Contractor must include unit prices showing any add or deduct costs for all recommended substitutions which have a greater or lesser cost than furnishing and installing the specified manufacturer and product.

2.2 PERFORMANCE/DESIGN CRITERIA

- A. Structural performance: Design, engineer and provide a complete metal framing and support system having deflection limits as specified herein under the full inward and outward lateral load prescribed by applicable codes for this project location. Deflection and structural calculations shall not include any structural benefit from the veneer(s); metal framing alone shall carry the loads. Where a member supports more than one finish, the most restrictive deflection shall govern.
 - 1. Design wall system to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 - 2. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings. Comply with the following cold-formed steel framing design standards:
 - a. Wall Studs: AISI S211.
 - b. Headers: AISI S212.
 - c. Lateral Design: AISI S213.
 - 3. Deflection limits
 - a. Exterior Wall Framing: Horizontal deflection of $1/360$ of the wall height except as specified otherwise herein below, or as indicated otherwise on Structural Drawings.
 - 1) Masonry veneer: $L/600$ where L is the length of the steel member. Design wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.
 - 2) Terra cotta rain screen systems: $L/360$ where L is the length of the steel member, with maximum movement not greater than $5/8$ inch.
 - 3) Exterior insulation and finish system (EIFS): $L/360$ where L is the length of the steel member.
 - b. Interior load-bearing wall framing: Horizontal deflection of $1/360$ of the wall height.
 - c. Floor joist framing: Vertical deflection of $1/480$ of the span.
- B. Design Loading: Refer to Structural Drawings.
 - 1. Wind Design Pressure: Loads shall be developed in accordance with the MAINE UNIFORM BUILDING AND ENERGY CODE and ASCE 7-16, incorporated by reference.
 - 1) Basic Wind Speed: 102 miles per hour. (three-second-gust).
 - 2) Occupancy Risk Factory I.
 - 3) Exposure: "D"
- C. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.
- D. Welding: Employ experienced welders who are certified in compliance with AWS Standard Qualification Procedures.
- E. Engineering: Provide the services of a Professional Engineer, registered in the State of Maine to design and certify that the work of this section meets or exceeds the performance requirements specified in this section and as required by MAINE UNIFORM BUILDING AND ENERGY CODE.

2.3 MATERIALS

- A. Recycled content of Steel: Use maximum available percentage of recycled steel. Steel framing products incorporated into the work shall contain not less than 30 percent of recycled steel.
- B. Steel Sheet: ASTM A1003/A1003M and ASTM A653/A 653M, structural steel, of grade as follows and having G90 (Z275) galvanized coating:
 - 1. Framing
 - a. Grade: As required by structural performance but in no case less than 18 gauge.
- C. Steel Sheet for Connectors: ASTM A1011/A1101M, hot rolled or ASTM A1008/A1008M, cold rolled; cleaned, pretreated, and primed with manufacturer's baked-on, lead- and chromate-free, rust-inhibitive primer complying with performance requirements in FS TT-P-664.
 - 1. Grade: As required by structural performance but in no case less than 18 gauge.
 - a. Coating: G90 (Z275) galvanized coating.

2.4 FRAMING MEMBERS

- A. Studs: Manufacturer's standard C-shaped steel studs complying with ASTM C955. Formed of ASTM A653/653M steel, G90 (Z275) galvanized, channel shaped with lipped flanges, punched web, size as shown on Drawings, thickness and grade as required by structural design calculations but in no case less than 18 gauge, 0.0428 inch (1.09 mm).
- B. Z-shape span connectors: Manufacturer's standard and custom formed Z-shape framing connectors, complying with ASTM C955. Formed of ASTM A653/653M steel, G90 (Z275) galvanized, having opposing lipped flanges. Sizes as shown on drawings, thickness and grade as required by structural design calculations but in no case less than 14 gauge, 0.0677 inch (1.72 mm).
- C. Tracks: Manufacturer's standard U-shaped steel track complying with ASTM C955. Formed of ASTM A653/653M steel, same designation, coating, and thickness as studs except as otherwise noted, channel shaped, solid web, depth compatible with studs, size, thickness and grade as required by structural design calculations but in no case less than 18 gauge, 0.0428 inch (1.09 mm).
- D. Drift and Vertical Deflection Clips: Manufacturer's standard bypass and head clips as required, capable of isolating wall stud from upward and downward vertical displacement of primary structure using mechanical fasteners.
 - 1. Provide clips with step bushings. Mechanical attachment to structure and screw attachment to stud web using step-bushings to permit frictionless vertical movement. 68 mils (1.72 mm) minimum thickness. Size of clips shall be as required by structural design calculations performed by clip manufacturer, and reviewed by specified Professional Licensed Engineer responsible for stamped shop drawings. Clips shall be fabricated/designed for the following conditions:
 - a. Exterior head of wall.
 - b. Exterior head of wall pre-assembled with track.
 - c. By-pass structural pour stop at floor slab.

- d. By-pass floor slab or structure.
- e. By-pass structure.

2.5 ANCHORS AND FASTENERS

- A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.
- B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.
- C. Mechanical Fasteners: Corrosion-resistant-coated, self-drilling, self-threading steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- D. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

- A. Sill sealer: Compressible polystyrene strip, minimum ¼ inch thick by width of framing. Acceptable products include the following, or approved equal.
 - 1. Dow Chemical Corp., Midland MI., product "Styrofoam Sill Seal".
 - 2. Owens Corning, Toledo OH. Product: "ProPink Comfort Seal".
 - 3. Pactiv Building Products, Lake Forest IL. product "Preimum Energy Sill Sealer".
- B. Liquid zinc coating, for touch-up of welds, scratches, and abrasions in galvanized steel: Low VOC organic zinc-rich coating containing 92% metallic zinc, by weight in the dried film (ASTM D520, Type III) and conforming to SSPC Paint 20, Type II, Level 1. Liquid zinc coating shall be recognized under the Component Program of Underwriter's Laboratories, Inc. as an equivalent to hot-dip galvanizing; conforming to MIL-P-21035B and SSPC Paint 29, Type II, Level I, for repair of hot-dip galvanizing and meeting the requirements for Zinc-Rich Paints.
 - 1. VOC limit: not more than 250 g/L.

2.7 PRE-ERECTION FABRICATION

- A. Framing components may be pre-assembled into panels prior to erecting. Fabricate panels square with framing members fitted, reinforced, and braced to suit design requirements; attach components in a manner to prevent racking.
- B. Fit and assemble in largest practical sections for delivery to site, ready for installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect previous work, related work, and conditions under which this work is to be performed and notify Contractor in writing of all deficiencies and conditions detrimental to the proper completion of this work.

- B. Beginning of installation means acceptance of existing substrates, previous work and conditions.

3.2 ERECTION - GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to ASTM C1007, unless more stringent requirements are indicated.
- C. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed metal framing members by welding or screw fastening, as indicated on approved Shop Drawings, or where not indicated, as standard with fabricator. Wire tying or clip fasteners of framing members is not permitted.
 - a. Where welding is indicated or required on approved Shop Drawings: Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to approved Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
- D. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members.
- E. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- F. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- G. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- H. Accurately align and attach runners in strict compliance with manufacturer's recommendations and approved shop drawings. Allow for main structure deflection at top runner to avoid transferring load stud system.
 - 1. Frame wall openings with additional framing members at perimeter of openings as needed.
 - 2. Align holes in framing members to facilitate electrical conduit and piping work.
 - 3. Provide all needed connections and accessories provide a complete structural system.
 - 4. Provide all needed members for proper fastening interior gypsum wallboard.
- I. Bracing: Provide continuous 1-1/2 inch cold-rolled channel horizontal bracing within 10 to 12 inches of tops of stud. Connect bracing to each stud as indicated on

approved shop drawings. Provide additional bridging and bracing as recommended by manufacturer, as necessary, and as indicated on approved shop drawings. Provide kick-back bracing perpendicular to plane of framing system and securely anchored to building structure needed to create a complete structural system meeting specified performance requirements.

- J. Touch-up damaged metal coatings and cut ends, with specified liquid zinc coating.

3.3 ERECTION OF STUDDING

- A. Install components in accordance with manufacturer's instructions and in accordance with approved shop drawings, referenced standards and codes.
- B. Align floor and ceiling tracks; locate to wall and partition layout. Secure in place as indicated on approved engineered shop drawings, at maximum 24 inches on center.
 - 1. Install Sill sealer as recommended by manufacturer beneath floor track with corrugated side facing down towards concrete slab, and ends butted.
- C. Squarely seat studs against webs of top and bottom tracks. Fasten both flanges of studs to top and bottom tracks. Space studs as indicated on approved shop drawings; not more than 2 inches from abutting walls and at each side of openings.
- D. Construct corners using minimum three studs. Double stud wall openings, door and window jambs.
- E. Erect load bearing studs one piece full length. Splicing of studs is not permitted.
- F. Erect load bearing studs, brace, and reinforce to develop full strength, to achieve design requirements.
- G. Install intermediate studs above and below openings to align with wall stud spacing.
- H. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing. Install double deep leg deflection track or specified clip system for vertical deflection of primary building structure.
- I. Attach cross studs, furring channels to studs for attachment of fixtures anchored to walls.
- J. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- K. Touch-up field welds and damaged galvanized and primed surfaces with primer.

3.4 ERECTION (WIND LOAD ONLY)

- A. Handling and lifting of prefabricated panels shall be done in a manner as to not cause distortion in any member.
- B. Tracks shall be securely anchored to the supporting structure as shown on the plans.
- C. At track butt joints, abutting pieces of track shall be securely anchored to a common structural element or they shall be butt-welded spliced together.

- D. Studs shall be plumbed, aligned and securely attached to the flanges or webs of both upper and lower tracks.
- E. Jack studs or cripples shall be installed below window sills, above window and door heads, at first standing stair rails, and elsewhere to furnish support and shall be securely attached to supporting members.
- F. Wall stud bridging shall be attached in a manner to prevent stud rotation. Bridging rows shall be spaced according to the following schedule. Wall up to 10 foot height; one row at mid-height. Wall exceeding 10 feet in height; bridging rows spaced not to exceed 5 feet on-center.

3.5 ERECTION (AXIAL LOAD-BEARING)

- A. Handling and lifting of prefabricated frame panels shall be done in a manner as to not cause distortion in any members.
- B. Tracks shall be securely anchored to the supporting structure as shown on the plans, and as designed and detailed on approved shop drawings.
- C. Complete uniform and level bearing support shall be provided for the bottom track.
- D. At track butt joints, abutting pieces of track shall be securely anchored to a common structural element or they shall be butt welded or spliced together,
- E. Studs shall be plumbed, aligned and securely attached to the flanges or webs of both upper and lower tracks.
- F. Framed wall openings shall include headers and supporting studs as shown on the plans, and as designed and detailed on approved shop drawings.
- G. Jack studs shall be installed below window sills, above window and door heads, at free standing stair rails and elsewhere to furnish support and shall be securely attached to supporting members.
- H. Temporary bracing shall be provided until erection is completed.
- I. Wall stud bridging shall be installed in a manner to provide resistance to both minor axis bending and rotation. Bridging rows shall be equally spaced not to exceed 4 feet on-center.
- J. Provide stud walls at locations indicated on plans as "shear walls" for frame stability and lateral load resistance. Such stud walls shall be braced as indicated on plans and specifications.
- K. Splices in axially loaded studs are not be permitted.
- L. Provide insulation equal to that specified elsewhere in all doubled jamb studs and double header member which will not be accessible to the insulation contractor.

3.6 TOLERANCES

- A. The following allowable installed tolerances are allowable variations from locations and dimensions indicated by the Contract Documents and shall not be added to allowable tolerances indicated for other work.
 - 1. Allowable variation from true plumb, Level, and Line: 1/8 inch in 20 feet.

2. Allowable variation from true wall thickness: 1/8 inch in 20 feet.
3. Allowable variation from true plane of adjacent surfaces: 1/8 inch in 10 feet.

End of Section

Section 06 1000
ROUGH CARPENTRY

PART 1 - GENERAL**1.1 SUMMARY**

- A. General: The work of this Section consists of rough carpentry as specified herein, where shown on the Drawings, and as additionally required for a complete and proper installation.
- B. Furnish and install the following:
 - 1. Fire retardant treated plywood backer panels between girts for mounting of electrical panelboards, telephone/data backboards, HV equipment, bracket mounted fire extinguishers, light fixtures, and other equipment.
 - 2. Fire retardant treated exterior grade plywood at indicated ceiling area above restroom.
 - 3. Various wood blockings, edgings, nailers, curbs, cants, grounds, furring, sheathing, framing members as required for receipt of various finishes, plumbing fixtures, toilet accessories, and surfacing materials.
 - 4. Rough installation hardware, including bolts, screws, spikes, nails, clips, and connection assemblies, as needed for installation of the rough carpentry work.
- C. Coordinate work of this Section with the work of the various trades responsible for applying finish materials and other items to rough carpentry work. Furnish and install furring, blocking, and shims, and other usual items of normal rough carpentry work as required by the various trades for the proper completion of the project.
 - 1. The applicable requirements specified in Part 1 - GENERAL and Part 3 - EXECUTION of the individual specification sections furnishing materials to be installed under this Section, shall be included in and made a part of this Section.
- D. No attempt is made in this Section to list all elements of rough carpentry required on this project or to describe how each element will be installed. It is the responsibility of the Contractor to determine for itself the scope and nature of the work required for a complete installation from the information provided herein and in the Drawings.

1.2 RELATED REQUIREMENTS

- A. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES: Furnishing hollow metal framing.
- B. Section 09 2900 - GYPSUM BOARD: Wall board construction work, having taped and compounded joint finish.
- C. Section 09 91 00 - PAINTING: Applied primer and finish coatings to exposed to view rough carpentry work.
- D. Division 26 - ELECTRICAL: Providing and mounting electrical panels and equipment.

1.3 REFERENCES

- A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
1. APA - applicable grades and specifications.
 2. APA PRB-108 Performance Standards and Policies for Structural-Use Panels.
 3. ASTM D 3201 - Test Method for Hygroscopic Properties of Fire-Retardant Wood.
 4. AWPA Standard UCFA – Fire Protection as Required by Codes Above Ground Interior Construction.
 5. AWPA Standard UCFB – Fire Protection as Required by Codes Above Ground Exterior Construction.
 6. AWPA Standards and references for preservative treated wood including Standards UC1, UC2, UC3A, UC3B, UC4A, UC4B, UC4C, and P5
 7. AWPA M4 – Care Of Preservative Treated Wood Products.
 8. MIL L-1914OE - Lumber and Plywood, Fire Retardant Treated.
 9. NER-643: ACQ Preserve® and ACQ Preserve Plus® Wood Preservative Treatment, ICBO Evaluation Service.
 10. SPIB Grading Rules, current edition.
 11. UL - Building Materials Directory
 12. US. Department of Commerce Voluntary Product Standard PS1 for Construction and Industrial Plywood.
 13. US. Department of Commerce Voluntary Product Standard PS2 for Wood-Based Structural-Use Panels.
 14. US. Department of Commerce Voluntary Product Standard PS-20 - American Softwood Lumber Standard.
 15. U.S. Department of Commerce Simplified Practice Recommendation R-16, for sizes and use classifications of lumber
 16. American Lumber Standards Committee, National Lumber Grades Authority for Canadian Lumber, and applicable grading rules and standards of the various lumber associations whose species are being used for grades specified.
- B. Definitions:
1. ACQ: Ammoniacal Copper Quaternary Compound preservative treatment.
 2. MCA: Micronized Copper Azole Compound preservative treatment.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
1. Coordinate the work of this Section with the respective trades responsible for locating anchorages installed into blocking which is provided under this Section.
 2. Coordinate work of this Section with the work of the various trades responsible for applying finish materials and other items to rough carpentry

work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for products specified herein.
 2. Certifications:
 - a. Written certification from the respective treatment plants indicating types of fire-retardant treatment used, treatments method, applications instructions, and conformance to the requirements specified herein.
 - 1) Provide certification that fire retardant treatment materials do not contain ammonium phosphate.
 - 2) Provide report from ICC Evaluation Service on fire retardant treated wood flame spreading, strength, corrosion and hygroscopic properties.
 - 3) Provide report from ICC Evaluation Service on pressure preservative treated wood strength, corrosion, anti-fungi, and anti-insect properties.

1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
1. All lumber shall:
 - a. Be new, dressed four sides (S4S), clear and free from warping and other defects.
 - b. Have a moisture content not exceeding 19 percent when delivered to the project.

- c. Be in accordance with the grading rules of the lumber manufacturer's association under whose jurisdiction the lumber is produced and bear the mark of grade and mill identification.
- B. Certifications:
 - 1. Plywood: Conform to the requirements of Product Standard PS-1, and bear applicable APA grade trademarks.
 - a. Plywood for electrical boards treated for retardance, meet Class I or a flame spread rating of 25 or less and bear U.L. label "Classified FRS".

PART 2 - PRODUCTS

2.1 BOARD AND SHEET MATERIALS

- A. Lumber for blocking, nailers and curbs as indicated or required: Hem-Fir, Douglas Fir, Eastern Spruce, Eastern Hemlock, or Southern Pine, surfaced dried stud or utility grade. Wood members shall be of sizes indicated on the Drawings or of the same size as the members being braced.
 - 1. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
 - 2. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.
- B. Plywood and sheet products:
 - 1. For indicated ceiling area above restroom: APA graded B-C, Exposure 1, EXT, Group 1 species, 5 ply/5 layer plywood, touch-sanded, fire-retardant treated, 3/4 inch thick.
 - 2. For electric panel board mountings and similar uses: APA graded B-D INT, Group 2 species, touch-sanded, fire-retardant treated, 3/4 inch thick, except as otherwise indicated on the Drawings.

2.2 WOOD TREATMENTS

- A. Treated wood products shall be produced by a single treatment plant, fully licensed by the chemical manufacturers, and conforming to the requirements specified herein.
 - 1. Toxicity and Environmental Quality:
 - a. Products containing chromium or arsenic will not be permitted.
 - b. Fire-retardant-treated wood products shall be free of halogens, sulfates, ammonium phosphate and formaldehyde.
 - 2. Dye wood or otherwise color code all treated wood at treatment plant to clearly distinguish the different treatments in the field.
 - 3. Kiln dry all treated lumber and plywood to the following maximum moisture content after treatment.
 - a. Lumber: 19 percent.
 - b. Plywood 15 percent.
 - c. Discard pieces with defects which might impair quality of work.
 - 4. Quality marks: Each piece of lumber and plywood shall be permanently affixed with a quality mark, containing the following information:

- a. Identification of the inspection agency.
 - b. Standard to which material was treated.
 - c. Identification of the treating plant.
 - d. Fire retardant treated wood shall include: stamp signifying a FR-S rating
 - e. Preservative treated wood shall include: Retention and end use for which product is suitable.
- B. Fire retardant treated wood. Designated as "FRTW"
1. Chemical Manufacturer: Subject to compliance with the requirements specified herein, Products which may be incorporated in the work include:
 - a. Arch Wood Protection, Atlanta, GA., product, "Dricon FRT Wood".
 - b. Flameproof Companies., Montgomery, IL, product: "FlameTech".
 - c. Hoover Treated Wood Products, Inc., Thomson, GA product "PyroGuard".
 - d. Osmose, Inc., Griffin GA., product "FirePro".
 - e. Viance, LLC., Charlotte, NC, product: "D-Blaze FRT".
 2. Fire retardant treated wood shall comply with the following requirements:
 - a. All fire-retardant lumber and plywood must have an Underwriters Laboratories stamp signifying a FR-S rating certifying a 25 or less flame spread and smoke developed value, when tested in accordance to ASTM E84, or UBC Standard No. 42-1.
 - b. Corrosion rates: Less than one mil per year for carbon steel, galvanized steel, aluminum, copper and red brass in contact with the fire retardant treated wood when tested in accordance with Federal Specification MIL-L-19140E Paragraph 4.6.5.2.
 - c. The fire retardant treated wood must have an equilibrium moisture content of not more than 25 percent when tested in accordance with ASTM D3201 procedures at 95 percent relative humidity and 80 degrees Fahrenheit.
 - d. Fire retardant chemical: Registered for use as a wood preservative by the U.S. Environmental Protection Agency.
 - e. Testing: Fire performance and strength properties for both lumber and plywood, of the fire retardant treated wood shall be recognized by issuance of a ICC Evaluation Service Report. Fire retardant chemical must not damage the middle lammella of the wood structure when exposed to 170 degrees Fahrenheit and 90 percent relative humidity for 23 days.
- C. Pressure preservative treated wood. Designated as "PT"
1. Pressure treatment of wood products shall conform to the requirements of AWPA Standards U1 and T1.
 - a. Fixation of Chemical: Treated wood shall not be shipped from treatment plant until fixation of the preservative has occurred in the wood.
 2. Retention of preservatives: Minimum Retention values pounds per cubic foot (pcf) shall be as prescribed in AWPA Standard U1 for the following Use Categories, (material conforming to a higher AWPA Use Category may be used).
 - a. UC1: Interior construction - above ground, protected conditions, includes but is not limited to: interior stud framing and baseboards

- b. UC2: Interior construction - above ground, damp conditions, includes but is not limited to: damp locations, wood in contact with masonry and concrete, interior sills, bottom plates, basement framing, bathrooms, and subflooring, nailers/blocking in contact with slabs on grade.
 - c. UC3A: Exterior construction - above ground 'protected', coated and with rapid water runoff, includes but is not limited to: wood blocking at roofing, protected wood fascia and trim.
3. Pressure preservative treatment products include the following:
- a. Ammoniacal Copper Quaternary Compound (ACQ) Treatment: arsenic-free and chromium-free chemical "ACQ Preservative" in compliance with AWPAs Standards. Apply the preservative in a closed cylinder by pressure process in accordance with AWPAs Standard C15.
 - 1) Chemical Manufacturer: Subject to compliance with the requirements specified herein, Products which may be incorporated in the work include:
 - a) Osmose, Inc., Griffin GA., product "NatureWood".
 - b) Flameproof Companies., Montgomery, IL, product: "ACQ Preserve".
 - c) Universal Forest Products, Inc., Grand Rapids MI., product "ProWood ACQ".
 - d) Viance, LLC., Charlotte, NC., product "Preserve"
 - b. Micronized Copper Wood Preservative (MCA, MCA-C) Treatment: arsenic-free and chromium-free chemical, waterborne micronized copper azole or preservative in compliance with AWPAs Standards,
 - 1) Chemical Manufacturer: Subject to compliance with the requirements specified herein, Products which may be incorporated in the work include:
 - a) Culpepper, Lancaster, MA., product "Micropro".
 - b) Koppers Performance Chemicals, Griffin, GA., product "MicroPro."
 - c) UFP Industries, Auburn, MA., product: "Prowood."
 - d) Great Souther Wood Preserving, Abbevie AL., product: "Yellowwood."
 - e) Arxada, Alpharetta, GA, "Wolmanized" Brand, Product: "Wolman E".

2.3 ACCESSORIES

- A. Adhesives:
 - 1. General: Provide adhesives approved which are Low-VOC or non-VOC, non-flammable, water-proof after cured, odor free, .
 - 2. Adhesive for lamination and fabrication of wood and plywood items: Exterior adhesives containing no urea formaldehydes, having a VOC limit of 70 g/L.
- B. Nails (interior and exterior): Galvanized common nails, of size and type to suit application and as required by state and local building codes.
- C. Screws:
 - 1. Screws for interior applications: Flat head electroplated-galvanized wood screws of the appropriate sizes.
 - 2. Screws for exterior applications:

- a. For general application : Flat head hard aluminum, or stainless steel, wood screws, of the appropriate sizes.
- D. Anchor bolts, expansion bolts and lag screws: Hot-dipped galvanized steel, of the following types:
 1. For lumber having actual thickness of 1-1/2 inches or greater to masonry and concrete: Anchor bolts or expansion bolts, as most applicable for the specific receiving surface material, 3/8-inch minimum diameter, spaced as shown on drawings, and staggered as far as practicable. Countersink all bolt heads, and provide head washers of matching material.
 2. For lumber having actual thickness of greater than 7/8-inch but less than 1-1/2 inches to masonry and concrete: Anchor bolts or expansion bolts, as most applicable for the specific receiving surface material, at least 1/4-inch diameter of the most appropriate lengths for the specific application, spaced as shown, and staggered as far as practicable. Countersink all bolt heads, and provide head washers of matching material.
 3. For lumber having actual thickness of 7/8-inch and less: Anchor bolts or expansion bolts, at least 1/4-inch in diameter; or screws, of the most appropriate sizes; in lengths most suitable for the specific application, countersunk, spaced, and staggered.

PART 3 - EXECUTION

3.1 PREPARATION

- A. All materials shall be inspected before use, with all checked, split and otherwise deficient stock rejected, or used only for miscellaneous blocking, furring or other incidental use. The Contractor shall be responsible for replacing all lumber which, due to warpage, twist, splitting, or checking, results in unsatisfactory work. Such replacement shall be required at any time, whether before or after application of finish material under other Sections.

3.2 INSTALLATION - GENERAL

- A. Closely coordinate the installation of the rough carpentry work with the work of other trades responsible for the installation of interfacing or overlaying materials, so as not to delay the work of the related trades.
- B. Erect all rough carpentry work plumb, level, and true with tight, close fitting joints, securely attached and braced to surrounding construction, all in a first class workmanlike manner. Counterbore for bolt heads, nuts, and washers where required to avoid interference with other materials. Bear complete responsibility for structural integrity, connections, and anchorage of all rough carpentry work.
 1. Bolt Fastening: Pre-drill holes 1/6 inch larger in diameter than bolt size, perpendicular to wood being bolted.
 2. Screw Fastening: Pre-drill holes having same diameter as root diameter (minor diameter).
 3. Nail Fastening: Nail tight without splitting wood, pre-bore as required. Set common nails flush with surface; Counter sink finish nails. Remove split wood members and replace.

- C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- D. Use as long lengths as practicable for wood nailers, blockings, and curbs, to minimize number of joints, and attach the members with the types, and spacing, of fasteners specified herein.
- E. Install blocking, grounds and furring, as required for proper attachment of the work of other trades, in accordance with the requirements provided by the respective related trades.
 - 1. Spacing for furring and strapping shall not exceed 16 inches on center.
- F. Field cuts of fire retardant treated lumber: Do not rip or mill fire retardant treated lumber. Only end cuts, drilling holes and joining cuts are permitted.
- G. Install concealed from view plywood with specified fasteners spaced not more than 10 inches on centers.
- H. Install fire-treated plywood backer boards with counter-sunk galvanized fasteners, of specified sizes, spaced not more than 12 inches on centers.

3.3 INSTALLATION – EQUIPMENT BACKBOARDS

- A. Provide panel mounting backboards for HVAC, Fire Prevention, Electrical and telephone/data equipment. Fabricate panels using fire-retardant treated 3/4 inch thick panels mounted to fire-retardant treated 2 by 4's, between metal girts. Provide a nominal space of 3-1/2 inches behind panels to permit wiring.

3.4 CLEANING

- A. Daily clean work areas by sweeping and disposing of scraps and sawdust.

End of Section

Section 07 21 00
THERMAL INSULATION

PART 1 – GENERAL**1.1 SUMMARY**

- A. The work of this Section consists of building insulation, where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Work includes, but is not limited to the following scope.
- B. Furnish and install the following:
 - 1. Thermal batt insulation between wall and ceiling framing.
 - 2. Under slab rigid insulation.
 - 3. Foil-faced rigid insulation.
 - 4. Accessories related to the installation of insulation.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - ROUGH CARPENTRY: Wood blocking, nailers.
- B. Section 07 2600 - VAPOR RETARDERS:
 - 1. Vapor barrier, seam tape, pipe boots, detail strip for installation under concrete slabs.
- C. Section 09 2900 - GYPSUM BOARD: Installation of wall board over insulation in Z-channel furring system.
- D. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Ductwork and piping insulation.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ASTM C203 - Breaking Load and Flexural Properties of Block Type Thermal Insulation.
 - 2. ASTM C518 - Thermal Transmission Properties by Means of the Heat Flow Meter.
 - 3. ASTM C553 - Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
 - 4. ASTM C578 - Preformed Cellular Polystyrene Thermal Insulation.
 - 5. ASTM C612 - Mineral Fiber Block and Board Thermal Insulation.
 - 6. ASTM C665 - Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

7. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
8. ASTM D1621 - Compressive Properties of Rigid Cellular Plastics.
9. ASTM E136 - Behavior of Materials in a Vertical Tube Furnace at 750°C.
10. ASTM E84 - Surface Burning Characteristics of Building Materials.
11. ASTM E96 - Water Vapor Transmission of Materials.
12. All applicable federal, state and municipal codes, laws and regulations for thermal insulation.

B. Definitions:

1. "R-Value": as referred to herein refers to the thermal resistance of the insulation alone and does not allow consideration of air spaces or other factors.
2. "HFC": refers to regulated (prohibited) Hydrofluorocarbon organic compounds which are designated as having high Global Warming Potential (GWP).

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 30 00 – ADMINISTRATIVE REQUIREMENTS:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.

1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 - 1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
 - 2. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
 - a. Rigid board insulation materials are combustible and may constitute a fire hazard, do not expose insulation materials to open flames or other ignition sources, comply fully with manufacturer's recommendations and the requirements of local authorities having jurisdiction, for delivery, handling, storage and installation.
 - 2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.
- C. Damaged material: Remove any damaged or contaminated materials from job site immediately, including materials in packages containing water marks, or show evidence of mold.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
 - 1. Rigid insulation board (XPS - extruded polystyrene):
 - a. Dow Chemical Corp., Midland MI.
 - b. Owens Corning Commercial Insulation, Toledo OH.
 - c. Kingspan Insulation LLC; Atlanta, GA.
 - 2. Mineral fiber insulation:
 - a. Johns Manville, Inc., Denver CO.
 - b. Rockwool, North America, Milton, Ontario. (Rockwool).
 - c. Owens Corning (Thermafiber Division), Wabash IN. (Thermafiber)
 - 3. Foil faced rigid insulation board:
 - a. Dow Chemical Corp., Midland MI.
 - b. Johns Manville, Inc., Denver, CO.
 - c. Rmax Operating, LLC, Dallas, TX.

2.2 EXTRUDED POLYSTYRENE INSULATION (XPS)

- A. Rigid Extruded Polystyrene Insulation (XPS) Closed Cell Foam Board:
1. Minimum R-value: 5 °F ft² h/Btu per inch thickness.
 2. Regulatory Requirement: Pursuant to State of Maine Regulations, rigid insulation boards used for this project are prohibited from having HFC blowing agents used in manufacture of rigid extruded insulation.
 3. Under-slab and foundation insulation: Closed cell extruded polystyrene foam board (XPS), square edge, conforming to ASTM C578, Type IV, with a compressive strength of 25 pounds per square inch when tested in accordance with ASTM D1621.
 - a. Panel size: 48 by 96 inches beneath slab.
 - b. Thickness: 3 inches.

2.3 MINERAL WOOL INSULATION

- A. Wall insulation for between framing: Semi-rigid mineral wool insulation for exterior wall cavities: mineral wool fiber insulation board, conforming to ASTM C612, Type IVB having a nominal density of 4.4 pounds per cubic foot.
1. Non-Combustible as tested per ASTM E-136.
 2. Flame Spread Classification: Class A (less than 25, per testing by NFPA 255, ASTM E-84 or UL 723), with flame spread rating of 0 and smoke developed rating of 0.
 3. Thicknesses as indicated on Drawings:
 - a. Designated 07 21A: 6 inches, having thermal resistance, R-value of 21.
 - b. Designated 07 21B: Nominal 10 inches, having thermal resistance, R-value of 30.
 4. Size: 16 inches x 48 inches (406 mm x 1219 mm).
 5. Acceptable products include the following or approved equal:
 - a. Rockwool, Inc., Milton, Ontario, product "Rockwool ComfortBatt"
 - b. Owens Corning (Thermafiber Division), Wabash IN, product "Thermafiber UltraBatt."
 - c. Johns Manville, Inc., Denver CO. product: "TempControl".

2.4 POLYISOCYANURATE FOAM INSULATION

- A. Foil-faced rigid insulation: Nonstructural, rigid board insulation consisting of a polyisocyanurate foam core laminated between 1.0 mil smooth, reflective aluminum facers on both sides, with square and shiplap edge, conforming to ASTM C1289, Type I, Class 1, having the following characteristics:
1. Physical properties:
 - a. R-Values per board thickness and edge treatment:
 - 1) Board thickness of 3.0": 19 R-Value, with square and shiplap edge.
 - b. Compressive Strength per ASTM D1621: 25 psi min.
 - c. Flexural Strength per ASTM C203: 40 psi min.
 - d. Water Absorption per ASTM C209, (% by volume, max.): 0.1.
 - e. Water Vapor Permeance, ASTM E96/E96M, (perm, max.): <0.03.

- f. Maximum Use Temperature: 250 °F.
 - 2. Sizes: 4 by 8 feet, 4 by 9 feet and 4 by 10 feet.
 - 3. Thickness: 3 inches..
 - 4. Acceptable products include but are not limited to:
 - a. Dow Chemical Corp., "Thermax Xarmor ci Exterior Insulation".
 - b. Johns Manville, Inc, product "AP Foil-Faced Polyiso Foam Sheathing".
 - c. Sikas (Rmax) Lyndhurst, NJ., product "ECOMAXci FR".
- B. Foil-facing repair tape: Insulation recommended flashing for repairs of damaged facer:
 - 1. Dow Chemical Company, product "LiquidArmor CM spray flashing" or product "LiquidArmor LT flexible single component silicone flashing"
 - 2. Johns Manville, Inc, product: "JM UltraFast Flashing Tape".
 - 3. 3M product "All Weather Flashing Tape 8067."
 - 4. Sikas (Rmax), product: "R-Seal 3000" tape.

2.5 ACCESSORIES

- A. Staples, tape, adhesives and fasteners required for the proper and complete installation for work of this Section shall be as recommended by each respective manufacturers of each insulation type.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
 - 1. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 INSTALLATION

- A. Mineral wool insulation between framing members:
 - 1. Install in accordance with manufacturer's instructions. Do not compress or "stuff" insulation into voids, compressed insulation has less thermal resistant value.
 - 2. Trim insulation neatly to fit spaces. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation, do not cut around electrical boxes. Leave no gaps or voids.
 - 3. Where faced insulation is specified, apply membrane facing on warm side of building spaces. Lap ends and staple side flanges of membrane between framing members.
 - 4. Where insulation is located between joists/rafters and is not to be covered, install wire insulation supports to keep insulation in place.
- B. Insulation beneath slabs-on-grade: 3 inch thick rigid foam insulation.
 - 1. Place insulation beneath slabs-on-grade, extend insulation to provide 100 percent coverage beneath slab at Toilet Rooms

2. Butt edges and ends tight to adjacent boards. Bevel insulation to allow snug fit at cants. Cut and fill insulation tightly to protrusions or interruptions to the insulation plane.
3. Place soil as a perimeter restraint to minimize movement of insulation.

3.3 CLEANING

- A. Daily clean work areas by sweeping and disposing of debris, and scraps.
- B. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

End of Section

Section 07 2600
VAPOR RETARDERS

PART 1 – GENERAL**1.1 SUMMARY**

- A. The work of this Section consists of vapor retarders (vapor barriers) where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Work includes, but is not limited to the following.
- B. Furnish and install the following:
 - 1. Sheet membrane vapor barriers (vapor retarders) under concrete slabs-on-grade including seam tape, and pipe boots.

1.2 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ASTM D570 - Water Absorption of Plastics.
 - 2. ASTM D1004 - Initial Tear Resistance of Plastic Film and Sheeting.
 - 3. ASTM D1622 - Apparent Density of Rigid Cellular Plastics.
 - 4. ASTM D1938 - Tear Propagation Resistance of Plastic Film and Thin Sheeting by a Single-Tear Method.
 - 5. ASTM D2842 - Water Absorption of Rigid Cellular Plastics.
 - 6. ASTM D2582 - Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting.
 - 7. ASTM D2856 - Open Cell Content of rigid Cellular Plastics by Air Pycnometer.
 - 8. ASTM E136 - Behavior of Materials in a Vertical Tube Furnace at 750°C.
 - 9. ASTM E154 - Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover
 - 10. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
 - 11. ASTM E1745 - Plastic Vapor Retarders Used in Contact with Soil or Granular fill under Concrete Slabs
 - 12. ASTM E84 - Surface Burning Characteristics of Building Materials.
 - 13. ASTM E96 - Water Vapor Transmission of Materials.
- B. General References The following reference materials are hereby made a part of this Section by reference thereto:
 - 1. ACI 302.1R Vapor Barrier Component (plastic membrane) is not less than 10 mils thick.
 - 2. NFPA 701 - Fire Tests for Flame Resistant Textiles and Films

3. All applicable federal, state and municipal codes, laws and regulations for thermal insulation and vapor barriers.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

C. Sequencing: Coordinate work of this section with related work.

1. Coordinate third party inspection to occur following installation of below-grade vapor retarders and reinforcement steel, but prior to concrete placement.

1.4 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.
2. Manufacturer's Instructions: Manufacturer's installation instructions for placement, seaming and pipe boot installation.
3. Samples:
 - a. 12 by 12 inch sample of vapor barrier.
 - b. 12 inch length termination bar.
 - c. Vapor retarder accessories including samples of double-sided tape, mastic, flashing boots and similar materials.

1.5 QUALITY ASSURANCE

- #### A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

- B. Sole Source: Obtain products required for the Work of this Section for each type of vapor retarder shall be from a single manufacturer, and the related accessories as recommended by the prime manufacturer of the vapor retarder.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 - 1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
 - 2. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
 - 2. Store materials under cover and in manner to keep them dry, protected from weather, direct sunlight and damage from construction traffic and other causes.

PART 2 - PRODUCTS

2.1 UNDER SLAB VAPOR BARRIERS

- A. Manufacturers and products:
 - 1. Specified Product (Basis of Design): To establish a standard of quality, design and function desired, Drawings and specifications have been based on Stego Industries LLC company, Product: "Stego Wrap (15 mil)".
 - 2. Acceptable manufacturers: Subject to compliance with the requirements specified herein, products which may be incorporated in the work include, but are not limited to, the following:
 - a. Stego Industries LLC, San Clemente, CA, product: "Stego Wrap (15 mil)".
 - b. W.R. Meadows, Hampshire, IL, product: "No. 723 Perminator (15 mil)".
 - c. Reef Industries, Houston, TX, product "Griffolyn -15 Mil Green".
 - d. Insulation Solutions Inc., East Peoria IL, product "Viper II, 15 mil vapor barrier".
- B. Characteristics:
 - 1. Minimum thickness: 15 mils.
 - 2. Permeance complying with ACI 302.2R.
 - 3. Permeance after conditioning when tested in accordance with ASTM E 1745 (where applicable): Less than 0.01 perms (gr/ft²/hr/in-Hg).
 - 4. Water vapor barrier tested by ASTM E-1745: Meets or exceeds Class A.

2.2 ACCESSORIES

- A. General: tape, adhesives and fasteners required for the proper and complete installation for work of this Section shall be as recommended by each respective manufacturers of each type of vapor barrier.

- B. Seam Tape: High Density Polyethylene Tape or HDPE Tape as recommended by vapor barrier manufacturer, with pressure sensitive adhesive. Minimum width 4 inches.
- C. Pipe Boots: Construct pipe boots from vapor barrier material and pressure sensitive tape per manufacturer's instructions.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Ensure that subsoil is approved by Architect.
- B. Level and tamp or roll aggregate, sand or tamped earth base.

3.2 INSTALLATION - BELOW-SLAB VAPOR BARRIERS/RETARDERS

- A. General: Install Vapor Barrier in accordance with manufacturer's instructions and ASTM E 1643. Place vapor barrier beneath all floor slabs
- B. Unroll Vapor Barrier with the longest dimension parallel with the direction of the pour.
- C. Lap Vapor Barrier over footings and seal to foundation walls.
- D. Overlap joints a minimum of six inches with top lap in direction of spreading concrete. Turn up layer at slab edges abutting walls. Seal with manufacturer's recommended tape or secure edge with non-corrosive termination bar.
- E. Seal all penetrations (including pipes, reinforcing steel, and permanent utilities) with manufacturer's pipe boot or vapor barrier manufacturer's recommended detail.
- F. Do not puncture vapor barrier. No punctures or unsealed penetrations are permitted.
- G. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all four sides with tape.

3.3 PROTECTION

- A. Protect vapor barrier from damage during application and remainder of construction period, per manufacturer's written instructions and technical bulletins.

3.4 FIELD QUALITY CONTROL

- A. Independent Third Party Inspection: Owner will retain an independent third-party inspector to review and report on below-slab vapor retarder. Inspection to be sequenced following vapor barrier installation and reinforcing steel installation, but prior to concrete placement.
 - 1. Notify Architect and Owner, of independent inspection not less than 3 work days prior to inspection.
 - 2. Submit written reports to Architect, Owner, and Contractor within 5 calendar days following inspection,

End of Section

Section 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL**1.1 SUMMARY**

- A. Furnish and install the following:
 - 1. Aluminum flashing.
 - 2. Miscellaneous stainless steel flashings as indicated on Drawings for drainage of moisture.
 - 3. Formed brake-metal work.
 - 4. Cap flashings, in conjunction with roofing system sheet membrane base flashings.
 - 5. Sealant in conjunction with sheet metal work specified herein.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - ROUGH CARPENTRY: Wood blocking, nailers.
- B. Section 07 9200 - JOINT SEALANTS: Sealant and backing material not specified herein.
- C. Flashing sleeves and collars for mechanical and electrical items protruding through roofing: By respective trade sections furnishing same.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ASTM A167 - Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
 - 2. ASTM B209 - Specification for Aluminum Alloy, Sheet and Plate.
 - 3. ASTM B221 - Specification for Aluminum Extrusions.
 - 4. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
 - 5. ASTM D2178 - Asphalt Impregnated Glass Mat for Roofing and Waterproofing.
 - 6. ASTM D4586 - Asphalt Roof Cement, Asbestos-Free.
 - 7. FS QQ-S-766D - Steel Plates, Sheets and Strip, Corrosion Resisting.
- B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:
 - 1. SMACNA - Architectural Sheet Metal Manual 7th Edition (January 2012), referred to herein as "Sheet Metal Manual".

2. NRCA - Roofing and Waterproofing Manual.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the installation of flashings and sheet metal work with the various trades responsible for installing interfacing materials, and install the work at appropriate times so as not to delay the progress of related work

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Literature: Manufacturer's data sheets for each metal type and accessories furnished hereunder, include material specifications, performance data, physical properties and finishes.
2. Certification: Provide certifications that materials and systems comply with the specified requirements for the use indicated.
3. Shop drawings:
 - a. Fully dimensioned large scale design details showing material profiles, splices, flashing terminations and other jointing details, fastening methods and installation details. Indicate material type, sizes, and weights or gauges. Indicate extent of adjacent work specified under other Sections of the Specifications.
 - b. Fully detail methods of relieving stresses due to thermal movement, including sealing of expansion seams.
 - c. All details bearing dimensions of actual measurements taken at the project.
4. Selection Samples:
 - a. Metal sample chips, indicating Manufacturer's full range of finish colors for factory finishes available for selection by Architect.
 - b. Manufacturer's sample boards for sealant colors.

- 5. Verification Samples:
 - a. 12 inch long samples of formed fascia, gutters and downspouts.
 - B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
 - 1. Manufacturer's warranties: Include coverage of materials and installation and resultant damage from failure of installation to resist penetration of moisture.
- 1.6 QUALITY ASSURANCE
- A. Company specializing in fabrication and installation of sheet metal flashing work with minimum 5 years documented experience.
 - B. Flashing and sheet metal applicator, with a minimum of 5 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.
- 1.7 DELIVERY, STORAGE AND HANDLING
- A. Store preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
 - B. Prevent contact with materials during storage which may cause discoloration, staining, or damage.
- 1.8 WARRANTY
- A. Provide the following warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
- 1.9 EXTRA MATERIALS
- A. Provide sufficient quantity of each color finish coat material, for field touch-up work after erection, and pack the additional coating materials with the components to be furnished hereunder.
 - B. Clearly label and package extra materials securely to prevent damage.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Provide permanently watertight flashing and sheet metal installations which will not deteriorate in excess of manufacturer's published limitations.
- B. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
 - 1. Wind Design Pressure: Loads shall be developed in accordance with the MAINE UNIFORM BUILDING AND ENERGY CODE and ASCE 7-16, incorporated by reference.
 - a. Basic Wind Speed (V^{ult}): 115 miles per hour. (three-second-gust).
 - b. Occupancy Risk Factor II.
 - c. Exposure: "C".

- d. Internal Pressure Coefficient: **GC_{pr}**: ±0.18.
- C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F material surfaces.
- D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.
- E. Interface with Other Systems:
 - 1. Do not proceed with installation of flashing and sheet metal until completion of curb and substrate construction, cants, blocking, reglets and other construction required to receive flashing.
 - 2. Coordinate flashing with other Work for correct sequencing of items comprising entire membrane or system of roofing or waterproofing and rain drainage.

2.2 MATERIALS

- A. Aluminum: ASTM B209 sheet aluminum, having a minimum thickness as specified herein below, for the applications indicated:
 - 1. General exposed-to-weather flashings and trim: 0.040 inch thick.

2.3 ACCESSORIES

- A. Membrane for ice-dam and wind-blown rain protection ("Protection Membrane"): Sheet barrier of high density cross laminated polyethylene with butyl-based rubber adhesive, with strippable silicone-coated release sheet.
 - 1. Acceptable products include the following or approved equal:
 - a. Basis of Design: GCP Applied Technologies, Cambridge MA., product "Grace Ice & Water Shield HT".
 - b. Firestone Building Products, Indianapolis, IN., product "Clad-Gard SA"
 - c. SDP Advanced Polymer Products Inc., Toronto Canada, product "Palisade SA-HT".
- B. Flashing cement: Trowel grade, composed of selected asphalt, solvents, and non-asbestos fillers, conforming to ASTM D4586, Type 1 (Non-asbestos), Class 1, and FS SS-C-15-3Type 1:
 - 1. Karnak Chemical Corporation, Clark NJ, product N°. 19 "Flashing Cement."
 - 2. Henry Company, El Segundo, CA product "Pro Grade 155 Flashing Cement."
 - 3. GAF Corporation, Parsippany, NJ., product "Matrix 201 Premium SBS Roof Flashing Cement."

- C. Nails shall not be smaller than N^o.2 of 12 stub gauge (1.109 inches), with large flat heads, and of sufficient length to penetrate the wood nailers a minimum of 7/8-inch. Nails shall be stainless steel.
- D. Screws: Stainless steel wood screws, of sizes most appropriate for the specific application, and equipped with soft neoprene washers.
- E. Sealant in conjunction with metal work of this Section: Joint Sealer Type SX (Silicone, Exterior construction): Medium modulus, neutral curing, low to no bleed silicone passing ASTM C1248, having a useful life expectancy of at least 20 years, conforming to ASTM C920, Type S, Grade NS, Class 50, with a minimum movement capability of +50 percent and -50 percent, equal to the following:
 - 1. Dow Corning, product, "795".
 - 2. GE Silicones, product, "SCS9000 SilPruf NB".
 - 3. Sika, product "Sikasil-WS-295".
 - 4. Tremco, product "Spectrem 4-TS".
- F. Rivets: Solid 3/16 inch diameter flat head rivets of proper length.
- G. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- H. Solder for Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
- I. Bituminous Coating used to isolate between dissimilar materials. Do not allow galvanic interaction.

2.4 FABRICATION - GENERAL

- A. Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA "Sheet Metal Manual. Shop fabricate flashings to greatest extent as practical. Form flashings as required, or to profiles indicated on the Drawings, to protect materials from physical damage and shed water.
- B. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance. To the greatest extent applicable, fabricate sheet metal components in shop, and thoroughly clean all joints on both sides of the sheet metal work.
- C. Fabricate cleats and starter strips of same material as sheet.
- D. Seams: Provide laps, joints, and seams that are watertight and weatherproof.
 - 1. Expansion provisions: Form expansion joints (detailed with release tape, uncured EPDM membrane, and metal cover plate) at 20 feet on center and within 24 inches. of corners and terminations.
 - 2. Nonmoving seams: fabricate with flat-lock seams.
 - a. Coated / finished metals: Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use

- b. Uncoated / unfinished aluminum: Form seams and seal with epoxy seam sealer. Rivet joints where recommended by referenced SMACNA Architectural Sheet Metal Manual.
 - c. Natural "Red" Copper and Lead Coated Copper: Tin edges to be seamed, form seams, and solder.
 - d. Stainless steel (Uncoated / unfinished) and Tin/Zinc coated copper: Form seams, and solder.
- E. Form pieces in longest practical lengths, with flat lock seams. Hem exposed edges on underside 1/4 inch, miter and seam corners.
- F. Fabricate corners from one piece with minimum 18 inch long legs, solder for rigidity, seal with sealant.

2.5 FINISHES

- A. Aluminum components not indicated for enamel or color finish: Mill finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place and nailing strips located.
- B. Beginning of work shall constitute acceptance of the conditions of the surfaces to which this work is to be applied.

3.2 PREPARATION

- A. Field measure site conditions prior to fabrication.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.
- D. Insert flashings into reglets to form tight fit. Secure in place with plastic wedges at maximum of 8 inches on center. Seal flashings into reglets with sealant.
- E. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations where approved by Architect.
- F. Cleat and seam all joints. Apply plastic cement compound between metal flashings and felt flashings, asphalt shingle roofing or asphalt roll roofing.
- G. Seal all metal joints watertight.
- H. Coat concealed side of uncoated-aluminum and stainless-steel sheet metal flashing and trim with dampproofing mastic where flashing and trim contact wood, ferrous metal, or cementitious construction. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- I. During the installation of work of this Section, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

3.3 FLASHING INSTALLATION - GENERAL

- A. Except as otherwise shown on the reviewed shop drawings or specified herein, the workmanship of sheet metal work, method for forming joints anchoring, cleating, provisions for thermal movement, shall conform to the standard details and recommendations of the sheet metal producer and those of producer organizations and research institutions and associations concerning the sheet metal used, in addition to the standards and details set forth in the referenced materials specified this Section.
- B. Face nailing will not be permitted, concealed cleating or other concealed method must be used to attach sheet metal work to structure.
- C. Ensure that fastenings do not exceed 8 inches on centers. Use flat head fasteners throughout, and seal all fastener heads after installation thereof.
- D. Fill all slip joints and overlapping surfaces in the assembly with specified sealant material, removing all excess sealant material from the prefinished surfaces immediately, to prevent staining the finish.

3.4 INSTALLATION HEADER FLASHING

- A. Install specified aluminum flashing at window heads, piping, vents and all other projections from vertical surfaces where rain water may accumulate. Flashing shall be of continuous length for full width of window head, joints in flashing is not acceptable. Flashing shall extend behind air infiltration barrier a minimum of 3 inches up the wall.

3.5 CLEANING

- A. Daily clean work areas by sweeping and disposing of debris.
- B. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

End of Section

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Section 07 8400
FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish and install fireproof firestopping, firesafing materials, smoke seals and related accessories required for this Project for all penetrations through fire resistance rated construction, including, but not limited to, penetrations for plumbing, fire suppression, heating, ventilating and air conditioning, electrical systems, and specialized equipment.
 - 1. Fire resistance rated construction requiring firestopping includes, but is not limited to: rated partitions, smoke barriers, smoke partitions, partitions in rated corridors, passageways and stairs, shaft partitions, shaft wall (vertical and horizontal), area separation fire walls, party wall systems, and temporary fire resistant rated partitions and barriers.
 - 2. Provide removable temporary firestopping (pillows) as required to maintain fire integrity prior to Owner's final acceptance, to permit installation of electrical, telephone, data and sound system wiring. Replace temporary firestopping with permanent, after wiring systems are completed.
- B. Furnish and install firestopping/smoke seals at construction joints occurring at tops of fire resistance rated partitions, smoke partitions, and temporary partitions between top of partition and underside of deck above.
- C. Furnish and install all firestopping, firesafing, and smoke seals at perimeter of floor/roof construction and exterior wall systems, as indicated and where required by applicable codes.
- D. Furnish and install all firestopping, firesafing, and smoke seals at expansion joints in chase walls where expansion joints are not exposed to view.
- E. Furnish and install all firestopping, firesafing, and smoke seals where required by applicable codes and as additionally required by authorities having jurisdiction at no additional cost to the Owner.

1.2 RELATED REQUIREMENTS

- A. Section 09 2900 - GYPSUM BOARD: Gypsum wallboard fireproofing.
- B. Division 21 - FIRE SUPPRESSION: Fire protection system penetrations through fire resistance rated construction.
- C. Division 22 - PLUMBING: Plumbing system penetrations through fire resistance rated construction.
- D. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Heating, ventilating and air conditioning system penetrations through fire resistance rated construction.
- E. Division 26 - ELECTRICAL: Electrical penetrations through fire resistance rated construction.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
1. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.
 2. ASTM E119 - Method for Fire Tests of Building Construction and Materials.
 3. ASTM E814 - Test Method of Fire Tests of Through-Penetration Firestops.
 4. ASTM E2174 - Standard Practice for On-site Inspection of Installed Fire Stops
 5. ASTM E2393 - Standard Practice for On-site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers
 6. NFPA 70 - National Electrical Code.
 7. UL - Fire Resistance Directory.
 8. UL 1479 - Fire Tests of Through Penetration Firestops.

1.4 PRE-CONSTRUCTION CONFERENCE

- A. General Contractor and **ALL** Filed Sub-Bid Contractors, subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
1. Project Overview
 2. Labor requirements
 3. Operation Safety Items
 4. Construction
 5. Temporary Facilities and Controls
 6. Project Closeout:
 7. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, and physical properties.
 - a. Indicate requirements for manufacturer's descriptive data for products and related materials with FM, UL or Warnock-Hersey illustrations showing systems and approval of materials in systems.
 2. Certificates:

- a. Manufacturer's written certification stating that firestopping materials, meet or exceed the requirements specified under this Section and that all fire-resistive requirements for the indicated combustibility, Flame (F-rating) and Temperature (T-rating) Ratings have been met.
3. Manufacturer's installation instructions.
4. Test reports: Submit fire test reports from recognized, independent testing agent(s) indicating the following:
 - a. Fire test report of firestop material applied to substrate and penetration materials similar to project conditions. Tests to indicate both Flame (F-rating) and Temperature (T-rating) Ratings.
 - b. Test reports of products to be used shall indicate conformance to ASTM E-814.
5. On-site sample installation to be included in Work: Minimum thirty days prior to application in any area, provide samples of firestop and smoke seal materials and installation in accordance with the following requirements.
 - a. Apply one sample of appropriate firestop and smoke seal material for each different penetration and fire rating required for the work.
 - b. Sample areas will comply with thickness, fire resistance ratings, and finished appearance of the project and applicable fire code.
 - c. Acceptance samples will constitute standard of acceptance for method of application, thickness, and finished appearance for firestop and smoke seal application. The sample(s) shall remain visible during completion of the work and shall remain as part of the completed work.
6. Shop drawings indicating requirements for penetrations in wall/deck intersections, change of planes, control joints, expansion joints and blank openings.

1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
- B. Sole Source: Obtain firestop and smoke seal products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of fireproofing, except as otherwise approved by Architect
- C. Special Inspections: Allow for 3 percent of each type of firestopping system to be removed and inspected for conformance with approved submittals.
 1. Firestopping shall be inspected prior to installation of suspended ceilings or concealed by other materials.

1.7 MOCK-UPS

- A. Provide mock-up under provisions of Section 01 4000 - QUALITY REQUIREMENTS, or purpose of verifying quality of typical firestopping conditions.
- B. Firestop at locations where accepted by Architect, or as directed. Schedule mock-up installation with Owner's Project Representative for observation.
- C. Accepted mockups may remain as part of the work.
 1. Keep accepted mock-up installation open for observation as criteria for sprayed-on fireproofing work.

2. Protect mock-ups from damage until Project Substantial Completion.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store firestopping materials in original, sealed, packages showing manufacturer's identification and date of packaging.
- B. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering similar products include the following, or approved equal:
 1. Bio Fireshield (A Division of Rectroseal), Houston TX.
 2. Dow Corning Corporation, Midland MI.
 3. Hilti, Inc. Tulsa OK.
 4. 3M Company, Saint Paul MN.
 5. Specified Technologies, Inc., Somerville NJ.
 6. Metacaulk, (A Division of Rectroseal), Houston TX.
 7. Tremco, Inc., Beachwood OH.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide materials and work to conform to Building Code Requirements in fire resistant wall assemblies.
- B. Regulatory Requirements:
 1. Conform to applicable code for fire resistance ratings and surface burning characteristics.
 2. Obtain certificate of compliance from authority having jurisdiction indicating approval of combustibility.
- C. Manufacturer's certified product test requirements:
 1. All firestop/smokeseal material shall be tested by a recognized, independent testing agency and shall conform to both Flame (F-rating) and Temperature (T-rating) requirements of ASTM E-814.
 2. Conform to UL Fire Hazard Classification Requirements.
 3. Tested and classified non-combustible per ASTM E-84.
- D. Firestops in place shall be of sufficient thickness, width, and density to provide a fire resistance rating at least equal to the wall, or partition construction into which it is installed.
- E. Non-combustible dams shall be constructed:
 1. As necessary to achieve fire rating as tested and rated.
 2. In conformance with installation requirements for type of wall, and partition construction.

3. As recommended by firestop/smokeseal manufacturer.

F. Combustible damming materials, if used, must be removed after proper curing.

2.3 MATERIALS

A. Firestop mortar: asbestos free, cementitious mortar, U.L. classified as a "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM/UL1479.

1. Acceptable products, or approved equal:
 - a. Bio Fireshield, product "Novasit K-10".
 - b. Hilti, Inc., product "CP 637 Firestop Mortar".
 - c. Specified Technologies, Inc., product "SSM Firestop Mortar".
 - d. Tremco Inc., product "Tremstop M".

B. Firestop sealant: Single component, non-combustible firestop sealant, U.L. classified as a "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479.

1. Acceptable products, or approved equal:
 - a. Bio Fireshield, product product "Biotherm 100" (Gun Grade) or "Biotherm 200" (Self Leveling).
 - b. Hilti, Inc., product "CFS-S SIL GG" (Gun Grade).
 - c. Specified Technologies, Inc., product "SpecSeal SIL300 Sealant (gun grade)" or "SpecSeal SIL300SL" (Self Leveling).
 - d. 3M Company, product "Fire Barrier Silicone Sealants".
 - e. Tremco Inc., product product "Tremstop" (Gun Grade) or "Tremstop S/L" (Self Leveling).
2. Sealants will not dissolve in water.

C. Intumescent firestop sealant and caulks: Acrylic based, water resistant sealant, which will not re-emulsify after drying.

1. Acceptable products, or approved equal:
 - a. Bio Fireshield, product "Biostop 500".
 - b. Hilti, Inc., product "FS-ONE Intumescent Firestop Sealant" or "FS 657 Fireblock".
 - c. Specified Technologies, Inc., product "SpecSeal SSS".
 - d. 3M Company, product "Fire Barrier Caulk CP25WB+".
 - e. Tremco Inc., product "Tremstop 1A".

D. Firestop putty: sticks or pads.

1. Acceptable products, or approved equal:
 - a. Bio Fireshield, product "Moldable Putty".
 - b. Hilti, Inc., product "CP 767 Speed Strips" or "CP 777 Speed Plugs".
 - c. Specified Technologies, Inc., product "SpecSeal Putty Bars and Pads".
 - d. 3M Company, product "Fire Barrier Moldable Putty".
 - e. Tremco Inc., product "Flowable Putty".

- E. Firestop collars: Pre-manufactured fire protective pipe sleeve, UL classified as "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479.
 - 1. Provide separated (two piece) firestop collar for application when plastic pipe system is already in place. Provide non-separated firestop collar for application prior to installation of plastic pipe system.
 - 2. Acceptable products, or approved equal:
 - a. Bio Fireshield, product, product "Fireshield Pass-through Device", or "Biostop Intumescent Sleeve."
 - b. Hilti, Inc., product "CP 643 Firestop Collar".
 - c. Specified Technologies, Inc., product "SpecSeal Collars".
 - d. 3M Company, product "Fire Barrier PPD's".
 - e. Tremco Inc., product "Fyrecan sleeve".
- F. Firestop pillows: UL Classified as "fill, void, or cavity material" for through penetration firestop system when tested in accordance with ASTM E-814/UL1479.
 - 1. Acceptable products, or approved equal:
 - a. Bio Fireshield, product "Fireshield Firestop Pillows".
 - b. Specified Technologies, Inc., product "SSB Firestop Pillows".
 - c. Tremco Inc., product "Tremstop P.S".
- G. Wrap strips:
 - 1. Acceptable products, or approved equal:
 - a. Bio Fireshield, product "FS-195".
 - b. Hilti, Inc., product "CP 645-E Endless Wrap Strip, or CP 648-S Firestop Wrap Strip".
 - c. Specified Technologies, Inc., product "Spec Seal Wrap Strip".
 - d. 3M Company, product "Fire Barrier FS195 Wrap Strip".
 - e. Tremco Inc., product "Tremco W.S".
- H. Mineral wool fiber / ceramic wool non-combustible insulation (fire safing):
Conforming to ASTM C665, Type 1, ASTM C612, and ASTM C553 with a minimum density of 4 pounds per cubic foot.
 - 1. Flame Spread Classification: Material shall be classified non-combustible per ASTM E-814.
 - 2. Recycled content of slag:: Use maximum available percentage of material (slag). Mineral wool insulation products incorporated into the work shall contain not less than 75 percent of recycled material (slag) by weight.
 - 3. Acceptable products include:
 - a. Fibrex Insulations Inc. Sarnia Ontario, Canada, product: "Fibrex FBX" Industrial board.
 - b. Rock Wool Manufacturing Company, Leeds, AL, product: "Delta Safing Mineral Wool".
 - c. Roxul, Inc., product "Roxul Safe".
 - d. Thermafiber, Inc. product "Safing 4.0 pcf".

4. Accessories: Provide galvanized steel safing clips as required for installation of insulation.
- I. Elastomeric Firestopping: Non halogenated latex based elastomeric coating applied by airless spray.
 1. Acceptable products, or approved equal:
 - a. Bio Fireshield (A Division of Rectroseal), product "Biostop 750."
 - b. Hilti, Inc., product "CP 601S." or "CFS-SP-WB"
 - c. Specified Technologies, Inc., product "Spec Seal Elastomeric Firestop Spray".

2.4 ACCESSORIES

- A. Forming and damming materials: Mineral fiberboard or other type as recommended by firestopping manufacturer.
- B. Primer, sealant and solvents: As recommended by manufacturer.
- C. Woven wire mesh: Galvanized 20 gage woven wire mesh "chicken wire" or "poultry fencing", 1 inch spacing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Inspect areas and conditions where firestops are to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
 1. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 PREPARATION

- A. Surface to receive firestops shall be free of dirt, dust, grease, oil, form release agents, or other matter that would impair the bond of the firestop material to the substrate or penetrating item(s).
- B. Voids and cracks in substrate shall be filled and unnecessary projection removed prior to installation of firestops.
- C. All penetrating items shall be permanently installed prior to firestop installation.
- D. Substrate shall be frost, free and, when applicable, dry.

3.3 INSTALLATION

- A. General
 1. Installation of firestops shall be performed by applicators/installers qualified and trained by the manufacturer. Installation shall be performed in strict accordance with manufacturer's detailed installation procedures.
 2. Apply firestops in accordance with fire test reports, fire resistance requirements, acceptable sample installations, and manufacturer's recommendations. Meet building code requirements.

3. Coordinate with plumbing, mechanical, electrical, and other trades to assure that all pipe, conduit, cable, and other items which penetrate fire rated construction have been permanently installed prior to installation of firestops. Schedule and sequence the work to assure that partitions and other construction which would conceal penetrations are not erected prior to the installation of firestops.
 - a. Ensure that all firestopping is inspected prior to installation of suspended ceilings or concealed by other finished materials.
- B. Dam construction
 1. Install dams when required to properly contain firestopping materials within openings and as required to achieve required fire resistance rating. Combustible damming material must be removed after appropriate curing. Incombustible damming material may be left as a permanent component of the firestop system.
 2. Placement of dams shall not interfere with function or adversely affect the appearance of adjacent construction.
- C. Installation of single component silicone firestop
 1. Apply with manual or powered caulking gun.
 2. Apply minimum 1/2 inch thickness for 2 hour rating. Apply 1/2 inch to both sides of wall penetrations.
 3. Use incombustible insulation as required to achieve fire resistance rating.
 4. Surface of gun grade silicone firestop may be tooled using clean, potable water.
 5. Clean excess material off of adjacent surfaces and tools within 10 minutes using either water or Xylol where the use of such would not be hazardous.
- D. Installation of cementitious firestop mortar.
 1. Add dry powder to water and mix with mechanical mixer or hand mixing tools as recommended by firestop mortar manufacturer. Allow a average mixing time is 3 minutes and provide a average wet density of 70 pounds per cubic foot, plus or minus 5 PCF.
 2. Do not apply if ambient or substrate temperature is less than 35 degrees Fahrenheit during 24 hours after application.
 3. Wet all surfaces prior to application of firestop mortar.
 4. Mortar may be hand applied or pumped into the opening.
 5. Exposed surfaces shall be finished using conventional plastering tools prior to curing.
 6. When installation around layered cables, it is recommended to increase the fluidity of the firestop mortar to provide a better fill around the cables. Vibrate or move the cables slightly to prevent voids from forming between the cables.
 7. Allow 48 hours for initial cure prior to form removal. For full cure allow 27 days.
 8. Wet material may be cleaned with water. Dry material may require scraping or chipping.
- E. Installation of firestop collars (plastic pipe only)

1. Firestop collars may be surface mounted to a slab or wall or imbedded in Firestop Mortar to a maximum depth of 2 inches.
 2. For wall penetrations with ABS pipe firestop collars must be installed on both sides of the penetration to provide a 2 hour F and T Rating. All other applications required installation on one side only to provide a 2 hour F and T Rating.
- F. Firesafing insulation: Install firestopping safing insulation on safing clips spaced as needed between each stud, leaving no voids. Secure safing clips to slab using fasteners recommended by insulation manufacturer. Install sealant over mineral wool in accordance with test requirements.

3.4 LABELING

- A. Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems.
1. Include the following information on labels

**WARNING: THROUGH-PENETRATION FIRESTOP SYSTEM-DO NOT DISTURB.
NOTIFY FACILITY MANAGER OF ANY DAMAGE.**

- Contractor's name, address, and phone number.
- Through-penetration firestop systems designation of applicable testing and inspecting agency.
- Date of installation.
- Through-penetration firestop systems manufacturer's name.
- Installer's name.

3.5 SCHEDULE

- A. General: Typical penetrations are indicated below with list of standard firestopping/smokeseal approaches. Actual firestopping materials and combination of materials will vary with size of penetration and with individual firestopping manufacturer's approved UL Design System Requirements. Use only UL Design System materials for each penetration that best matches the wall construction.
1. Where penetrations occur for which no listed UL or WH Design System test exists, obtain from the firestop system manufacturer an engineered system acceptable to the authorities having jurisdiction for firestopping such penetrations. Engineered system from manufacturer shall include a detail drawing showing the engineered system and shall contain no disclaimers.
- B. Single metal pipe (non-insulated) and conduit penetrations through walls:
1. (masonry and concrete walls only) Firestop mortar and putty.
 2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
 3. Intumescent firestop sealant with wrap strips.
- C. Multiple metal pipe and conduit penetrations through walls:
1. Firestop mortar and putty.
 2. (through masonry walls only) Firestop pillows with woven wire mesh.

3. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- D. Insulated metal pipe penetrations (single and multiple) through walls:
 1. Firestop mortar with wrap strips.
 2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
 3. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing) and Wrap strips.
 4. (multiple penetrations through masonry walls only) Firestop pillows with woven wire mesh.
- E. Duct penetrations through walls:
 1. Rectangular and square ducts: Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing), and steel flanges provided under Division 23.
 2. Round ducts: Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- F. Combustible plastic pipe and conduit penetrations through walls:
 1. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
 2. Intumescent firestop sealant with firestop collars.
- G. Cable penetrations through walls:
 1. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
 2. Intumescent firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
 3. (single penetrations only) Firestop putty.
 4. (electrical boxes) Firestop pads.
 5. Firestop putty over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- H. Blank openings:
 1. Firestop mortar.
 2. Silicone Firestop sealant over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- I. Fire rated joints:
 1. Silicone Firestop sealant over backer rod or bond breaker.
- J. Construction joints at head of wall/floor assemblies:
 1. Silicone Firestop sealant/mastic over mineral fiber / ceramic wool non-combustible insulation (fire safing).
 2. Elastomeric spray over mineral fiber / ceramic wool non-combustible insulation (fire safing).
- K. Smoke barrier sealant for dampers, fire door frames:

1. Silicone Firestop sealant.
- L. Temporary sealing of openings and penetrations:
 1. Firestop putty, sticks or pads.
 2. Firestop pillows.

End of Section

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Section 07 9200
JOINT SEALANTS

PART 1 - GENERAL**1.1 SUMMARY**

- A. General: The work of this Section consists of sealants and backing materials, where shown on the Drawings, as specified herein, and as required for a complete and proper installation.
 - 1. This Section specifies general requirements, definition of joint sealer types, and application requirements for sealant work specified within other individual specification sections.
- B. Prepare sealant substrate surfaces.
- C. Furnish and install sealant and backing materials.

1.2 RELATED REQUIREMENTS

- A. Section 07 8400 - FIRESTOPPING: Firestopping sealants and related backing materials.
- B. Section 09 2900 - GYPSUM BOARD: Application of concealed acoustical sealant used in conjunction with gypsum board work at abutting surfaces (perimeter of partitions and walls).
- C. Section 09 9100 - PAINTING: Caulks used in preparation of applied finish coatings.
- D. Section 13 3419 - METAL BUILDING SYSTEMS
 - 1. Sealant used in conjunction with sheet metal roofing system.
 - 2. Sealant integral with flashing.

1.3 REFERENCES

- A. The standards referenced herein are included to establish recognized quality only. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
- B. Reference Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
 - 1. ASTM C717 - Standard Terminology of Building Seals and Sealants.
 - 2. ASTM C790 – Guide for Use of Latex Sealants
 - 3. ASTM C804 - Use of Solvent-Release Type Sealants.
 - 4. ASTM C834 - Latex Sealing Compounds.
 - 5. ASTM C919 - Use of Sealants in Acoustical Applications.
 - 6. ASTM C920 - Elastomeric Joint Sealants.
 - 7. ASTM C962 - Use of Elastomeric Joint Sealants.
 - 8. ASTM C1193 - Guide for Use of Joint Sealants.

9. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
 10. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.
 11. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
- C. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:
1. SWRI – Sealant and Caulking Guide Specification.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-construction Conference:
1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, performance data, chemical and physical properties and installation instructions for each item furnished hereunder.
 2. Selection Samples: Sample card indicating Manufacturer's full range of colors available for selection by Architect.
 3. Verification Samples: 12 inch long samples of sealant for verification of color, installed where directed by Architect.
 4. Certificates: Manufacturer's certification that the Products supplied meet or exceed specified requirements.
 5. Test and Evaluation Reports:
 - a. Compatibility and adhesion test reports: Test reports from sealant manufacturer indicating that sealant proposed for use have been tested for compatibility and adhesion with actual samples of substrates to be used on this project. Include sealant manufacturer's interpretation of test results, and recommendations for primers and substrate preparation specific to this Project.

- B. Closeout Submittals: Submit the following under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
 - 1. Bonds and Warranty Documentation: Manufacturer's standard Warranties and Guarantees.

1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
- B. Sole Source: Provide sealants from a single manufacturer for all work of this Section to the greatest extent possible. Each individual type of sealant installed in the Work shall be from a single manufacturer.
- C. Qualifications:
 - 1. Installer/Applicator: Minimum of 3 years documented experience demonstrating previously successful work of the type specified herein.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Each container and package must bear an unbroken seal, test number and label of the manufacturer upon delivery to the site. Failure to comply with these requirements shall be sufficient cause for rejection of the material in question, by the Architect and his requiring its removal from the site. New material conforming to said requirements, shall be promptly furnished at no additional cost to the Contract.
- B. Store sealants within sealant manufacturer's recommended optimum temperature range for at least 16 hours before use. Store backer rod and bond breaker tape in clean dry areas at 70 deg. F so that will not become damp, wet, or frost covered

1.8 SITE CONDITIONS

- A. Do not install single component solvent curing sealant in enclosed building spaces.
- B. Environmental Requirements: Maintain temperature and humidity recommended by the sealant manufacturer during and 24 hours after installation. Do not proceed with installation of joint sealers under the following conditions:
 - 1. When ambient and substrate temperature conditions are below 40 degrees F.
 - 2. When joint substrates are wet due to rain, frost, condensation, or other causes.
- C. Do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from substrates.

1.9 WARRANTY

- A. General: Submit manufacturer's warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
- B. Manufacturer's warranties shall guarantee sealants installed are free of manufacturing defects and conforms to the published physical properties and referenced standards effective at time of installation.

1. Sealant performance: Manufacturer's warranties shall include coverage for the following listed failures, when sealants are applied in accordance with manufacturer's written instructions. Warranty to include coverage for:
 - a. Sealant will not become brittle, tear or crack due to normal exposure or normal expansion or contraction.
 2. Warranty period:
 - a. Silicone sealants on vertical surfaces: 20 years.
- C. Special Manufacturer's Warranty - Five years from date of Substantial Completion manufacturer agrees to furnish material only to repair or replace those joint sealants that do not comply with the performance or other specified requirements in the Section. Warranty: Include coverage of installed sealants that fail to achieve air tight and watertight seal, exhibit loss of cohesion or adhesion, or do not cure. Include coverage of sealants that revert to an uncured state. Warranty shall be transferable with no dollar limit and shall be non-pro-rated. Warranty shall not require Owner's signature to be effective.
- D. Special Installer's Warranty: Provide 3 year warranty or bond which shall include coverage of installed sealant and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.
1. Installer's warrant shall include coverage for sealant that fails cohesively or adhesively. Installer agrees to provide material and labor to repair or replace joint sealants that do not comply with the performance or other specified requirements in the Section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Specified Manufacturers and Products: To establish a standard of quality, design and function desired, Drawings and specifications have been based on the products specified under this section for each individual sealant type, for the applications scheduled at the end of Section, and as may be additionally identified on the Drawings.
- B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
1. BASF Construction Chemicals (Sonneborn), Shakopee MN.
 2. Bostik, Inc., Wauwatosa, WI.
 3. Dow Corning Corporation, Auburn MI.
 4. GE Construction Sealants, Huntersville, NC.
 5. Momentive Performance Materials (GE Silicones), Waterford NY.
 6. Owens Corning, Toledo, OH.
 7. Pecora Corporation, Harleysville PA.
 8. Phenomenal Brands, Baltimore, MD.
 9. Sika Corp, Lyndhurst NJ.
 10. Tremco, Inc., Beachwood OH.

2.2 SEALANT MATERIALS

- A. Sealant Materials, General Requirements:
 - 1. Only use sealant and primers that comply with the following limits for VOC content:
 - a. Architectural Sealants: 250 g/L.
 - b. Roofing Sealants: 420 g/L.
 - c. Roadway Sealants: 250 g/L.
 - d. Sealant primer: 250 g/L.
 - 2. Sealants containing aromatic solvents, fibrous talc, formaldehyde, halogenated solvents, mercury, lead, cadmium, chromium and their compounds, are not permitted.
- B. Joint Sealer Type AA (Acrylic acoustical): One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paintable.
 - 1. Owens Corning, product: "QuietZone Acoustical Sealant."
 - 2. Pecora, product "AC-20 FTR".
 - 3. Specified Technologies, Inc. (STI), product "Smoke 'N' Sound Acoustical Sealant". (spray applied).
 - 4. Tremco, product "Tremco Acoustical Sealant".
- C. Joint Sealer Type AP (Acrylic Painters caulk): One component acrylic latex caulking compound, conforming to ASTM C 834 Type P, Grade NF, paintable within 24 hours after application, with a minimum movement capability of ± 12.5 percent, equal to one of the following:
 - 1. BASF (Sonneborn), product, "MasterSeal NP520".
 - 2. Tremco, product, "Tremflex 834".
 - 3. Bostik, product, "Chem-Calk 600".
 - 4. Pecora, product "AC-20+".
- D. Joint Sealer Type BL (Butyl): Gun-grade modified butyl and polyisobutylene sealant, conforming to ASTM C-834, with a movement capability of ± 10 percent or better and a Shore A hardness of 24 to 28, equal to one of the following:
 - 1. Tremco, product "Butyl Sealant".
 - 2. Pecora, product "BC-158".
- E. Joint Sealer Type BPM (Modified polyurethane, Multi-component): Pouring grade, self-leveling bitumen modified two component urethane sealant, conforming to ASTM C920, Type M, Grade P or NS, Class 25 and FS SS-S-00227E, Type 1, Class A, with a minimum movement capability of ± 25 percent, equal to one of the following:
 - 1. BASF (Sonneborn), product "MasterSeal CR125".
 - 2. Pecora, product "Urexpan NR-300".
 - 3. Tremco, product "Vulkem THC 900/901".
 - 4. Sika, product "Sikaflex 2C NS TG".
- F. Joint Sealer Type SC (Silicone, general construction): One-part medium modulus, natural cure, synthetic sealant, having a useful life expectancy of at least 20 years,

conforming to ASTM C 920, Type S, NS, Class 50, use NT, G, A, M, O with a minimum movement capability of ± 50 percent, equal to the following:

1. Dow Corning, product, "791".
2. GE Silicones, product, "Silpruf".
3. Pecora, product, "895".
4. Sika, product, "Sika Sil-C 995".
5. Tremco, product, "Spectrem 2".

- G. Joint Sealer Type SX (Silicone, Exterior construction): Medium modulus, neutral curing, low to no bleed silicone passing ASTM C1248, having a useful life expectancy of at least 20 years, conforming to ASTM C 920, Type S, Grade NS, Class 50, with a minimum movement capability of ± 50 percent, equal to the following:

1. Dow Corning, product, "795".
2. GE Silicones, product, "SCS9000 SilPruf NB".
3. Sika, product "Sikasil-WS-295".
4. Tremco, product "Spectrem 4-TS".

2.3 ACCESSORIES

- A. Compressible joint bead back-up: Compressible closed cell polyethylene, extruded polyolefin or polyurethane foam rod complying with ASTM C 1330, Type C (losed cell material with a surface skin), 25 to 33 percent greater in diameter than width of joint. Shape and size of compressible back-up shall be as recommended by manufacturer for the specific condition used. Provide one of the following, or equal.
1. Construction Foam Products (Division of Nomaco, Inc.), Zebulon, NC, product "HBR Closed Cell".
 2. Industrial Thermo Polymers Ltd., Brampton, Ontario CN, product "ITP Standard Backer Rod".
 3. BASF Construction Chemicals (Sonneborn), Shakopee MN, product "Sonolastic Closed Cell Backer Rod".
 4. W.R. Meadows Inc., Hampshire, IL, product "Sealtight Kool-Rod".
- B. Primers: Furnish and install joint primers of the types, and to the extent, recommended by the respective sealant manufacturers for the specific joint materials and joint function.
- C. Bond-breaker tape, and temporary masking tape: Of types as recommended by the manufacturer of the specific sealant and caulking material used at each application, and completely free from contaminants which would adversely affect the sealant and caulking materials.
1. Liquid bond breaker and duct tape are not permitted.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General:
 - 1. Weather conditions must be dry and of the temperature, as recommended by sealant manufacturer, during application operations.
 - 2. Surface receiving work of this section must be absolutely dry and dust free. All joints receiving sealant/caulking materials and primers shall be subject to the approval of the sealant manufacturer for proper use of specified materials.
- B. Thoroughly clean all joints, removing all loose mortar, oil, grease, dust, frost, and other foreign materials that will prevent proper adhesion of primers and sealant materials.
 - 1. Clean ferrous metals of all rust and coatings by wire brush, grinding or sandblasting. Remove oil, grease and protective coatings with cleaners recommended by sealant manufacturer.
- C. Prime joint substrates, as recommended in writing by joint-sealant manufacturer, as based on preconstruction joint-sealant-substrate tests or as based upon prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- D. Verify that joint backing and release tapes are compatible with sealant.
- E. Perform preparation in accordance with ASTM C 804 and C 790 for solvent and latex base solvents, respectively.

3.3 INSTALLATION

- A. General: Conform to SWRI requirements, and sealant manufacturer's written requirements for installation.
- B. Install joint bead back-up in all joints in excess of 5/8-inch depth, and joints that have no back-up therein, placing the joint bead in the joint in a manner that will assure a constant depth 1/8 inch greater than the sealant and caulking material depth tolerances.
 - 1. Set beads into joints continuously, by slightly stretching during placement, to permit compression against sides of joint, without surface wrinkles or buckles.
 - 2. Do not stretch back-up material into joints.
- C. Install bond breaker in joints where shown in the Drawings and wherever recommended by the sealant manufacturer to prevent bond of the sealant to surfaces where such bond might impair the Work.
- D. Apply masking tape or other precautions to prevent migration or spillage of materials onto adjoining surfaces.
- E. Apply urethane sealants, silicone sealants, and latex caulking materials into joints in accordance with manufacturer's instructions, using mechanical or power caulking gun equipped with nozzle of appropriate size, with sufficient pressure to completely fill the joints.

1. The depth of sealant and caulking materials shall be in accordance with manufacturer's recommendations for the specific joint function, but in no case exceed 1/2-inch in depth, nor less than 1/4-inch, regardless of the joint width.
 2. Maintain the outer edge of the sealant and caulking materials, where side faces of joints are in the same plane, back 1/8-inch from the faces.
 3. Apply sealant in continuous beads without open joints, voids or air pockets so as to provide a watertight and airtight seal for the entire joint length.
 4. After placement of the sealant and caulking materials, concave-tool the surfaces to uniform density, using a water-wet tool. Do not use detergents or soapy water for the tooling operations.
 5. Remove the temporary masking tape immediately after tooling, and before the sealant or caulking material has taken initial set.
- F. Apply pouring self-leveling urethane sealant (Sealant designation **HL**) into horizontal joints in accordance with manufacturer's instructions, to a level approximately 1/16 inch below adjacent surfaces.
1. Apply sealant without open joints, voids or air pockets so as to provide a watertight and airtight seal for the entire joint length.
 2. After placement of the sealant and caulking materials, concave-tool the surfaces to uniform density, using a water-wet tool. Do not use detergents or soapy water for the tooling operations.
 3. Remove the temporary masking tape immediately after tooling, and before the sealant has taken initial set.

3.4 CLEANING

- A. Clean all surfaces of adjacent surfaces which have been marked or soiled by the work of this Section, removing all excess sealant and caulking materials with solvents which will not damage the surfaces in any way.

3.5 PROTECTION

- A. During the operation of sealant work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

3.6 SCHEDULE

- A. General: Seal joints indicated and all interior and exterior joints, seams, and intersections between dissimilar materials.
- B. Sealant Colors:
1. Colors for Sealant (typical): As selected by the Architect from manufacturer's standard colors.
 2. Color for Sealant Types "AA" and "AP": White.
 3. Color for Sealant Type "BL": Black.
 4. In concealed installation, and in partially or fully exposed installation where so approved by the Architect, standard gray or black sealant may be used.
- C. Specialty Joint Conditions:

1. Sealant for setting exterior door thresholds Phase A (T Hanger Replacement):
Type "BL".

D. Exterior joints (Listed by primary building material abutting sealant joints):

1. Concrete:

Joint Condition	Sealant Type
a. Concrete to concrete, vertical control joints:	SX or SC
a. Concrete to all items which penetrate exterior concrete walls, including, but not necessarily limited to, door frames, louver frames, pipes, vents, and similar items:	SX or SC
b. Concrete to concrete control, expansion and isolation joints in horizontal vehicular traffic surfaces:	BPM

2. Exterior Metal:

Joint Condition	Sealant Type
a. Metal to metal:	SX

E. Interior joints (Listed by primary building material abutting sealant joints):

1. Interior Concrete:

a. Concrete to concrete horizontal vehicular traffic surfaces:	BPM
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2. Interior metal:

Joint Condition	Sealant Type
a. Metal to metal :	SX

3. Gypsum Board:

Joint Condition	Sealant Type
a. Gypsum board to metal or wood trim:	AP
b. Gypsum board to abutting surfaces at exposed tops and bottoms partitions and walls:	AA
c. Gypsum board to masonry:	SC
d. At gaps and spaces between gypsum board to interior door and window frames, penetrating conduits and piping, building specialty items, ductwork, and similar items:	AP
e. Gypsum board to plumbing fixtures:	SM

End of Section

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Section 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 – GENERAL**1.1 SUMMARY**

- A. General: The work of this Section consists of hollow metal doors and frames, where shown on the Drawings, as specified herein, and as required for a complete and proper installation.
- B. Provide the following products:
 - 1. Flush UL-Labeled and non-labeled steel doors and frames, complete with internal reinforcing, hardware cut-outs; installed under requirements of Section 08 05 13- COMMON WORK RESULTS – DOOR AND HARDWARE INSTALLATION
 - a. Provide thermally broken, insulated steel doors and frames at Toilet Rooms.

1.2 RELATED REQUIREMENTS

- A. Section 08 7100 - DOOR HARDWARE: Furnishing finish hardware, and installation templates for hardware cut-outs and reinforcing.
- B. Section 09 9100 - PAINTING: Applied finish coatings.
- C. Division 26 – ELECTRICAL: Wiring connections for electrified door hardware.
- D. Building-in of frame anchors to wall and partition construction: By trade responsible for wall and partition erection.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
 - 2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcing.
 - 3. ANSI/SDI A250.8 – *R2008* (formerly SDI 100) - Recommended Specifications for Standard Steel Doors and Frames.
 - 4. ANSI/SDI A250.11 – Recommended Erection Instructions for Steel Frames.
 - 5. ASCE-7 – Minimum Design Loads and Associated Criteria for Building and Other Structures.
 - 6. ASTM A109 / A109M - Standard Specification for Steel, Strip, Carbon (0.25 Maximum Percent), Cold-Rolled.

7. ASTM A568 / A568M - Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for.
8. ASTM A653 / A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
9. ASTM A924 / A924M - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
10. ASTM A1008 / A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
11. ASTM A1011 / A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
12. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.
13. ASTM E283 – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
14. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
15. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
16. SDI 111 Series (111A-111F): Recommended Details, Steel Doors and Frames.
17. SDI 117-93: Manufacturing Tolerances for Standard Steel Doors and Frames.
18. NFPA publication 80 - Fire Doors and Windows.
19. NFPA publication 105 – Standard for the Installation of Smoke Door Assemblies.
20. UL publication 10B - Fire Tests of Door Assemblies.
21. UL publication 10C – Positive Pressure Fire Tests of Door Assemblies.
22. UL 1784 – Air Leakage Tests of Door Assemblies.
23. All applicable federal, state and municipal codes, laws and regulations for exits.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.
2. Coordinate the work of this Section with the respective trades responsible for furnishing hardware and installing doors and frames.
3. Ensure that the work performed hereunder is coordinated with issued templates authorized by the hardware supplier.

4. Do not fabricate doors or frames before receiving a copy of the approved hardware schedule, submitted by the hardware supplier, reviewed by the Contractor and accepted by the Architect. Verify that issued templates are coordinated with the approved schedule; immediately notify the Architect, in writing, of any conflicts.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
1. Product Data: Manufacturer's product data sheets, specifications, for doors, frames and shop applied finishes.
 2. Shop Drawings:
 - a. Door and Frame Schedule: A complete schedule coordinated with, and using same identifier designations as, the door and frame schedule contained in the Contract Drawings.
 - b. Large scale details of each type door and frame construction, indicating all gages, reinforcing, and anchorage.
 3. Certificates: Manufacturer's written certification stating that doors, frames, and all related items to be furnished hereunder, meet or exceed the requirements specified under this Section; that specified galvanized and shop priming has been performed; and that all U.L. fire-resistive requirements for the indicated Labels have been met.
- B. Closeout Submittals: Submit the following under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
1. Bonds and Warranty Documentation: Manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards, specified materials, and methods of construction.

- B. Sole Source: Obtain doors and frames specified in this Section from a single manufacturer.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 - 1. Prior to shipping, identify each frame and door with a removable metal or plastic label which corresponds with door schedule identifying opening number and location.
 - 2. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
 - 3. Deliver doors and frames boxed or crated to provide protection during transit and job storage.
 - 4. Inspect doors and frames upon delivery for damage. Minor damage may be repaired provided the refinished items are equal in respects to new work and acceptable to the Architect; otherwise remove and replace damaged items.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials following manufacturer's recommended procedures.
 - 2. Store doors and frames at the building site upright and under cover. Place the units on wood dunnage and cover in a manner that will prevent rust and damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
 - 1. Hollow metal doors and frames:
 - a. Amweld Building Products, Inc., (A Division of Amweld International, LLC), Coppell TX.
 - b. Ceco Door Products (A Division of Assa Abloy Group Company), Milan TN.
 - c. Curries Company (A Division of Assa Abloy Group Company), Mason City IA.
 - d. Republic Doors and Frames, McKenzie TN.
 - e. Steelcraft (A Division of Allegion Company), Cincinnati OH.

2.2 DESCRIPTION

- A. Regulatory Requirements:
 - 1. Fire resistance rated door construction shall conform to UL publications 10B and 10C.
 - a. Oversize Fire-Rated Door Assemblies Construction: For units exceeding sizes of tested assemblies, attach construction label certifying doors are built to standard construction requirements for tested and labeled fire rated door assemblies except for size.

2. Fire resistance rated borrowed light assemblies: NFPA 80.
3. Corridor door assemblies shall be tested and listed per UL 1784.
4. Smoke Control Door Assemblies: Comply with NFPA 105.
 - a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors
5. Install fire rated door assemblies in compliance with NFPA 80.

2.3 PERFORMANCE CRITERIA

A. Exterior Openings:

1. Thermal Performance (Toilet Room Doors only):
 - a. Comply ASTM C1363 for minimum thermal ratings. Openings to be fabricated and tested as fully operable, thermal insulating door and frame assemblies.
 - b. Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM C1363 and meet or exceed the following requirements:
 - 1) Door Assembly Operable U-Factor and R-Value Ratings: U-Factor 0.29, R-Value 3.4, including insulated door, thermal-break frame and threshold.
 - a) Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.36 and R-Value 2.7, including insulated door, kerf type frame, and threshold.
2. Air Infiltration (ALL Exterior Openings): Independent testing laboratory certification for exterior door assemblies being tested in accordance with ASTM E283 to meet or exceed the following requirements:
 - a. Rate of leakage of the door assembly shall not exceed 0.25 cfm per square foot of static differential air pressure of 1.567 psf (equivalent to 25 mph wind velocity).

2.4 DOORS

- A. General: Refer to the Drawings for design of doors, sizes, and details.
- B. Construction: Full flush commercial type, 1-3/4 inches thick, unless noted otherwise, meeting or exceeding the materials, gages, construction, and testing requirements of the referenced ANSI and SDI publications.
 1. Insulated Toilet Room Doors, Door Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds, in compliance with HMMA 867 "Laminated Core".
 - a. Provide 22 gauge steel stiffeners at 6 inches on-center internally welded at 5 inches on-center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
 2. Non-insulated Door Core Construction: Manufacturer's standard vertical steel-stiffener core. Fabricate doors with specified R-value when tested according to ASTM C1363.
- C. Interior and Exterior Doors 1-3/4 inch thick (44.4 mm): ANSI 250.8, Level 2, Model 1 (Full Flush), ANSI A250.4 Physical Performance Level B, (Heavy Duty) having 18-gage, minimum 0.042 inch (1.0 mm) steel faces.

1. Visible edge seams: Epoxy fill edge seams and finish for seamless appearance (Model 2).
- D. Hardware reinforcing: Welded in place steel reinforcement, hot rolled pickled and oiled steel per ASTM A1011. Provide G-60, hot-dipped galvanized reinforcing for all exterior openings, and locations where galvanized doors and frames are scheduled. Reinforcing shall be not less than the following minimum steel thicknesses:
 1. Hinges: 7 gage, minimum 0.167 inch (4.2 mm) thick.
 2. Closers: Box/channel-shape reinforcing, 14 gage, minimum 0.067 inch (1.6 mm) thick.
 3. Locks: Box/channel-shape reinforcing,
 - a. Cylindrical locks: 16 gage, minimum 0.053 inch (1.3 mm) thick.
 - b. Mortise locks: 14 gage, minimum 0.067 inch (1.6 mm) thick.
 4. Kick plates: 18 gage, minimum 0.042 inch (1.0 mm) thick.
 5. All other hardware: 14 gage, minimum 0.067 inch (1.6 mm) thick.
 6. Locations for reinforcing shall be determined from information and templates provided under Section 08 71 00 - DOOR HARDWARE.
- E. Fabrication
 1. Fabricate exposed faces of door panels from cold-rolled steel only.
 2. Fabricate concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at manufacturer's option).
 3. Fabricate doors with hardware reinforcement welded in place.
 4. Attach fire rated label to each door unit.
 5. Close top and bottom edge of exterior doors with flush end closure. Seal joints watertight.

2.5 HOLLOW METAL FRAMES

- A. General: Refer to the Drawings for various types of frames, sizes, and profiles, UL fire-resistive Label frames, and other characteristics of frames and related items.
 1. Frame type (all frames): Shop welded frames with mitered joints arc-welded, reinforced and ground smooth.
- B. Materials for frames, reinforcement, anchors, anchor clips and related items: commercial grade cold-rolled steel conforming to ASTM A109 or commercial grade hot-rolled and pickled steel conforming to ASTM A1011.
 1. Frame gage: 16-gage, 0.053 inch thick (1.3 mm), with an A60 zinc coating (galvannealed), supplied by the hot-dip process conforming to ASTM A653, Grade 37, with coating applied in accordance with A 924.
 2. Hinge reinforcement: 7 gage, minimum 0.167 inch (4.2 mm) thick.
 3. Lock and strike reinforcement: 16 gage, minimum 0.053 inch (1.3 mm) thick.
 4. Door closer reinforcement: 14 gage, minimum 0.067 inch (1.6 mm) thick.
 5. Floor clips: 16 gage, minimum 0.053 inch (1.3 mm) thick.
 6. Splice plates or channels: same gage as door frame.
- C. Frame construction:

1. Fire-rated frame assemblies: Modify specified construction to meet all construction requirements required for fire-resistive rating.
 - a. Affix appropriate UL, FM or Warnock Hersey labels to each rated frame assembly, indicating applicable rating.
2. Shop-fabricate frames as whole single units per door opening, except when frame size is too large to ship as a single unit. Oversized frames may be shipped in large sections as practicable for field assembly with concealed splice plates or channels.
 - a. Frame corner construction: Refer to paragraph A of this Article.
3. Reinforcements, stiffeners, and base angle clips: Welded to interior surfaces of frames to provide a stable base and so as to not interfere with installation of hardware.
4. Appearance of finished frames: Strong, rigid, completely free from warp and buckle, with miters well-formed and in true alignment, and with surfaces smooth and free from defects of any kind.
5. Silencer holes: Prepare frames for silencers at non-gasketed doors, coordinate with Section 08 71 00 – DOOR HARDWARE and Hardware Schedule. Provide three single silencers for single doors, and mullions of double doors on strike side. Provide two single silencers on frame head at double doors without mullions.

D. Anchorage:

1. Anchor clips for frames in metal stud partitions: Steel clips, 18-gage (minimum 0.042 inch [1.0 mm] thick), 1-1/2 inch upturned and downturned legs, or equivalent type standard with the manufacturer, contained within the frames, for screw attachment to metal studs under Section 09 22 16 - NON-STRUCTURAL METAL FRAMING.
2. Anchor clips for frames in cold-formed metal framed exterior walls: Steel clips, 16-gage (minimum 0.053 inch [1.3 mm] thick), 1-1/2 inch upturned and downturned legs, or equivalent type standard with the manufacturer, contained within the frames, for screw attachment to metal studs under Section 05 40 00 - COLD-FORMED METAL FRAMING.
3. Provide the following number of anchors, clips, or bolts, per jamb:
 - a. For frames 7'-6" in height or less: 3 anchors per jamb.
 - b. For frames 7'-6" in height or less and having doors exceeding 3'-0" feet width, and for cross corridor frames: 4 anchors per jamb.
 - c. For frames greater than 7'-6", up to 10'-0" in height: 4 anchors per jamb.
 - d. For frames greater than 7'-6", up to 10'-0" in height, and having doors exceeding 3'-0" feet width, and for cross corridor frames: 5 anchors per jamb.
 - e. For frames over 10'-0' in height: 5 anchors per jamb.

2.6 FABRICATION

- A. General: Do not fabricate materials until all specified submittals have been submitted to, and approved by, the Architect.
- B. Fabrication Tolerances, Maximum variation for doors and frames: Maximum diagonal distortion 1/16 inch measured with straight edge, corner to corner.

2.7 FINISHES

- A. Preparation: Pressure-sand all surfaces of all doors, frames, accessory items, anchors, and related items, to remove blemishes and foreign matter and provide paint grip. Spot-fill imperfections with metallic filler, and sand smooth. Thoroughly clean the surfaces by applying hot or cold phosphate treatment standard with the manufacturer.
- B. Following cleaning apply one dip or spray coat of rust-inhibitive metallic oxide, zinc chromate, or synthetic resin primer to all surfaces, including those which will be concealed after erection. Bake, or oven dry, the primer at time and temperature recommended by the manufacturer for developing maximum hardness and resistance to abrasion.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
 - 1. Verify that opening sizes and tolerances are acceptable and in compliance with these specifications and applicable codes.
 - 2. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 ERECTION AND INSTALLATION

- A. General: Install frames and doors in accordance with the manufacturer's recommendations, ANSI A250.8, SDI-105, and the Door Hardware Institute recommendations. Install with a maximum diagonal distortion of 1/16 inch measured with a straight edge, corner to corner.
- B. Place in-position all steel frames, in accordance with the approved shop drawings and frame schedule.
 - 1. During the installation of metal door frames, after the manufacturer's steel shipping bars have been removed, install wood spreaders at door opening, carefully dimensioned to permit square and plumb installation of door frames and doors.
 - a. Provide rigid temporary bracing for frames as required to ensure maintenance of positioning, and remove only after frames have been permanently anchored.
 - b. For doors located in masonry work, maintain frame position with temporary bracing until frames are built-into-place, and grout has sufficiently cured to maintain frame position.
 - c. Spreaders shall remain in place until doors are installed.
 - 2. Coordinate installation of frames with the various trades installing abutting wall construction for anchor placement.
 - a. Secure frames with the following number of anchors per jamb.
 - 1) For frames 7'-6" in height or less: 3 anchors per jamb.
 - 2) For frames 7'-6" in height or less and having doors exceeding 3'-0" feet width, and for cross corridor frames: 4 anchors per jamb.

- 3) For frames greater than 7'-6", up to 10'-0" in height: 4 anchors per jamb.
 - 4) For frames greater than 7'-6", up to 10'-0" in height, and having doors exceeding 3'-0" feet width, and for cross corridor frames: 5 anchors per jamb.
 - 5) For frames over 10'-0' in height: 5 anchors per jamb.
3. Secure frames, occurring in existing masonry, with expansion bolts and sleeves.
4. Where exposed fastener heads occur in frames, fill with automotive body filler and sand smooth.
- C. Install doors and door hardware in accordance with manufacturer's instructions and requirements of referenced organizations, and the requirements of Section 08 71 00 - DOOR HARDWARE.
 1. Tools for maintenance: All special tools packaged with hardware items shall be saved, tagged/identified as to product use, and turned over to the Owner upon completion of the Work.

3.3 CLEANING

- A. General: Clean work under provisions of Section 01 70 00 – EXECUTION AND CLOSEOUT REQUIREMENTS.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

3.4 ADJUSTING

- A. Prior to Final Inspection make final check and adjustment of all hardware, clean operating items as necessary to restore proper function and finish of hardware.

End of Section

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Section 08 3613
SECTIONAL DOORS

PART 1 - GENERAL**1.1 SUMMARY**

- A. Furnish and install the following:
 - 1. Manually-operated steel sectional door assembly, complete with tracks, clip angles, guides, operating hardware and mechanisms, weather seals, and all related items.

1.2 RELATED REQUIREMENTS

- A. Section 08 7100 - DOOR HARDWARE: Furnishing cylinders for sectional doors.
- B. Section 13 3419 - METAL BUILDING SYSTEMS:
 - 1. Steel framing.
 - 2. Steel channel frame for door opening.
- C. Division 26 - ELECTRICAL:
 - 1. Conduit from electric circuit to door operator and from door operator to control station.
 - 2. Electrical power wiring and conduit from the building power supply to the motors, and from the motors to the operating control stations.

1.3 REFERENCES

- A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES.
 - 1. ANSI A 216.1 - Sectional Overhead Type Door (NAGDM 102).
 - 2. ANSI/AHA A 135.4 - Basic Hardboard.
 - 3. ASTM A 446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Structural (Physical) Quality.
 - 4. ASTM A 526 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Commercial Quality.
 - 5. ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.
 - 6. ASTM B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.
 - 7. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
 - 8. NEMA 250 - Enclosures for Electrical Equipment.
 - 9. NEMA ICS 2 - Standards for Industrial Control Devices, Controllers and Assemblies.
 - 10. NEMA MG1 - Motors and Generators.
 - 11. NFPA 70 - National Electrical Code.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
 1. Literature: Manufacturer's product data sheets, specifications, and performance data.
 2. Manufacturer's installation instructions. Indicate installation sequence and procedures, adjustment and alignment procedures and lubrication instructions.
 3. Maintenance Data: Lubrication requirements and frequency, periodic adjustments required.
 4. Warranty: Provide sample copies of manufacturers' actual warranties for all materials to be furnished under this Section, clearly defining all terms, conditions, and time periods for the coverage thereof.
 5. Shop drawings: Fully-dimensioned, large scale details of door construction, tracks, guides, counterbalancing and operating mechanisms, electrical characteristics, and related items; with complete installation details reflecting actual site conditions for each location.
 - a. Indicate electrical requirements, connection details.
 6. Selection samples:
 - a. Sample card indicating Manufacturer's full range of finishes available for selection by Architect.
 7. Verification samples: 12 inch length samples of door framing illustrating material and finish, color matched to existing sectional doors.

1.6 QUALIFICATIONS

- A. Installer, with a minimum of 3 years documented experience demonstrating previously successful work of the type specified herein, and approved by product manufacturer.

1.7 WARRANTY

- A. General: Submit warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
 - 1. In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.
- B. Manufacturer's Warranty: Manufacturer's 1 year warranty, which shall include materials and workmanship of sectional overhead doors, tracks, springs and electric motor, satisfactory operation, and contain any limitations of items specified herein.
- C. Special Warranties:
 - 1. Provide 3 year counterbalance spring and mechanism warranty.
 - 2. Provide 5 year finish warranty for custom powder coat finish.

1.8 MAINTENANCE

- A. Provide Installers maintenance contract under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS, for a period of one year from Date of Project Substantial Completion. Maintenance contract includes:
 - 1. Callback service for the doors and grilles, during standard weekday working hours.
 - 2. Two post-installation examinations of doors during regular working hours by trained employees of the door manufacturer. (one six months into warranty period, and one in last 30 days of warranty period).
 - a. Perform All necessary adjusting, greasing, and oiling.
 - 3. Cleaning supplies and parts necessary to keep the equipment in proper operation, except any parts needed due to misuse, accident, or neglect caused by others.
- B. Repair work shall be carried out only by the installer's personnel, using only standard parts furnished by the door manufacturer. Maintenance shall be carried out directly by the installer and shall not be assigned or transferred to any agent.

PART 2 - PRODUCTS

2.1 SYSTEM PERFORMANCE

- A. Design and size components to withstand dead and live loads caused by pressure and suction of wind acting normal to plane of wall as calculated in accordance with Massachusetts State Building code as measure in accordance with ASTM E 330.
- B. Maximum air leakage per foot of door perimeter (sill, jamb and header) shall not exceed 0.81 CFM (6.36 cm²/min) at 25 MPH (402 KM/hr). No air leakage shall be detected between section joints when tested in accordance with ASTM E-283.

2.2 COMPONENTS

- A. Door Assembly: Non-insulated steel door assembly with rabbeted meeting rails to provide full-width interlocking structural rigidity.
 - 1. Panel Thickness: 2 inches (51 mm).
 - 2. Exterior Surface: Flush.
 - 3. Section Material: 16 gauge, galvanized steel.
 - 4. Center and End Stiles: 16 gauge steel.
- B. Lifting Cables: Provided with aircraft-type, galvanized steel lifting cables with minimum safety factor of 5 to 1.
- C. Spring Counterbalance: Torsion spring on cross head shaft, with braided steel lift cables. Sized to weight of the door, with a helically wound, oil tempered torsion spring mounted on a steel shaft; cable drum of diecast aluminum with high strength galvanized aircraft cable. Sized with a minimum 7 to 1 safety factor.
 - 1. Springs rated for 100,000 cycles.
- D. Manual Operation, Push-up Operation: Lift handles and pull rope for raising and lowering doors, operating with a maximum 25-lbf lift or pull.
- E. Weatherstripping:
 - 1. Flexible bulb-type strip at bottom section.
 - 2. Flexible Jamb seals.
 - 3. Flexible Header seal.
- F. Track:
 - 1. Material: Hot-dipped galvanized steel (ASTM A-653), fully adjustable for adequate sealing of door to jamb or weatherseal.
 - 2. Configuration Type: Low Headroom type with Incline.
 - 3. Size: 2 inches (51mm), or as otherwise recommended by manufacturer.
 - 4. Mounting: Jamb mounted.
 - 5. Finish: Galvanized and color-matched to door aluminum framing.
- G. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of stainless steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
- H. Locks: Furnish door system with interior lock with five-pin tumbler cylinder, night latch and steel bar engaging track.

2.3 FINISHES

- A. Exterior steel surfaces: Custom color powder coat finish to match existing in situ sectional doors.
 - 1. Clean surfaces by shot blasting.
 - 2. Apply zinc-phosphate treatment in a continuous five-state process. Following zinc-phosphate treatment, apply electro-statically applied powder coat finish in color selected by Architect.

3. Powder coating epoxy coating, as manufactured by TIGER Drylac, Reading PA (610) 926-8148, Product Special Series 49 in smooth Semi-Gloss finish or approved equal.
 - a. Film Thickness: 2.5-3.5 mils, dry film thickness.
 - b. Gloss: 55-65° (per gardener 60°, ASTM D523).
 - c. Cross hatch adhesion test (per ASTM D3359): rated 5B.
 - d. Mandrel bending test (per ASTM D522) 4mm (5/32 inch).
 - e. Impact test (per ASTM D2794), Up to 120 in-lb.
 - f. Pencil Hardness (ASTM B3363) 2H (minimum).
 - g. Humidity resistance, maximum blistering (1500 hours, ASTM D2247): 1 mm (0.04 inch).
 - h. Acid salt spray resistance, maximum undercutting (1500 hours, ASTM G85): 1 mm (0.04 inch).
- B. Interior steel surfaces: Manufacturer's standard white, two coat baked-on polyester enamel.

2.4 FABRICATION

- A. Do not fabricate doors until all specified submittals have been submitted to, and approved by, the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect and verify wall openings are in proper condition to receive the work of this Section. Verify that field measurements are as indicated on reviewed and approved shop drawings.

3.2 PREPARATION

- A. Prepare opening[s] to permit correct installation of door unit to perimeter air and vapor barrier seal.
- B. Verify that electric power is available and of the correct characteristics.

3.3 INSTALLATION

- A. Perform installation of door units, except as otherwise specified, in accordance with the approved shop drawings and the recommendations of the manufacturer.
- B. Anchor assembly to wall construction and building framing without distortion or stress.
- C. Brace door tracks suspended from structure. Secure tracks to structural members only.
- D. Set entire assembly including doors, guides, and hardware, plumb and true to line, to assure smooth operation.

- E. Coordinate installation of electrical service for sectional overhead door with Division 26 - ELECTRICAL. Complete power and control wiring from disconnect to unit components.
- F. Coordinate installation of sealants and backing materials at frame perimeter of sectional overhead door as specified in Section 07 92 00 - JOINT SEALANTS.

3.4 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work. Maximum variation from plumb or level: 1/16 inch. Maximum variation in longitudinal or diagonal warp: 1/8 inch per 10 foot straight edge.

3.5 ADJUSTING

- A. Adjust doors, hardware and operating assembly as required to ensure a smooth operation without binding.

3.6 CLEANING

- A. Remove all labels, protective films and coverings from assembly components.
- B. Clean doors, frames and glass.
- C. Remove tools, equipment and all rubbish and debris from the work area, caused by the work of this Section; leave area in broom-clean condition.

3.7 PROTECTION

- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

End of Section

**SECTION 08 71 00
DOOR HARDWARE****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
1. Swinging doors.
 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
1. Mechanical door hardware.
 2. Cylinders specified for doors in other sections.
- C. Related Sections:
1. Division 08 Section "Hollow Metal Doors and Frames".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 2. ICC/IBC - International Building Code.
 3. NFPA 70 - National Electrical Code.
 4. NFPA 80 - Fire Doors and Windows.
 5. NFPA 101 - Life Safety Code.
 6. NFPA 105 - Installation of Smoke Door Assemblies.
 7. UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
 8. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
1. ANSI/BHMA Certified Product Standards - A156 Series.
 2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
 3. ANSI/UL 294 - Access Control System Units.
 4. UL 305 - Panic Hardware.
 5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
 - 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
 - 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.
 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual overhead door closer bodies.
 - 4. Five years for motorized electric latch retraction exit devices.
 - 5. Two years for electromechanical door hardware, unless noted otherwise.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
 1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 5. Manufacturers:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:

- a. Pemko (PE).

2.3 POWER TRANSFER DEVICES

- A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

- a. Pemko (PE) - EL-CEPT Series.
 - b. Securitron (SU) - EL-CEPT Series.

- B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

- a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

- a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - QC-C Series.

2.4 DOOR OPERATING TRIM

- A. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.

3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
5. Manufacturers:
 - a. Rockwood (RO).

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:
 1. Threaded mortise cylinders with rings and cams to suit hardware application.
 2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
 4. Tubular deadlocks and other auxiliary locks.
 5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 6. Keyway: Manufacturer's Standard.
- D. Removable Cores: Provide removable cores as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
 1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. New System: Key locks to a new key system as directed by the Owner.
- F. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Three (3).
 2. Master Keys (per Master Key Level/Group): Five (5).
 3. Construction Keys (where required): Ten (10).
 4. Construction Control Keys (where required): Two (2).
 5. Permanent Control Keys (where required): Two (2).
- G. Construction Keying: Provide temporary keyed construction cores.
- H. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 KEY CONTROL

- A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:
 - a. Lund Equipment (LU).
 - b. MMF Industries (MM).
 - c. Telkee (TK).

2.7 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ML2000 Series.
 - b. Sargent Manufacturing (SA) - 8200 Series.

2.8 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

- B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.9 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
9. Rail Sizing: Provide exit device rails factory sized for proper door width application.
10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.

1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
 - b. Sargent Manufacturing (SA) - 80 Series.

2.10 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) - DC6000 Series.
- b. Norton Rixson (NO) - 7500 Series.
- c. Sargent Manufacturing (SA) - 351 Series.

C. Door Closers, Surface Mounted (Unitrol): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted closers with door stop mechanism to absorb dead stop shock on arm and top hinge. Hold-open arms to have a spring loaded mechanism in addition to shock absorber assembly. Arms to be provided with rigid steel main arm and secondary arm lengths proportional to the door width.

1. Manufacturers:

- a. Corbin Russwin Hardware (RU) - Unitrol Series.
- b. Norton Rixson (NO) - Unitrol Series.

D. Door Closers, Surface Mounted (Commercial Duty): ANSI/BHMA 156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, institutional grade door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size,

frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck, closing sweep, and latch speed control valves. Provide non-handed units standard.

1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - DC6000 Series.
 - b. Norton Rixson (NO) - 8500 Series.
 - c. Sargent Manufacturing (SA) - 1431 Series.
- 2.
- 3.

2.11 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

- a. Rockwood (RO).

- C. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

- a. Norton Rixson (RF).
- b. Rockwood (RO).
- c. Sargent Manufacturing (SA).

2.12 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
 - 1. Pemko (PE).

2.13 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.14 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.
 - 1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 - 1. Quantities listed are for each pair of doors, or for each single door.
 - 2. The supplier is responsible for handling and sizing all products.
 - 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
 - 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Refer to Section 080671, Door Hardware Sets, for hardware sets.

END OF SECTION

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Section 08 71 01**DOOR HARDWARE SCHEDULE****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section references specification sections relating to commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- B. Commercial door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Door Hardware".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: Reference Related Sections for requirements regarding compliance with applicable industry standards.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- D. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.
- F. Warranties and Maintenance: Special warranties and maintenance agreements specified in the Related Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.5 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Refer to "PART 3 – EXECUTION" for required specification sections.

PART 3 - EXECUTION

3.1 DOOR HARDWARE SETS

- A. The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 - 1. Quantities listed are for each pair of doors, or for each single door.
 - 2. The supplier is responsible for handing and sizing all products.

3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Products listed in the hardware sets shall be supplied by and in accordance with the requirements described in the specification section as noted for each item.
1. Section 08 71 00 – Door Hardware.
 2. Section 08 71 13 – Automatic Door Operators.
- C. Manufacturer's Abbreviations:
1. MK - McKinney
 2. PE - Pemko
 3. SU - Securitron
 4. RU - Corbin Russwin
 5. SA - SARGENT
 6. RO - Rockwood
 7. RF - Rixson
 8. NO - Norton
 9. OT – Other

Hardware Sets**Set: 4.0**

Doors: 111,110A

1 Continuous Hinge	CFM_HD1 PT x Length Required		PE
1 Storeroom Lock	ML2057 104T C6 CT6B	619	RU
1 Surface Closer	UNI7500	689	NO
1 Conc Overhead Stop	1-336	619	RF
1 Threshold	273X224 FGT (pemko)		PE
1 Gasketing	303AS (Head & Jambs)		PE
1 Sweep	18061CNB		PE

Set: 2.0

Doors: 100A, 109A

1 Continuous Hinge	CFM_HD1 PT x Length Required		PE
1 Storeroom Lock	ML2057 104T C6 CT6B	619	RU
1 Surface Closer	UNI7500	689	NO
1 Conc Overhead Stop	1-336	619	RF
1 Threshold	252x_AFG		PE
1 Gasketing	303AS (Head & Jambs)		PE
1 Sweep	18061CNB		PE

Set: 1.0

Doors: 100,101,102,103,104,105,106,107,108,109

1 Continuous Hinge	CFM_HD1 x Length Required		PE
1 Storeroom Lock	ML2057 104T C6 CT6B	619	RU
1 Surface Closer	UNI7500	689	NO
1 Threshold	252x_AFG		PE
1 Gasketing	303AS (Head & Jambs)		PE
1 Sweep	18061CNB		PE

Set: 3.0

Doors: 110,112

1 Mortise Cylinder	as required	US15	SA
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Notes: Balance of hardware by overhead door supplier

END OF SECTION

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Section 09 2900

GYPSUM BOARD

PART 1 – GENERAL**1.1 SUMMARY**

- A. The work of this Section consists of gypsum board (drywall) and trim finishes for partitions, ceilings, and soffits, where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Work includes, but is not limited to the following scope.
- B. Furnish and install:
 - 1. Taped, compounded and sanded moisture resistant gypsum board finishes.
 - 2. All trim and accessory components related to gypsum board work.
 - 3. Acoustical joint sealant and backing at perimeter of gypsum board partitions.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - ROUGH CARPENTRY: Supplemental wood blocking supporting gypsum board.
- B. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES: Furnishing steel door frames.
- C. Section 09 9100 - PAINTING: Applied finish coatings.
- D. Section 10 4000 - SAFETY SPECIALTIES.
- E. Division 21 - FIRE SUPPRESSION: Sprinkler heads in ceiling system.
- F. Division 23 - HEATING, VENTILATING AND AIR CONDITIONING: Supply and return air registers.
- G. Division 26 - ELECTRICAL: Independent hangers for suspended lighting fixtures.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - 2. ASTM C645 – Standard Specification for Nonstructural Steel Framing Members.
 - 3. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

4. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
5. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
6. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
7. ASTM C1177/C1177M – Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
8. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel.
9. ASTM C1396/C1396M - Standard Specification for Gypsum Board.
10. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
11. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels.
12. ASTM C1766 - Standard Specification for Factory-Laminated Gypsum Panel Products.
13. ASTM D1784 - Standard Classification System and Basis for Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
14. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
15. ASTM D3678 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Interior-Profile Extrusions.
16. ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
17. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
18. ASTM G21 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
19. GA 220 - Recommended Specifications for Gypsum Board Winter Related Job Problems.
20. GA 600 – Fire Resistance and Sound Control Design Manual.
21. The Gypsum Construction Handbook, (USG), Seventh Edition.
22. UL - Fire Resistance Directory.
23. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
24. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

- B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:

1. GA 201 - Gypsum Board for Walls and Ceilings.
2. GA 214 - Recommended Specifications for Levels of Gypsum Board Finish, Glass Mat and Fiber-Reinforced Gypsum Panels.
3. GA 216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:

1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.
2. Work of this Section shall be closely coordinated with the work of Section 09 22 16 - NON-STRUCTURAL METAL FRAMING, to assure the steady progress of the Contract.

- B. Sequencing: Do not install gypsum board until all pipes, ducts, conduits, and other such items which are to be enclosed thereby, have been permanently installed, inspected and approved.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.6 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties for each item furnished hereunder.
2. Shop Drawings:
 - a. Details of any special conditions associated with fireproofing.
 - b. Mark-up a set of blackline interior elevations indicate corrections to grid layout and provide dimensioning showing locations of all proposed control joints and expansion joints.
 - 1) Provide interior elevation drawings for interior elevations which are not included as part of the Contract Drawing set.

1.7 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
- B. Sole Source: Obtain products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum board.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
 2. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Storage and Handling Requirements:
 1. Store materials inside, under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.
 - a. Neatly stack board materials flat to prevent sagging.
 2. Handle board materials so to prevent damage to edges, ends and surfaces.
 3. Protect trim, accessories and corner beads from being bent or damaged.

1.9 SITE CONDITIONS

- A. Environmental Conditions: In accordance with GA 216, maintain minimum ambient temperature of 50 degrees Fahrenheit 48 hours before, during taping and compounding, and until completely dry thereafter.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Gypsum board products:
 - a. United States Gypsum Company, Chicago IL. (USG).
 - b. National Gypsum Company, Charlotte NC. (Gold Bond and ProForm Brands).
 - c. G-P Gypsum Corporation, Atlanta GA.
 - d. Continental Building Products, Hendron VA.
 2. Polyvinyl chloride trim and accessories:
 - a. Plastic Components, Inc., Miami FL.
 - b. Trim-Tex Drywall Products, Lincolnwood IL.
 - c. Vinyl Corporation, Miami FL.
 - d. Alabama Metal Industries Corporation, (AMICO)Birmingham, AL.
 3. Joint sealants:
 - a. Tremco, Beachwood OH.
 - b. Pecora Corporation, Harleysville PA.
 - c. Owens Corning, Toledo OH.
 - d. Specified Technologies, Inc. (STI), Somerville NJ.
- B. The design and details as shown on the Drawings and the model numbers specified herein are to establish the standards of design and quality and not to limit competition.

2.2 DESCRIPTION

A. Regulatory Requirements

1. Fire resistance ratings: Where gypsum board systems with fire-resistance ratings are indicated, provide materials and assemblies of the rating required, tested per ASTM E119, which are identical to those indicated by reference to Gypsum Association file numbers in "Fire Resistance Design Manual" or to design designation in the Underwriters Laboratories "Fire Resistance Directory" or in listing of other testing agencies acceptable to authorities having jurisdiction and to the Owners' insurance underwriters.
2. Seismic Compliance: Nonstructural components that are permanently attached to structures and their support attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance to local jurisdiction.

2.3 BOARD MATERIALS

- A. "Paper-less" moisture and mold resistant board: 5/8 inch thick Glass mat, water-resistant, fire-resistant, mold-resistant interior wall panel: Coated inorganic glass mat-faced, with Type "X" water-resistant, treated core gypsum wallboard. Physical properties conforming to the applicable sections of ASTM C1177 and ASTM D3273.
1. Acceptable products include the following or approved equal:

- a. USG Sheetrock brand product "Glass-Mat Panels Mold Tough AR Firecode X".
- b. National Gypsum Company, Gold Bond brand product "eXP Interior Extreme Gypsum Panel".
- c. G-P Gypsum Corporation product, "DensArmor Plus Paperless Interior Panel".
- d. CertainTeed Saint-Gobain, product "GlasRoc Interior Type X Drywall."

2.4 TRIM AND EDGE COMPONENTS

A. Polyvinyl chloride (PVC) trim accessories, conforming to ASTM D1784 and C 1047.

- 1. J Bead: Edge trim with exposed 1/2 inch face cap, furnish trim model number corresponding to the board thickness where installed.
 - a. Plastic Components model number: 200X-50 (for 1/2 inch thick board) or 200S-58 (for 5/8 inch thick board).
 - b. Trim-Tex, model: 1110 (for 1/2 inch thick board) or 1210 (for 5/8 inch thick board).
 - c. Vinyl Corporation model number: JB50 (for 1/2 inch thick board) or JB58 (for 5/8 inch thick board).
- 2. L Bead: casing edge trim, furnish trim model number corresponding to the board thickness where installed
 - a. Plastic Components model number: 221-50 (for 1/2 inch thick board) or 221-58 (for 5/8 inch thick board).
 - b. Trim-Tex, model: 1710 (for 1/2 inch thick board) or 1810 (for 5/8 inch thick board).
 - c. Vinyl Corporation model number: SB50 (for 1/2 inch thick board) or SB58 (for 5/8 inch thick board).
- 3. L-Bead with removable leg: Casing edge trim for joints at ceilings doors and windows, with removable leg strip, furnish trim model number corresponding to the board thickness where installed
 - a. Plastic Components model number: 224-50 (for 1/2 inch thick board) or 224 (for 5/8 inch thick board).
 - b. Trim-Tex model: 9002 (for both 1/2 inch thick board and 5/8 inch thick board).
 - c. Vinyl Corporation model number: TMJB50 (for 1/2 inch thick board) or TMJB58 (for 5/8 inch thick board).
- 4. Corner beads, 90 degree with 1-1/4 inch flanges:
 - a. Plastic Components model number: 209.
 - b. Trim-Tex model: 4010.
 - c. Vinyl Corporation model number: CB125.
 - d. AMICO model number: AMCB125.

5. Control joints: "V" type joint with nominal 3/16 inch reveal and removable temporary tape:

- a. National Gypsum model "EZ Strip Expansion Joint".
- b. Plastic Components model number: 2027-16.
- c. Trim Tex model: 093V.
- d. Vinyl Corporation model number: CJV16.

B. Paper faced trim accessories for use with Abuse Resistant Gypsum Board:

1. Corner beads (at outside corners): Paper-faced galvanized steel sheet for finishing with joint compound conforming with ASTM C1047, equal USG product "Sheetrock" Brand Paper-Faced Metal Corner Bead.
 - a. Provide curved-edge cornerbead with notched or flexible flanges at curved openings.
2. Casing beads: Paper-faced galvanized steel sheet for finishing with joint compound conforming with ASTM C1047, equal to USG product "Sheetrock" Brand Paper-Faced Metal Beads and Trims.
 - a. LC-Bead (J-Bead): Use at exposed panel edges.
 - b. L-Bead: Use where indicated
 - c. U-Bead: Use where indicated.
3. Control joints: Solid zinc "V-shaped control joint, having 3/32 inch thick perforated grounds, equal to USG Control Joint No. 093.

2.5 ACCESSORIES

A. Tapes and compound:

1. Joint tape (at paper-faced gypsum): Nominal 2 inch wide, high strength, cross-fibered paper drywall tape.
2. Joint tape (at fiberglass faced gypsum): Nominal 2 inch wide, self adhering (adhesive backed), fiberglass mesh tape.
3. Joint Compound for setting fiberglass joint tape:
 - a. Cetainteed, Valley Forge PA., product "ProRock Moisture and Mold Resistant 90".
 - b. Georgia Pacific Gypsum LCC., Pittsburgh PA, product "Densarmor Cote"
 - c. CTS Cement Manufacturing Corporation, Cypress CA., product "Rapid Set OnePass".
4. Joint Compound for setting paper joint tape: 'Speed-setting type compound', field mixed.
 - a. Acceptable products, or approved equal:
 - 1) USG product "Durabond 20".
 - 2) ProForm Brand product "ProForm QuickSet 20".

- 3) Georgia Pacific Gypsum LCC, product "ToughRock All-Purpose Dry Mix"
5. Joint Compound for finishing: field mixed joint compound or factory pre-mixed compound.
 - a. Field-mixed compounds: acceptable products, or approved equal:
 - 1) USG product "Durabond 90".
 - 2) ProForm Brand product "ProForm QuickSet 90".
 - 3) Georgia Pacific Gypsum LCC, product "ToughRock Setting Compound 90".
 - b. Factory pre-mixed compounds: acceptable products, or approved equal:
 - 1) USG product "Ready-Mixed Joint Compound".
 - 2) ProForm Brand product "ProForm All Purpose Compound".
 - 3) Georgia Pacific Gypsum LCC, product "ToughRock Ready Mix All-Purpose Compound"
- B. Fasteners (interior board systems):
 1. Type S, bugle head screws complying with ASTM C1002, for applying gypsum board to metal framing, ceiling grid system, and furring channels.
 - a. Not less than 1 inch long for single layer gypsum board.
 - b. Not less than 1-5/8 inch [41mm] long for double-layer gypsum board.
 - c. Not less than 1-5/8 inch [41mm] long for double-layer gypsum board,
- C. Ceiling buttons, perforated type, 1 inch diameter, for use at multiple layered gypsum board ceiling systems.
- D. Laminating adhesive: Ready mix joint compounds as specified herein above.
- E. Joint Sealers (Acoustical Sealant): One component acrylic latex, permanently elastic, non-staining, non-shrinking, non-migrating and paintable.
 1. Acceptable products include the following, or approved equal.
 - a. Owens Corning, product: "QuietZone Acoustical Sealant."
 - b. Pecora Corporation, Harleysville PA.; product " AC-20 FTR".
 - c. Specified Technologies, Inc. (STI), product "Smoke 'N" Sound Acoustical Sealant".
 - d. Tremco, Beachwood OH.; product, "Acoustical Sealant".

2.6 SOURCE QUALITY CONTROL

- A. Obtain gypsum board and finishing products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Verify that all items which are to be enclosed by Work of this Section, have been permanently installed, inspected and approved.
- B. Inspect framing and other substrates; verify that they are in proper condition to receive the work of this Section.
- C. Beginning of installation means acceptance of existing substrate and site conditions.

3.2 PREPARATION

- A. During the operation of gypsum board work, protect all wood, metal, glass, flooring, and other finished materials against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled.

3.3 INSTALLATION - GENERAL

- A. General: Perform erection procedures for the various gypsum board system conditions, except as otherwise specified, as set forth in GA 201, GA 216, GA 220, GA 600, and the written instructions of gypsum board manufacturer, together with the additional requirements specified herein and as indicated on the Drawings.
- B. Where fire-resistive rated assemblies are indicated, erect gypsum board systems in strict accordance with the manufacturers' UL listed test constructions for the required fire rating on each specific assembly.
 - 1. At intersections of dissimilar wall types, gypsum wallboard assembly of the higher fire resistant rating is to run through the intersection maintaining required fire separation.
 - 2. Fire rated construction shall be continuous from floor deck to underside of floor deck above or to underside of roof deck as applicable, and as detailed.
 - 3. Shaft wall construction shall be continuous from bottom of shaft wall to top of shaft wall without interruption, except where otherwise detailed on Drawings.
- C. Install specified control joints where indicated on Drawings and where run of partitions, or furred surfaces exceeds 30 feet. Show locations of all control joints on shop drawings.
 - 1. Locate control joints at corners of head frames of doors.
 - 2. Run vertical control joints continuously to top of partition, shaft wall or furred area, as applicable.

3.4 INSTALLATION OF GYPSUM BOARD

- A. Screw fasten only, gypsum board to framing and furring, with ends and edges occurring over firm bearing. At all door jambs screw fasten gypsum panels 8 inches on center to both box studs
 - 1. Erect single layer fire-resistance rated gypsum board vertically.

2. Erect standard and moisture resistant layer board in most economical direction.
 3. Erect ceiling and soffit gypsum boards to meet UL requirements, where applicable, stagger end joints over supports. Secure gypsum board with fasteners inserted through ceiling buttons; anchor fasteners directly to framing or suspended support system.
- B. Wherever items penetrate the gypsum board surfaces, use extra care in cutting the gypsum board to ensure a uniformly-dimensioned joint between the penetrating item and the gypsum board, and fill joints with specified sealant material. Verify the expected deflection factor of the penetrating members, and cut the gypsum accordingly, to prevent damage thereto from the deflecting members.
- C. Installing Trim Accessories:
1. General: For trim with back flanges intended for fasteners, attach to framing with same screw fasteners used for gypsum board. Otherwise, attach trim according to manufacturer's written instructions.
 - a. Nailing, stapling, or crimping methods to install trim components is prohibited.
 2. Install corner beads at all exterior corners of gypsum boards.
 3. Install casings (PVC trim) wherever gypsum board meets a dissimilar material, and in other locations indicated on the Drawings, except at floors where bottom of the board will be concealed by base, integral with flooring, resilient base, wood base or carpeted base.

3.5 APPLICATION OF ACOUSTICAL SEALANT

- A. General: Install sealant and backing in accordance with the recommendations of ASTM C919 and sealant manufacturer's recommendations.
1. Perform preparation in accordance with C790. Thoroughly clean all joints, removing all loose mortar, oil, grease, dust, frost, and other foreign materials that will prevent proper adhesion of primers and sealant materials.
 2. If so recommended and furnished by the specific sealant manufacturer, apply primer to all joint surfaces, taking care not to stain adjacent surfaces.
- B. Seal all partition perimeters prior to taping or compounding. Where perimeters are edged with metal trim, apply sealant and backing material between trim and dissimilar material.
- C. Seal all penetrations in partition types designated for "acoustical" insulation. Penetrations to receive sealant include electrical boxes, plumbing, heating and air conditioning ducts, telephone, intercom hookups and similar items.
1. Install joint bead back-up in all joints in excess of 5/8-inch depth, and joints that have no back-up therein, placing the joint bead in the joint in a manner that will assure a constant depth 1/8 inch greater than the sealant and caulking material depth tolerances.
 - a. Set beads into joints continuously, by slightly stretching during placement, to permit compression against sides of joint, without surface wrinkles or buckles.

- b. Do not stretch back-up material into joints.
 - c. Install bond breaker wherever recommended by the sealant manufacturer to prevent bond of the sealant to surfaces where such bond might impair the Work.
2. Apply sealant in continuous beads without open joints, voids or air pockets
- a. The depth of sealant and caulking materials shall be in accordance with manufacturer's recommendations for the specific joint function, but in no case exceed 1/2-inch in depth, nor less than 1/4-inch, regardless of the joint width.
3. Remove the temporary masking tape immediately after tooling, and before the sealant or caulking material has taken initial set.

3.6 APPLICATION OF JOINT TREATMENT

- A. Install joint tape at all joints where gypsum boards abut and where boards form internal corners, whether or not such joints will be concealed from view.
- B. Apply compound to all joints, edges, corners, fastener head depressions and abrasions in the surfaces, whether or not such conditions will be concealed from view. Sand completely smooth all compound surfaces, which will be exposed to view, and leave ready to receive applied coatings or finish.
- C. Provide the minimum levels of gypsum board finishes as defined by the Gypsum Association recommended specifications GA-214 and GA-216, per the following:
 - 1. At areas hidden from view, except as otherwise specified: Level 1.
 - 2. At areas hidden from view, requiring a fire rating: Level 1.
 - 3. At surfaces scheduled to receive painted finishes: Level 4, except at abuse resistant board, provide Level 5 finish:

3.7 TOLERANCES

- A. Maximum variation for gypsum board partitions and ceilings from true flatness: 1/8 inch per 10 feet, noncumulative.

3.8 CLEANING

- A. Daily clean work areas by sweeping and disposing of debris, scraps, and deposits of compound and gypsum fill.
- B. After completion of the work of this Section, remove equipment, and clean all wall, partition, and floor areas free from deposits of gypsum fill, and other materials installed under this Section.
- C. Waste Management:
 - 1. Recycle or dispose of off-site waste materials and trash at intervals approved by the Owner and in compliance with waste management procedures specified in Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

End of Section

Section 09 6513

RESILIENT BASE AND ACCESSORIES

PART 1 – GENERAL**1.1 SUMMARY**

- A. Prepare substrate to receive resilient base.
- B. Furnish and install the following:
 - 1. Cove resilient base.

1.2 RELATED REQUIREMENTS

- A. Section 09 2900 - GYPSUM BOARD: Gypsum board substrate to receive resilient base.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM F1861 - Standard Specification for Resilient Wall Base
 - 3. All applicable federal, state and municipal codes, laws and regulations regarding flammability and smoke generation of interior finishes.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.
- B. Sequencing:
 - 1. Sequence work to ensure resilient base is not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, wet work is dry and cured, and work overhead is completed.
 - 2. Sequence resilient base installation after flooring is installed and when base cabinets or other built-in casework is present on the substrate.
 - 3. Ensure that installation of flooring and accessories occurs after other finishing operations, including painting.
 - 4. Field Measurements
 - a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.

- b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.
- C. Pre-construction Conference:
 - 1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
 - 1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions.
 - a. Include certification of data indicating Volatile Organic Compound (VOC) content of all adhesives. Submit MSDS highlighting VOC limits.
 - 2. Selection Samples: Manufacturers' sample chain of colors available for selection by Architect.
 - 3. Verification Samples: Each type resilient base and color selected, 24 inches long.
 - 4. Qualification Submittals.
- B. Closeout Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS.
 - 1. Bonds and Warranty Documentation:
 - a. Manufacturer's Warranties and Guarantees as specified elsewhere herein this Section.
- C. Maintenance Material Submittals: Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS. Clearly label and package extra materials securely to prevent damage.
 - 1. Extra Stock Materials: Upon completion of the Work of this Section, deliver to the Owner extra materials for future repairs and maintenance, an amount equal 24 linear feet for each color and type of resilient base installed.

1.6 QUALITY ASSURANCE

- A. General: Avoid color and pattern differential; provide base from one production run in any single room or contiguous areas.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 - 1. Do not deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
 - 2. Do not deliver resilient base materials to the project until all concrete, masonry, plaster and other wet work has been completed and dry.
 - 3. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
 - 2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.
- C. Packaging Waste Management: Comply with packaging requirements specified under Section 01 6000 - PRODUCT REQUIREMENTS.
 - 1. Shipping materials: Manufacturer shall utilize to the greatest extent possible packaging materials which are biodegradable and recyclable.
 - 2. Jobsite packaging waste management: Recycle packaging materials coordinated with general construction waste management specified under Section 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.

1.8 SITE CONDITIONS

- A. Maintain uniform temperature of minimum of 65 degrees Fahrenheit and humidity of 20 to 40 percent 48 hours prior to, during, and 48 hours after installation. Store resilient flooring materials and accessories in the spaces where they will be installed for at least 48 hours before beginning installation. Thereafter, maintain a minimum temperature of 55 degrees Fahrenheit in the areas where the work is completed.

1.9 WARRANTY

- A. General: Submit the following warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
- B. Manufacturer Warranty:
 - 1. Resilient Base: Provide manufacturer's standard one year limited product warranty for resilient base materials.
 - 2. Adhesives: Provide manufacturer's one year limited product warranty for adhesion reliability.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
1. Mannington Commercial Flooring, Salem NJ.
 2. Tarkett Inc., Houston TX.
 3. Roppe Corporation, Fostoria OH.
 4. VPI Corporation, Sheboygan WI.

2.2 DESCRIPTION

- A. Performance Requirements:
1. Flexibility, ASTM F137: Passes 1/4 inch mandrel
 2. Resistance to light, ASTM F1515: Passes
 3. Resistance to chemicals, ASTM F925: Passes
 4. ASTM E648, Standard Test Method for Critical Radiant Flux of 0.45 watts/cm² or greater, Class 1.
 5. ASTM E84, Flame Spread and Smoke Development: Class B, ≤ 450

2.3 RESILIENT BASE

- A. Rubber Base: 4 inches high, ribbed back, 1/8 inch thick, rounded top complying with ASTM F1861, Type TS, (Vulcanized Thermoset Rubber), Group1. Colors shall be as selected. Rubber base shall be furnished in continuous lengths, approximately 100 feet long.
1. Provide coved base at resilient flooring.
 2. Coved base at sealed concrete floors, and back-of-house spaces not having a finished floor.
 3. Provide straight (non-coved) base at carpeted and walk-off entrance mat areas.
- B. Base accessories: Premolded end stops of same material, size and color as base. Job-form all external and internal corners from base material, pre-molded corner pieces will not be acceptable

2.4 ACCESSORIES

- A. Adhesives
1. General: Water resistant, low VOC, acceptable to the resilient flooring manufacturer, for substrate conditions.
 - a. Cove Base Adhesives: Maximum VOC 50 [g/L less water]
 2. Acceptable manufacturers:
 - a. Advanced Adhesive Technology, Inc, Dalton GA, product: "No. 432 Modified Acrylic Cove Base Adhesive".
 - b. DAP Incorporated, Dayton OH, product: "Cove Base Construction Adhesive".

- c. W.W. Henry Company, Aliquippa PA., product: "Henry 440 Cove Base Adhesive".
 - d. Roberts Consolidated Industries, Inc., City of Industry, CA, product: "Premium Solvent-Free Cove Base Adhesive".
- B. Joint Sealer for between the top of wall base and irregular wall surfaces: Plastic filler as recommended by manufacturer.
- C. Cleaning material: Domestic neutral floor detergent having a pH 7 or pH 8, as recommended by the flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Beginning of installation means acceptance of existing substrate and site conditions.

3.2 INSTALLATION

- A. Install all products in strict accordance with each manufacturer's written installation procedures and other provisions specified herein.
- B. Spread only enough adhesive to permit installation of materials before initial set.
- C. Install Resilient base: Install base on solid backing, bond to vertical substrate with continuous contact at horizontal and vertical surfaces. Apply wall base to walls, columns, casework and other permanent fixtures in areas where base is required.
 - 1. Install in lengths as long as practical.
 - 2. Scribe to fit to door frames and other interruptions.
 - 3. Form all external and internal corners in accordance with manufacturer's written instructions. Cope inside corners and fit neatly.
 - 4. Fill voids with plastic filler along the top edge of the resilient wall base on masonry surfaces or other similar irregular substrates.

3.3 CLEANING

- A. Comply with requirements of Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL for handling and disposition of all construction and demolition waste.
- B. Post-installation Cleaning: As installation progresses, continually remove excess adhesive from floor, base and wall surfaces without damage.

End of Section

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Section 09 9100

PAINTING

PART 1 - GENERAL**1.1 SUMMARY**

- A. Section Includes: This Section consists of painting work where shown on the Drawings, as specified herein, and as required for a complete and proper installation. Painting work includes but is not limited to the surface preparation and application of coated finishes, and subsequent touch-up, of interior and exterior items and surfaces as indicated on the Contract Drawings and as scheduled herein.
 - 1. No attempt is made in this Section to list all surfaces, fixtures and equipment requiring painting on this project. It is the responsibility of the Subcontractor to determine for itself the scope and nature of the Work required for a complete installation from the information provided herein and in the Drawings.
- B. Surfaces and Materials: In general, without limiting the generality thereof, the following surfaces, fixtures and equipment require a painted finish:
 - 1. Gypsum board partition and wall surfaces, ceilings and soffits.
 - 2. Metal doors and frames.
 - 3. Exposed to view structural steel.
 - 4. Overhead surfaces above wood ceiling system using Dry-Fall Paint, including but not limited to ducts, sprinkler piping, conduit, underside of decking, and gypsum surfaces.
- C. DO NOT PAINT the following surfaces and materials.
 - 1. Concealed from view surfaces, except as indicated otherwise in the Contract Documents or as specified herein.
 - 2. Chrome or nickel plating, stainless steel, bronze, brass.
 - 3. Aluminum other than mill finished or factory primed.
 - 4. Factory finished mechanical and electrical equipment, pumps, machinery and similar items which occur in mechanical, storage or equipment rooms or areas.
 - 5. Factory finished materials, specialties, and accessories unless otherwise specified.
 - 6. Prefinished millwork items.
 - 7. Fire resistant testing and certification labels, code required labels, safety warning labels, performance rating plates, nomenclature plates, identification plates, and similar other labels.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - CAST-IN-PLACE CONCRETE:
- B. Section 07 9200 - JOINT SEALANTS: Requirements for sealant and backing materials.
- C. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES: Shop priming of metal frames and steel doors.

- D. Division 22 - PLUMBING: Prefinished items such as plumbing fixtures, sprinkler heads, convectors, anemostates and similar surfaces and materials.
- E. Division 26 - ELECTRICAL: Prefinished items such as light fixtures, switch gear, electrical distribution cabinets and similar surfaces and materials.
- F. Respective sections: Factory-finishing of mechanical, plumbing, fire protection and electrical equipment.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
 - 2. ASTM D2016 - Test Method for Moisture Content of Wood.
 - 3. SSPC-Vis1 - Pictorial Surface Preparation Standards for Painting Steel Structures.
 - 4. SSPC-SP2 - Steel Structures Painting Manual, Volume 2, Systems and Specifications.
 - 5. All applicable federal, state and municipal codes, laws and regulations for flammability and smoke generation of interior finishes.
- B. Definitions:
 - 1. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials specified herein, whether used as prime, intermediate or finish coats.
 - 2. Sheen: Specular gloss readings in accordance with ASTM D52.
 - a. Flat: less than 5 (measured at 85 degrees).
 - b. Eggshell: 5 – 20 (measured at 60 degrees).
 - c. Satin: 15-35 (measured at 60 degrees).
 - d. Low Luster: 25 – 35 (measured at 60 degrees).
 - e. Semi-Gloss: 30 -65 (measured at 60 degrees).
 - f. Gloss: 65 or more (measured at 60 degrees).

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. General: The applicator of work specified herein is responsible to ensure that all paints, enamels, and coatings, proposed to be applied hereunder, are compatible with coatings used for shop-primed items and items which have been prime-coated under the work of other trades.
 - 2. Immediately notify the Architect in writing of conditions which may require a change in the specifications of this Section before proceeding with the work. Failure to do so, in a timely fashion, so as not to interfere with the schedule of

work of this Contract, shall be construed as acceptance of the coatings specified. Perform all corrective measures, at no cost to the Owner, for any defects in the work, resulting from the use of such materials.

B. Scheduling:

1. Sequence painting work to ensure primers and painting is not applied until building is enclosed, sufficient heat is provided, all dust-generating activities have terminated, wet work is dry and cured, and work overhead is completed.
 - a. Painting work should be scheduled so as to minimize touch-ups. Interior painting is to be without flashmarks. Should flashmarks occur due to touch-ups, the Contractor shall be required to redo the entire surrounding wall surface.
 - b. Concrete, masonry, plaster, tile and marble setting and polishing and other wet work shall be completed and dry before commencement of painting work.
 - c. Finish flooring and ceiling work may be scheduled by Contractor to be completed after painting. In such cases, paint subcontractor is required to perform touch-ups as necessary following floor and ceiling installations, without additional cost to Owner.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
 1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties, material compositions, and application instructions for all finishing products to be applied hereunder.
 - a. Include certification of data indicating Volatile Organic Compound (VOC) content of all paint materials.
 2. Samples:
 - a. Manufacturer's color selector for custom mixed colors for Architect's color scheduling.
 - b. Opaque coatings: Two 9 x 12 inch finished samples on hardboard of each color scheduled in each finish for review and approval. Identify boards with finish type, color mix number and scheduled substrate surfaces or materials.
- B. Submit the following under provisions of Section 01 78 00 - CLOSEOUT SUBMITTALS:
 1. Color chips: After final approval of all colors and tints by the Architect, submit to the Owner, color chips of all coatings used, with manufacturer's name and mix designation of the coating for the purpose of future re-ordering of coatings. Color chips shall be at least six (6) square inches in size, for each color and tint.

1.6 QUALITY ASSURANCE

- A. Applicator: Company specializing in commercial painting and finishing with 3 years minimum documented experience.
- B. Single source responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

- C. Environmental Requirements for Volatile Chemicals:
1. For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) and the following chemical restrictions:
 - a. Flat Paints and Coatings: VOC not more than 50 g/L.
 - b. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
 - c. Anti-Corrosive Coatings: VOC not more than 250 g/L.
 - d. Clear wood finishes:
 - 1) Varnishes: VOC not more than 350 g/L.
 - 2) Lacquer: VOC not more than 550 g/L.
 - e. Floor coatings: VOC not more than 100 g/L.
 - f. Sealers:
 - 1) Waterproofing sealers: VOC not more than 250 g/L.
 - 2) Sanding sealers: VOC not more than 275 g/L.
 - 3) All other sealers: VOC not more than 200 g/L.
 - g. Stains: VOC not more than 250 g/L.
 2. Do not use water based paints formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure), formaldehyde, halogenated solvents, mercury or mercury compounds, or tinted with pigments of lead, cadmium, chromium VI and their oxides. Water based paints shall be low VOC and shall have a flash point of 61 degrees C or greater.
 3. Where it is necessary to use solvent-based paints, with less than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 4. The following shall be low VOC and not be formulated with aromatic hydrocarbons (organic solvent with a benzene ring in its molecular structure).
 - a. High performance water based acrylic coatings.
 - b. Pigmented acrylic sealers.
 - c. Catalyzed epoxy coatings.
 - d. High performance silicone grafted epoxy coatings.
 5. Restricted Components: Paints and coatings used on this Project shall not contain any of the following compounds. (Excluded from this restriction are residual quantities of naturally occurring elements and chlorinated organics which are found in chlorinated water supplies; contaminate levels shall be below that of the National Primary Drinking Water Standard):
 - a. 1,2-dichlorobenzene
 - b. Alkylphenol ethoxylates (APEs)
 - c. Formaldehyde-donors
 - d. Heavy metals, including lead, mercury, cadmium, hexavalent chromium and antimony in the elemental form or compounds
 - e. Phthalates
 - f. Triphenyl tins (TPT) and tributyl tins (TBT).

1.7 FIELD SAMPLES

- A. Provide field samples under provisions of Section 01 4000 - QUALITY REQUIREMENTS for purpose of verifying selected colors.
- B. Paint on-site sample areas, minimum 40 square feet, illustrating selected color, and tint.
- C. Locate samples where directed. The Contractor shall provide in the base Contract, a total amount of samples equal to one sample per room.
- D. Accepted samples may not remain as part of the work.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site in sealed and labeled containers; container labeling shall include manufacturer's name, type of paint, color mix designation, expected coverage, surface preparation instructions, instructions for mixing and reducing, drying time, and clean-up recommendations.
- B. Store materials, conforming with applicable codes and fire regulations, in designated spaces. Keep storage area secure when direct access is not required or when not performing work under this Section. Take precautionary measures to prevent fire hazards and spontaneous combustion, maintain a dry-chemical type fire extinguisher in all areas where materials of this Section are being stored or used.
- C. Store paint materials in a well ventilated area at minimum ambient temperature of 45 degrees Fahrenheit and a maximum of 90 degrees Fahrenheit.
- D. Do not use the sanitary system for mixing or disposal of refuse material. Carry water to mixing rooms and dump waste material in a suitable refuse receptacle. Remove oily rags and waste each day.

1.9 PROJECT CONDITIONS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees Fahrenheit for 24 hours before, during and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Apply paints and finishes above minimum temperature conditions in strict accordance with manufacturer's instructions.
 - 1. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent unless required otherwise by manufacturer's instructions.
- C. Provide sufficient lighting to maintain 80 foot-candles measured mid-height at substrate surface.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Benjamin Moore & Company, Montvale, NJ.
2. California Paints, Andover MA.
3. Pittsburgh Paints / PPG Industries, Inc., Pittsburgh PA.
4. Sherwin Williams, Cleveland OH.

2.2 MATERIALS

- A. Coatings: Ready mixed, except for field catalyzed coatings with good flow and brushing properties; capable of drying or curing free of streaks or sags. Color pigments shall be processed to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating. Provide best quality grade, where manufacturer makes more than one grade of any material specified.

2.3 ACCESSORIES

- A. Accessory materials: other materials not specifically indicated, but are required to achieve the finishes specified of commercial quality.
- B. Cleaning Materials: Tri-Sodium Phosphate (TSP) substitute. Acceptable products include the following, or approved equal:
1. Savogran, Norwood MA, products "TSP-PF", or "Liquid TSP Substitute".
 2. Custom Building Products, Seal Beach, CA., product "Custom T.S.P. Substitute".
 3. DAP Inc., Baltimore MD., product "T.S.P. Substitute Heavy Duty Cleaner".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section. Notify Contractor of any condition that may potentially affect proper application of coatings.
- B. Beginning Work of this Section means acceptance of substrate surfaces and site conditions.

3.2 PREPARATION

- A. Furnish and lay suitable drop cloths in all areas where coating work is being done to protect floors and all other surfaces from damage during the work. Protect adjoining surfaces with painters mask tape.
- B. Prior to preparing surfaces or finishing, remove all finish hardware for painting doors and frames, except hinges and locks on exterior door; remove electrical plates, light fixture trim and fittings. Re-install hardware and other removed items after painted surfaces are thoroughly dry.
- C. Mix coatings thoroughly, unless otherwise directed by the manufacturer of the specific coating used, to ensure uniformity of color and mass. Strain previously opened coatings to remove skins, lumps, and other foreign matter prior to painting.
- D. Thin or reduce materials only as recommended by the specific material manufacturer, and only with the approval of the Architect.

- E. Impervious surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to thoroughly dry.
- F. Uncoated steel and iron surfaces:
 - 1. Remove grease, scale, dirt, rust, and all foreign materials, down to bright metal by wire brushing, scraping, sanding, or sandblasting where heavy coatings of scale are evident.
 - 2. Wash steel with solvent, apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned.
 - 3. Spot prime after repairs with metal primer product of the finish coating manufacturer.
- G. Shop primed steel surfaces:
 - 1. Remove rust, blistered and defective shop prime paint, and all foreign materials, down to bright metal by wire brushing, scraping, sanding, or commercial paint remover. Feather edges to make touch-up patches inconspicuous.
 - 2. Remove all grease or dirt with mineral spirits.
 - 3. Spot prime bare metal with metal primer product of the finish coating manufacturer. Seal top and bottom edges of metals doors with primer.

3.3 APPLICATION

- A. Apply all materials in strict accordance with the approved manufacturer's printed instruction, and in accordance with the best trade practices. Each coat shall be reviewed and approved by the Architect before succeeding coats are applied.
- B. Do not apply successive coating until the preceding coat is thoroughly dry, and in no case in less than 24 hours after the preceding coat.
- C. Number of coats is indicated under Painting Schedules. Number of coats is indicated as a minimum number to be applied over scheduled substrates. An additional coat or coats may be required for proper color coverage of substrate as determined by the Architect, at no additional cost to the Owner. Examples of these conditions include, but are not limited to:
 - 1. Dark colored substrates may require an additional primer or intermediate coat to stabilize color, if final applied top-coat color is light.
 - 2. Pre-finished or pre-primed products may require an additional field applied coat to stabilize the shop/factory applied base color prior to application of top-coat finishes.
 - 3. Dark color top coat finishes may require additional finish coat over white or light colored substrates to obtain correct color density.
- D. Apply each coat to a uniform finish; Apply primer and first coat of slightly lighter in color tint than the scheduled color of the final coat.
- E. Sand lightly between coats to achieve required finish and remove sanding dust prior to applying succeeding coat.
- F. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

- G. Prime back surfaces of all interior and exterior woodwork scheduled for painted finish with primer.
- H. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

3.4 CLEANING

- A. Upon completion of the work in each area, remove all coating splatters from glass, prefinished surfaces, bright metals, and from other surfaces that have not been painted or finished hereunder. Do not use abrasive paper or abrasive cleaner on any prefinished surface or bright metal. Remove all materials and debris; leave work area in a clean condition.

3.5 PROTECTION AND TOUCH-UP

- A. During painting work, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Properly clean, repair or replace any work so damaged and soiled.
- B. Protect all painted and finished surfaces against damage until the date of final acceptance of the work. The Architect will conduct a final review of all work performed hereunder. Re-coat or touch-up, all scratches and other blemishes on surfaces, and as directed by the Architect, any areas found which do not comply with the requirements of this Section, and bear all costs therefore.
- C. Any re-coating or touch-up work, required after the work of this Section has been reviewed and accepted by the Architect, will be paid for by the Contractor.

3.6 PAINTING SCHEDULE

- A. Colors: The Architect will furnish a schedule of colors for each area and surface. Tinting and matching shall be to the satisfaction of the Architect. No limit is placed on the number of colors that may be required, or the number of colors in any one room, area, or surface. Premium paints of deep-hued, bright, pigment intensive, accent and primary colors may be scheduled for up to 25 percent of all interior and exterior surfaces without additional cost to the Owner.
 - 1. Colors of priming coats (and body coats where specified) shall be lighter in tint than those of finish coat.
- B. Paint schedule for exterior surfaces and materials: Refer to Document 09 91 13.
- C. Paint schedule for interior surfaces and materials: Refer to Document 09 91 23.
- D. Paint schedule for labeling and identifying fire resistive and rated designations : Refer to Document 09 91 23.
- E. Painting schedule for mechanical and electrical equipment: Refer to Document 09 91 23.

End of Section

Document 09 9113

EXTERIOR PAINTING SCHEDULE

PART 1 - GENERAL

- A. General: Number of coats scheduled herein below is minimum required, refer to Article entitled "APPLICATION" in specification Section 09 9100 - PAINTING, regarding coverage.

1.2 PAINTING SCHEDULE FOR EXTERIOR SURFACES AND MATERIALS

- A. Exterior METAL, FERROUS, new, shop primed and existing:
1. One coat rust inhibitive primer. (touch up bare metal at existing and shop primed surfaces).
 - a. California: "Everlife Oil-based Metal Primer, N°. 21150.
 - b. Devoe Coatings: Devguard 4160 Multi-Purpose Tank & Structural Primer.
 - c. Moore: "Corotech Universal Metal Primer" N°. V131
 - d. Pittsburgh: "Speedhide Industrial Rust Inhibitive Primers", 6-208/6-212 Series.
 - e. Sherwin-Williams: "Kembond HS Universal Metal Primer", B50 Series.
 2. Two coats acrylic gloss enamel:
 - a. California: "Everlife 100% Acrylic Waterborne High Gloss ", N°. 521..
 - b. Devoe Coatings: Devflex 4208QD Waterborne Gloss Enamel.
 - c. Moore: "Acrylic Gloss Enamel", N°. HP28
 - d. Pittsburgh: "Pitt-Tech DTM Exterior Waterborne High Gloss Enamel", 90-300 Series.
 - e. Sherwin-Williams: "DTM Acrylic Gloss", B66 Series
- B. Exterior METAL, GALVANIZED:
1. Wash primer apply if recommended by individual paint manufacturer.
 2. One coat primer.
 - a. California: "Rust-Stop DTM 100% Acrylic Latex Semi-Gloss".
 - b. Moore: "DTM. Acrylic Gloss Enamel", HP28
 - c. Pittsburgh: "Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel", 90-712 Series.
 - d. Sherwin-Williams: "DTM Acrylic Primer/Finish", B66-W1 Series.
 3. Two coats of gloss finish direct-to-metal acrylic enamel paint.
 - a. California: "Rust-Stop DTM 100% Acrylic Latex Semi-Gloss". Devoe Coatings: Devflex 659 Gloss DTM Waterborne Acrylic Enamel.
 - b. Moore: "DTM Acrylic Gloss Enamel", HP28
 - c. Pittsburgh: "Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel", 90-374 Series.
 - d. Sherwin-Williams: "DTM Acrylic Coating", B66-100 Series.

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Document 09 9123
INTERIOR PAINTING SCHEDULE

PART 1 - GENERAL**1.1 GENERAL PROVISIONS**

- A. General: Number of coats scheduled herein below is minimum required, refer to Article entitled "APPLICATION" in specification Section 09 9100 - PAINTING, regarding coverage.

1.2 MANUFACTURER'S DESIGNATIONS

- A. Manufacturer's designations used in Schedule are defined as follows:
1. "Moore": Benjamin Moore & Company, Montvale, NJ.
 2. "California": California Paints, Andover MA.
 3. "Pittsburgh": Pittsburgh Paints / PPG Industries, Inc., Pittsburgh PA.
 4. "Sherwin Williams": Sherwin Williams, Cleveland OH.

1.3 PAINTING SCHEDULE FOR INTERIOR SURFACES AND MATERIALS

- A. Interior GYPSUM BOARD (drywall) partitions, and ceilings, for VOC compliant epoxy finish:
1. One coat of sealer,
 - a. Moore: "Ultra Spec 500 Primer N534.
 - b. PPG Paints: Speedhide Zero Interior Zero VOC Latex Primer, 6-4900XI. Applied Dry Film Thickness: 1.2 mils min..
 - c. Sherwin-Williams: "ProMar 200 Zero VOC Interior Latex Primer", B28w2600 Series.
 - d. Tnemec: PVA 51-792 Sealer.
 2. Two coats of semi-gloss Water Based Acrylic-Epoxy Coatings (3 mils DFT each coat).
 - a. Moore: "Corotech Water Based (WB) Epoxy, V450 series.
 - b. PPG Paints: Aquapon WB EP Two-Component Waterborne Semi-Gloss Epoxy Coating, 98E-1/98E-100 Series. Applied Dry Film Thickness: 2.0 mils min.
 - c. Sherwin-Williams: "Pro industrial Water Based (WB) Epoxy" B73 Series.
 - d. Tnemec: "Tneme-Tufcoat", N°. 112.
- B. Interior METAL, FERROUS, to receive semi-gloss finish: (includes galvanized metal doors and frames):
1. One coat of rust prohibitive primer for unfinished metal surfaces, and touch up bare metal at shop primed, existing and previously coated surfaces:
 - a. California: "Rust-Stop DTM Primer/Finish", N°. 1061.
 - b. Devoe Coatings: Devflex 4020PF DTM Primer and Flat Finish.
 - c. Moore: "Acrylic Metal Primer", N°. P04.
 - d. Pittsburgh: "Pitt-Tech DTM Primer/Finish 100% Acrylic", 90-709/712 Series

- e. Sherwin-Williams: "DTM Acrylic Primer Finish", B66 W1 Series.
- 2. Two coats acrylic semi-gloss enamel:
 - a. California: "Rust-Stop DTM Primer/Finish", N°. 1061.
 - b. Devoe Coatings: Devflex 4216HP High Performance Waterborne Acrylic Semi-Gloss Enamel.
 - c. Moore: "Ultra Spec 500 DTM Acrylic Semi-Gloss", N°. HP29.
 - d. Pittsburgh: "Pitt-Tech Plus High Performance, Semi -Gloss DTM Industrial Enamel", 90-1210 Series.
 - e. Sherwin-Williams: "Sher-Cryl HPA Semi-Gloss", B66 Series.

C. Interior exposed METAL, PIPING: Same as specified for ferrous metal.

1.4 PAINTING SCHEDULE FOR FIRE RESISTIVE AND RATED DESIGNATIONS

- A. Provide identification for all fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions and any other wall or partition which is required to have protected openings or penetrations.
 - 1. Application:
 - a. Apply to outside of fire rated shafts, and to both sides of partitions to be located withing 15 feet of the end of each wall and at intervals not to exceed 30'-0" horizontally for entire length of partition or wall, or once on any partition 30'-0 feet or less in length.
 - b. Locate identification in all accessible concealed floor, floor-ceiling and attic spaces. Locate identification within 12 to 18 inches above finished ceilings.
 - c. Apply stenciled lettering by spray or brush, or provide permanent signage. Identification shall be waterproof, fade-proof and non-combustible. Signage shall be mechanically fastened or permanently adhered to partition.
 - d. Stencil character height: 3 inch (76mm) minimum, sans-serif block lettering font, having minimum 3/8 inch width (9.5mm) strokes, with wording in all capital lettering.
 - e. Color: Easily identifiable color, contrasting with background, acceptable to authorities having jurisdiction.
 - 2. Apply stenciled lettering to the following types of partitions using wording specified:
 - a. Applied identification for 2 hour fire rated partitions shall read: "2 HOUR FIRE WALL - PROTECT ALL OPENINGS".
 - b. Applied identification for 1 hour fire rated partitions shall read: "1 HOUR FIRE WALL - PROTECT ALL OPENINGS".
 - c. Applied identification for Smoke barriers shall read: "1 HOUR SMOKE BARRIER - PROTECT ALL OPENINGS".
 - d. Applied identification for Smoke partitions shall read: "SMOKE BARRIER PARTITION - PROTECT ALL OPENINGS".

1.5 PAINTING SCHEDULE FOR MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black enamel.

- B. Paint dampers exposed behind louvers, grilles, and convactor and baseboard cabinets to match face panels.
- C. Remove unfinished louvers, grilles, covers and access panels on and paint as scheduled above.
- D. Plywood backboards for electrical panels and other equipment. Paint both front and back surfaces and all edges of plywood backboards before backboards are installed.
 - 1. One coat latex primer-sealer (undercoater):
 - a. Glidden Professional: Lifemaster No VOC Primer N°. 9116.
 - b. Moore: "Ultra Spec 500 Latex Primer N534.
 - c. Pittsburgh: "Pure Performance Interior Latex Primer".
 - d. Sherwin-Williams: "Harmony Interior Latex Primer" B11W900.
 - 2. Two coats latex semi-gloss paint:
 - a. Glidden Professional: Lifemaster No VOC Semi-Gloss" N°. 9200.
 - b. Moore: "Ultra Spec 500 Semi Gloss N539.
 - c. Pittsburgh: "Pure Performance Interior Semi-gloss", 9-500 Series.
 - d. Sherwin-Williams: "Harmony Interior Latex Semi-gloss" B10 Series.
- E. Prime and paint insulated and exposed cold pipes, conduit, electrical boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are located in storage, mechanical or equipment spaces or those items which are factory prefinished.
- F. Exposed to view un-insulated hot pipes within finished painted areas: Two coats heat-resistant enamel conforming to Federal Specification TT-E-496, Type I, applied when surfaces are less than 140 degrees Fahrenheit.

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Section 10 1400
SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish and install the following informational and directional signage:
 - 1. Interior acrylic plate signage.
 - a. Room identification signage.
 - 2. Individual three-dimensional metal letter signage.

1.2 RELATED REQUIREMENTS

- A. Division 26 – Electrical: Illuminated exit signs.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. All applicable federal, state and municipal codes, laws and regulations regarding accessibility requirements.
- B. Inclusionary References: The following reference materials are hereby made a part of this Section by reference thereto:
 - 1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
 - 2. ADAAG: Americans with Disabilities Act Accessibility Guidelines.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. General: Coordinate the work of this Section with the respective trades responsible for installing interfacing and adjoining work for proper sequence of installation, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.
- B. Sequencing:
 - 1. Field Measurements
 - a. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
 - b. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.
- C. Pre-construction Conference:
 - 1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at

mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:

- a. Project Overview
- b. Labor requirements
- c. Operation Safety Items
- d. Construction
- e. Temporary Facilities and Controls
- f. Project Closeout:
- g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
 1. Literature: Manufacturer's product data sheets, specifications, physical properties for each item furnished hereunder.
 2. Schedule: prepare and submit shop drawings and verification schedule.
 - a. Proofs: All text must be reviewed and approved by Architect prior to production of signage. Signage fabricator is responsible for providing corrected copies of text, and to recommend proper letter and word spacing. Text will be reset until approved by the Architect, and the approved proofs shall serve as the standard for all further typesetting and approvals.
 - 1) Each proof shall clearly identify the individual number assigned to each plate, panel, mural, or sign.
 3. Shop drawings:
 - a. Plan drawing showing location of each sign. Coordinate plan with schedule.
 - b. Elevation drawings showing full size elevations of each sign. Indicate for each sign: sign styles, lettering and locations, and overall dimensions.
 - c. Large scale design details of signs, showing attachment clips and brackets; and complete installation details.
 4. Selection samples:
 - a. Sample plastic chips indicating Manufacturer's full range of colors available for initial selection by Architect.
 5. Verification samples:
 - a. For individual letter signage: Full size sample method of attachment.
 - b. Full size sign in specified finish and typeface. Approved sample may be used in finished Project.

1.6 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.

- B. Sole Source: Obtain products required for the Work of this Section from a single signage fabricator, or from manufacturers recommended by the prime signage fabricator of plastic plate signage.
- C. Qualifications:
 - 1. Signage Fabricator: Minimum of 5 years documented experience demonstrating previously successful work of the type specified herein.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 - 1. Do not deliver items to the site, until all specified submittals and proofs have been submitted to, and approved by, the Architect.
 - 2. Deliver materials in original unopened packages, containers or bundles bearing brand name, and identification of manufacturer, with labels and package seals intact and legible.
 - a. Delivered packaged sign, clearly labeled in name groups organized for installation.
- B. Storage and Handling Requirements:
 - 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
 - 2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.
- C. Packaging Waste Management: Comply with packaging requirements specified under Section 01 6000 - PRODUCT REQUIREMENTS.
 - 1. Shipping materials: Manufacturer shall utilize to the greatest extent possible packaging materials which are biodegradable and recyclable.
 - 2. Jobsite packaging waste management: Recycle packaging materials coordinated with general construction waste management specified under Section 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
- D. Damaged material: Remove all damaged signage materials from job site and replace with new.

1.8 ENVIRONMENTAL CONDITIONS

- A. Do not install adhesive applied signs when ambient temperature is below 70 degrees Fahrenheit. Maintain this minimum during and after installation of signs.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
 - 1. Interior acrylic signs:
 - a. Apco New England, East Providence, RI.
 - b. Design Communications, LTD., Boston, MA.

- c. Sunshine Sign, North Grafton, MA.
- d. Back Bay Sign Company, Medford, MA.
- 2. Individual letter signage:
 - a. Impact Signs, La Grange, IL.
 - b. A.R.K. Ramos, Oklahoma City OK.
 - c. Gemini Inc., Cannon Falls MN
 - d. Matthews International Corporation, Pittsburgh PA
 - e. Metal Arts, Mandan ND.

2.2 SIGNAGE - GENERAL

- A. General: Provide sign copy to comply with the requirements indicated in the Drawings, for sizes, styles, spacing, content, positions, materials, finishes and colors of letters.
 - 1. All Signs shall conform to United States "*Americans with Disabilities Act*".
 - 2. Final placing and sizing of lettering shall be done as part of the shop drawing approval process, at which time the manufacturer shall make recommendations for Architect's review. Lettering shall have stroke width to height ratio and width to height ratio in accordance with the Americans with Disabilities Act.
 - 3. Tactile Signage:
 - a. Raised Lettering: raised minimum 0.793 mm (1/32 in). and be in compliance with Americans with Disabilities Act.
 - b. Braille: Accurate Grade 2 translations and conforming to the provisions of ADAAG and ICC/ANSI A117.1 with regard to size, position, spacing, and profile characteristics.
- B. Installation of all signs shall be done by vandal-proof method, fully described on the approved shop drawings.
- C. Regulatory Requirements
 - 1. Provide all signage as required by accessibility regulations and requirements of authorities having jurisdiction.
 - a. Comply with all applicable federal, state and municipal codes, laws and regulations regarding signage for exits and handicapped barriers.

2.3 MATERIALS

- A. Stainless Steel:
 - 1. Stainless steel castings: ASTM A743, Grade CF 8 or CF 20.
 - 2. Stainless steel pipe: ASTM A312/A312M, Grade TP316L.
 - 3. Stainless steel tubing: ASTM A554, Grade MT316L.
 - 4. Stainless steel plate and sheet: ASTM A666, Type 316L.

2.4 INTERIOR PLAQUE SIGNAGE

- A. Photopolymer plaque signage (general requirements): Identification signs with raised tactile graphics, text, and Grade 2 Braille. Signs shall consist of 1/32 inch

thick synthetic light sensitive photo emulsion permanently bonded to a rigid phenolic substrate, aluminum or acrylic plaque.

1. Raised lettering: Bond photopolymer permanently to sign plaque, with appropriate laminating film, as recommend by the photopolymer manufacturer.
 2. Lettering height: As indicated on Drawings.
 3. Lettering font: As shown on Drawings.
 4. Screen-printing: All screen-printing graphics, including raised areas of tactile plaques except Braille, shall be screen printed in a contrasting color so as to meet the color contrast requirements of Americans with Disabilities Act.
 - a. All non-tactile text shall be screen printed with catalyzed epoxy ink. Applied vinyl lettering and graphics is not acceptable.
 - b. Apply screen printing inks evenly without pinholes, scratches or orange-peeling.
 5. Graphics: All text, symbols and graphics shall be reproduced utilizing computer-generated digital art. All screen-printed graphics shall utilize photographically prepared screens and shall be printed in accordance with industry standards. Hand-cut screens are not acceptable.
 - a. All edges and corners and letter forms shall be true and clean. Letterforms, color areas, or lines with rounded positive or negative corners, built-up edges, bleeding, spattering, shall not be accepted.
 - b. Prepare artwork from typesetters' reproduction of the test specified, minimum 1200 dpi resolution, camera ready artwork. All camera-ready artwork and typesetting shall be no less than 75 percent of actual finished size.
 6. Mounting: Surface applied by means of silastic adhesive mounting.
 7. Sign colors: As selected by Architect from manufacturer's standard and standard special colors.
 - a. All signs shall be two color signs.
 8. Allow one room identification sign for every room entry door on the plans.
- B. Window plaque signage: Two ply sign, 4 inches high by 8 inches wide comprised of 1/4 inch thick white self-extinguishing acrylic baseplate, with 2 milled out slots to accept removable 3/4 inch high name cards, with 1/16 inch thick clear acrylic window.

2.5 FABRICATED METAL LETTERS

- A. Cast stainless steel letters: Projecting from wall with stand-offs, 8 inches high, individual cast stainless steel letters, 2-1/2 inches depth, having "Arial" Typeface: with an average stroke width of 1-1/4 inches. Letters shall have a satin face and edges.
1. Cast stainless steel shall be solid, free of all porosity, with sharp corners, flat and accurate profiles. All exposed welds shall be filed smooth with all tool marks removed. Remove burrs and rough spots and polish faces uniform to a number 4, non-directional, satin polish finish.

2.6 ACCESSORIES

- A. Fasteners and Installation Hardware:

1. General: Except as otherwise indicated, use concealed fasteners fabricated from metals not corrosive to sign material and mounting surface.
2. Adhesives, where used for wall mounted signs, shall be per the sign material.
3. Adhesive tape (Interior conditioned spaces only): Double sided tape, permanent adhesive.
4. Anchors and inserts for individual lettering signage:
 - a. Mounting studs: Threaded type 316 stainless steel studs.
 - b. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel type 316 bolts, nuts and, where indicated, flat washers; ASTM F593 for bolts and ASTM F594 for nuts, Alloy Group 2.

2.7 FABRICATION - GENERAL

- A. Design components to allow for expansion and contraction for a minimum material temperature range of 56 °C (100 °F), without causing buckling, excessive opening of joints or over stressing of adhesives, welds and fasteners.
- B. Form work to required shapes and sizes, with true curve lines and angles. Provide necessary rebates, lugs and brackets for assembly of units. Use concealed fasteners whenever and wherever possible.
- C. Shop fabricate so far as practicable. Joints fastened flush to conceal reinforcement, or welded where thickness or section permits.
- D. Contact surfaces of connected members be true. Assembled so joints will be tight and practically unnoticeable, without use of filling compound.
- E. Signs shall have fine, even texture and be flat and sound. Lines and miters sharp, arises unbroken, profiles accurate and ornament true to pattern. Plane surfaces be smooth flat and without oil-canning, free of rack and twist. Maximum variation from plane of surface plus or minus 0.3 mm (0.015 inches). Restore texture to filed or cut areas.
- F. Level or straighten wrought work. Members shall have sharp lines and angles and smooth surfaces.
- G. Extruded members to be free from extrusion marks. Square turns and corners sharp, curves true.
- H. Drill holes for bolts and screws. Conceal fastenings where possible. Exposed ends and edges mill smooth, with corners slightly rounded. Form joints exposed to weather to exclude water.
- I. Finish hollow signs with matching material on all faces, tops, bottoms and ends. Edge joints tightly mitered to give appearance of solid material.
- J. All painted surfaces properly primed. Finish coating of paint to have complete coverage with no light or thin applications allowing substrate or primer to show. Finished surface smooth, free of scratches, gouges, drips, bubbles, thickness variations, foreign matter and other imperfections.
- K. Movable parts, including hardware, are to be cleaned and adjusted to operate as designed without binding or deformation of members. Doors and covers centered in

opening or frame. All contact surfaces fit tight and even without forcing or warping components.

- L. Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.
- M. No signs are to be manufactured until final sign message schedule and location review has been completed by the Architect and Owner.

2.8 FABRICATION STAINLESS STEEL LETTERING

- A. Weld and form edges, ends, and joints, by electric process, with all welded joints ground and polished smooth. Perform all welding so that no mark of any kind shall be noticed on the finished surfaces. Welds and adjoining components shall be homogenous, non-porous, free from pits, cracks, imperfections or discoloration.
 - 1. Hammer and peen flush with adjoining surface wherever materials have been depressed or sunken by a welding operation, and, if necessary, re-weld and grind to eliminate low spots.
 - 2. Excessive distortions caused by welding will not be acceptable and shall be cause for rejection and removal from Project Site.
- B. Exercise care in grinding operations to avoid excessive heating of metal and discoloration. Use iron-free abrasives, wheels and belts on stainless steel; do not use the same abrasives, wheels or belts for both steel and stainless steel. Provide a uniform and smooth final polishing with a uni-direction grain for total length of materials. Cross grains and random polishing will not be acceptable and shall be cause for rejection.
- C. Provide a finish consistent throughout the work of this Section.
 - 1. Brake ends free of open texture or orange-peel appearance. Where brake work mars the finish of the materials, remove marks by grinding, polishing and finishing.
 - 2. Shear edges free of burrs, projection or fins to eliminate all danger of laceration.
 - 3. Neatly finish mitre joints and bullnosed corners with under edge of the material neatly ground to a uniform condition and in no case will overlapping materials be acceptable.

2.9 FINISHES

- A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated.
- B. Stainless Steel: Finish exposed stainless steel surfaces to the following, as defined by Specialty Steel Industry of North America (SSINA):
 - 1. General exposed to view finish: Number 4, brushed finish.
- C. Paints: Paint for signs is acrylic polyurethane enamel, eggshell finish. Paint for background of tactile photo-polymer signs is eggshell finish automotive grade lacquer. All surfaces shall be cleaned, primed and pre-treated according to the manufacturer's specifications and noted in Shop Drawings as part of the finished surface work.

- D. Inks:
 - 1. Inks for tactile graphics on photo-polymer signs are eggshell finish Low Odor Vinyl Ink.
 - 2. All inks and paints are evenly applied without pin-holes, scratches or application marks. Prime coats or other surface pre-treatments, where recommended by the manufacturers are included in the work and noted in the shop drawings as part of the finished surface work.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

- A. Locate sign units and accessories where indicated, locations in accordance with the approved shop drawings. Use mounting methods of the type described and in compliance with manufacturer's instructions.
- B. Install signs plumb, level and true to height indicated, with sign surfaces free from distortion or other defects in appearance.
 - 1. Installation of signs shall conform to requirements of Americans with Disabilities Act (ADA) and/or state or local accessibility standards.
- C. Shop fabricate signs where practical and deliver to site completely assembled. All joints of such fabricated work are completely smooth without apparent marks showing throughout the finish. All work "broken down" is erected so that all parts fit accurately with hairline joints, with all joints flush. Joints in lighted signs shall be light-proof.
- D. For drilled anchors in concrete, verify location of embedded reinforcing steel, posttensioning, or pre-stressing cables prior to installation.
- E. Wall Mounted Panel Signs: Attach to wall surfaces with Hilti "Hit" anchors or ITW Ramset/Red Head Hammer Set anchors into concrete or masonry surfaces as shown on Drawings. DO NOT OVERDRIVE anchors, as overdriven anchors will damage sign faces and spall concrete.
- F. Bracket Mounted Units: Provide manufacturer's standard brackets, fittings, and hardware as appropriate for mounting signs which project at right angles from walls or ceilings. Attach brackets securely to walls or ceilings with concealed fasteners and anchors per manufacturer's directions.
- G. Interior Wall and door mounted signs: Attach to surfaces as follows:
 - 1. Vinyl Tape Mounting: Use very high bond, double sided foam tape, of thickness indicated, to mount signs to smooth nonporous surface. Use construction adhesive in conjunction with foam tape.
 - 2. Silicone Adhesive Mounting: Use appropriate liquid silicone adhesive to attach sign units to irregular, porous, or vinyl-covered surfaces. Use double-sided vinyl tape to hold the sign in place until the adhesive has fully cured.

3.2 INSTALLATION DIMENSIONAL LETTERS, NUMBERS AND GRAPHICS

- A. Dimensional Letters and Numbers: Mount letters and numbers using threaded studs, foam tape and construction adhesive as indicated in the detail drawings. Provide heavy paper template to establish letter spacing and to locate holes for fasteners.

3.3 CLEANING

- A. Clean and polish installed signs.
- B. Upon completion of the work of this Section in any given area, remove tools and all rubbish and debris from the work area; leave area in broom-clean condition.
- C. Remove all names, stamps and decals of sign manufacturers, and installers. No visible advertising of any kind is permitted.

3.4 SCHEDULES

- A. General: Provide interior code-related signage as required by accessibility regulations and additional requirements of authorities having jurisdiction. Signage includes, but is not limited to, the following sign types. Additionally refer to Drawing A-603B – SIGNAGE SCHEDULE AND DETAILS.
 - 1. Service Rooms identification signage.
 - 2. Toilet room and shower room signage.
 - 3. Visible hazard identification signs per NFPA 704.
- B. At each door to the following room types, provide: nominal 6 by 8 inch size sign, having 1-1/2 inch high letters identifying room label, a maximum of 2 lines of copy, and Grade 2 Braille strip.
 - 1. Equipment, electrical and mechanical rooms.
- C. At toilet room doors: provide: nominal 6 by 8 inch size sign, having 3 inch high international symbol for men/women (as appropriate) beneath provide 5/8 inch high text “MEN” or “WOMEN” (as appropriate), raised 1/32 inch and a Grade 2 Braille strip.
 - 1. At each wheelchair accessible toilet room, provide international handicap symbol.

End of Section

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Section 10 2119
PHENOLIC TOILET COMPARTMENTS

PART 1 - GENERAL**1.1 SUMMARY**

- A. Furnish and install:
 - 1. Solid phenolic (black core) extra tall toilet partitions, floor/wall mounted with floor to ceiling pilasters.
 - 2. Urinal screens, matching toilet partition design and finish.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - ROUGH CARPENTRY: In wall blocking for partition panel support.
- B. Section 09 2900 – GYPSUM BOARD.
- C. Section 10 2813 - TOILET ACCESSORIES: Furnishing templates, providing and installing toilet accessories surface mounted to toilet compartments, and integral with compartments.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
 - 2. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - 3. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 4. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 5. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-construction Conference:
 - 1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items

- d. Construction
- e. Temporary Facilities and Controls
- f. Project Closeout:
- g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
 - 1. Literature: Manufacturer's product data sheets, specifications, and manufacturer's warranty for each item furnished hereunder. Include information panel construction, hardware, and accessories.
 - 2. Shop drawings:
 - a. 1/2 inch scale dimensioned plans and elevations of each toilet room condition showing toilet compartment and urinal screen layout.
 - b. Large scale design details of showing attachment clips and brackets; and complete installation details.
 - 3. Samples:
 - a. Selection samples: Manufacturer's full range of color chips, for selection by the Architect; up to two-color combinations for doors and partitions may be selected in each area.
 - b. Verification samples: 6 inch square samples of each color and finish on same substrate to be used in Work, for color verification after selections have been made.

1.6 FIELD MEASUREMENTS

- A. Take field measurements before preparation of shop drawings and fabrication, where possible, to ensure proper fitting of Work.
- B. Allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay Work.

1.7 REGULATORY REQUIREMENTS

- A. Fire Resistance: Comply with the following requirements:
 - 1. Flame Spread and smoke developed rating, tested per ASTM E84: Class A flame spread/smoke developed rating.
 - 2. Material Fire Ratings:
 - a. National Fire Protection Association (NFPA) 286: Pass.
 - b. International Code Council (ICC): Class B.

1.8 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with the respective trades responsible for installing inserts and anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.

1.9 WARRANTY

- A. Furnish the following manufacturer's warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS, and in compliance with Section 01 7836 – WARRANTIES:
 - 1. Manufacturer's warranties are in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.
 - 2. Manufacturer's written warranty, for a minimum period of 25 years from date of Substantial Completion. Warranty shall cover panel, pilaster and door material and manufacturing workmanship against defects, including delamination of surfacing, corrosion and breakage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
 - 1. Hadrian Inc., Mentor OH.
 - 2. Accurate Partition Corp., Lyons IL.
 - 3. Bobrick Washroom Equipment, Inc.
 - 4. General Partitions Manufacturing Corp.
- B. Toilet compartments: Flush type, floor mounted, with floor to ceiling pilasters of standard height and depth, except for sizes of handicapped compartments, which shall be as indicated on the Drawings.
 - 1. Basis of Design Hadrian Inc., Mentor OH., product "Elite Max"

2.2 FABRICATION

- A. Pilasters (stiles) and doors: 3/4 inch [19 mm] thick, solid phenolic (black) core with integrally bonded decorative "matte finish" melamine surface on both sides, in color(s) selected by Architect from available range. Laminated surfaces are not acceptable.
 - 1. Door widths
 - a. 36 inches at toilet room stalls.
 - b. 30 inches at Janitor's space.
 - 2. Pilasters (stiles) shall run full height, floor to ceiling with secure attachment at both ends.
 - 3. Door heights: 84 inches, mounted not greater than 4 inches above floor.
- B. Panels: 1/2 inch [13 mm] thick, of same material and finish as pilasters and doors.
 - 1. Panel height: 84 inches, mounted not greater than 4 inches above floor.
- C. Pilaster floor and ceiling shoes: 3 inches high formed stainless steel with satin finish.
- D. Hardware and fittings: Type 302/304 stainless steel, except as specified otherwise.
 - 1. Door hinges: Fabricated from 11-gauge stainless steel with adjustable cams for self-closing operation. Attach to doors and pilasters with manufacturer's standard stainless steel fasteners.

2. Indicator Latches: Manufacturer's standard brushed nickel zamac indicator latch assembly with antimicrobial coating showing red in the window when in locked position and green when unlocked.
3. Door Pulls: Manufacturer's standard brushed nickel zamac pulls with antimicrobial coating at outswinging doors that comply with accessibility requirements.
4. Wall Connections: Continuous stainless steel channels at panel to wall, panel to pilaster, and pilaster to wall connections, Grade 304 stainless steel, #4 brushed finish.

2.3 ACCESSORIES

- A. Coat Hooks: Stamped stainless steel door hook, Grade 304 stainless steel, #4 brushed finish, combined coat hook and bumper.
- B. Anchorages and Fasteners: Through-bolted stainless steel with theft-resistant heads. Chrome plated steel or brass are not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
- B. Verify correct spacing of plumbing fixtures.
- C. Ensure wall blocking is coordinated with location of anchors before commencing with installation.
- D. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION - GENERAL

- A. Comply with manufacturer's recommended procedures and installation sequence, and as specified herein.
- B. Install pilasters, partitions, and doors rigid, straight, plumb and level.
- C. Set pilaster units with anchorages having minimum 2 inches penetration into structural floor, unless otherwise recommended by partition manufacturer.
- D. Attach panel brackets securely to walls using anchor devices.
- E. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster. Conceal floor fastenings with pilaster shoes.
- F. Hang door and adjust so tops of doors are level with tops of pilasters when doors are in closed position.
- G. Ensure that all holes in partitions, as required for attachment of related items, are accurately located and drilled, in accordance with the templates furnished by the accessory manufacturer. Conceal all evidence of drilling, cutting, and fitting in the finished work.
- H. No permanent exposed to view labels of any kind will be permitted to remain on the partitions, or doors.

3.3 FIELD QUALITY CONTROL

- A. Ensure that all work is free from dents, tool marks, warpage, buckle, open joints, or other defects. Protect compartments during erection, and after erection, and until final approval of the entire project by the Architect.

3.4 ADJUSTMENT

- A. Adjust and align hardware to provide a uniform clearance at vertical edges of doors not to exceed 3/16 inch.
- B. Adjust hinges to locate doors in partial-open position (approximately 30 degrees open) when unlatched. Return outswing doors to closed position.
- C. Test operation of movable parts, and make all adjustments necessary to ensure proper operation.

3.5 CLEANING

- A. Upon completion of the installation, remove all evidence of tapes and other packing materials; touch-up all scratches and surface defects and thoroughly clean and polish all exposed to view surfaces.
- B. Provide protection as necessary to prevent damage during remainder of construction period.

End of Section

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Section 10 2813
TOILET ACCESSORIES

PART 1 - GENERAL**1.1 SUMMARY**

- A. Furnish and install toilet, bath and custodial accessories.
- B. Furnish and install protection padding for exposed piping.
- C. Furnish concealed anchorage devices for handicap handrails for installation under Section 06 1000 - ROUGH CARPENTRY.
- D. Furnish toilet and bath accessory templates, to locate anchorage reinforcement, to trades responsible.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - ROUGH CARPENTRY:
 - 1. Wood blocking.
 - 2. Installation of concealed anchorage devices for grab bars in toilet rooms: Section 10 2813 - TOILET ACCESSORIES.
- B. Section 09 2900 - GYPSUM BOARD: Gypsum board partitions and metal framing.
- C. Section 10 2119 - PHENOLIC TOILET COMPARTMENTS.

1.3 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. ANSI A 117.1 - Specifications for Making Buildings and Facilities Accessible To and Usable by Physically Handicapped People.
 - 2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 3. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - 4. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
 - 5. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - 6. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.

7. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

1.5 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Literature: Manufacturer's product data sheets, for each item furnished hereunder.
2. Schedule: Complete schedule, indicating types, quantity, and model numbers of accessories for each location in which the accessories will be installed.
3. Selection samples: Sample color chips indicating each manufacturer's full range of colors available for selection by Architect.
4. Verification samples: Complete units, as requested by Architect.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original packages, containers or bundles bearing brand name, identification of manufacturer or supplier and item identification number corresponding with approved schedule.
- B. Store materials inside, under cover, and in manner to keep them dry, protected from weather, surface contamination, corrosion and damage from construction traffic and other causes.

1.7 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.
- B. Coordinate the work of this Section with placement of internal wall reinforcement.

1.8 WARRANTY

- A. General: Submit the following warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
 - 1. Warranties shall be effective starting from Date of Project Substantial Completion and are effective for specified term lengths.
- B. Manufacturer Warranty: In addition to the specific guarantee requirements of the GENERAL CONDITIONS and SUPPLEMENTAL GENERAL CONDITIONS, the Contractor shall obtain in the Owner's name the standard written manufacturer's guarantee of all materials furnished under this Section where such guarantees are offered in the manufacturer's published product data. All these guarantees shall be in addition to, and not in lieu of, other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Specified Manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on Bobrick Washroom Equipment, Inc., North Hollywood CA., referred to as "Bobrick."
- B. Acceptable Manufactures and models: To establish a standard of quality, design, function desired, and appearance, Drawings and specifications have been based on manufacturers and model numbers specified herein below. Manufacturers offering products which may be considered as equal include the following:
 - 1. A&J Washroom Accessories, Inc., (A&J) New Windsor NY.
 - 2. American Specialties, Inc. (ASI), Yonkers NY.
 - 3. Bobrick Washroom Equipment, Inc. (Bobrick), Clifton Park NY.
 - 4. Bradley Corporation / Washroom Accessories Division, (Bradley) Menomonee Falls, WI.
 - 6. Meek Manufacturing Company, Inc., Fort Smith AR.
 - 7. Excel Dryer Corp., East Longmeadow, MA.
 - 8. World Dryer Corp., Berkeley IL.

2.2 MATERIALS

- A. Sheet steel: Cold rolled, commercial quality, ANSI/ASTM A1008.
- B. Stainless steel sheet: ASTM A240/A240M, Type 302/304.
- C. Tubing: ASTM A269 stainless steel.

2.3 TOILET ACCESSORIES

- A. Coat/robe hook: Surface-mounted hat and coat hook shall be Type 304 stainless steel with satin finish. Flange and support arm shall be 22 gauge (0.8mm) and equipped with a concealed, 16-gauge (1.6mm) mounting bracket that is secured to a concealed, 16 gauge (1.6mm) wall plate with a stainless steel setscrew. Hook shall be 12 gauge (2.8mm), welded to the support arm.
 - 1. Bobrick model N°. B-6827.

2. AJW model N°. UX-116-SF.
3. ASI series 7382.
4. Bradley series 9143.

B. Grab bars

1. Grab Bar Loading Criteria :
 - a. Bending stress in a grab bar induced by the maximum bending moment from the application of 250 lbs. shall be less than the allowable stress for the material of the grab bar.
 - b. Shear stress induced in a grab bar by the application of 250 lbs. shall be less than the allowable shear stress for the material of the grab bar. If the connection between the grab bar and its mounting bracket or other supports is considered to be fully restrained, then direct and torsional shear stresses shall be totaled for the combined shear stress, which shall not exceed the allowable shear stress.
 - c. Shear force induced in a fastener or mounting device from the application of 250 lbs. shall be less than the allowable lateral load of either the fastener or mounting device or the supporting structure, whichever is the smaller allowable load.
 - d. Tensile force induced in a fastener by direct tension force of 250 lbs. plus the maximum moment from the application of 250 lbs. shall be less than the allowable withdrawal load between the fastener and the supporting structure
 - e. Grab bars shall not rotate within their fittings.
2. Grab bars: Stainless steel, minimum wall thickness 18 gage (Stub's gage), with non-slip knurled, peened or striated surface, 1-1/4 inch diameter with satin finished ends, concealed 1/8 inch thick mounting flange with snap-on cover.
 - a. Grab bars adjacent to toilets: L-Shape, 40 inches horizontal and 30 inches vertical):
 - 1) Basis of Design: Bobrick series B-5854.99 / B-58546.99
 - b. Grab bars behind toilets, straight bar 42 inches horizontal):
 - 1) Basis of Design: Bobrick series B-5806.99

C. Soap Dish: Surface mounted soap dish unit fabricated from type 304 stainless steel with satin polished finish. Shell and flange shall be drawn and beveled, one-piece, seamless construction.

1. Bobrick model N°. B680.
2. AJW model N°. UX122.
3. ASI model N°. 7320.
4. Bradley model N°. 9015.

D. Mirrors with adjustable tilt frame: 18 inches wide by 30 inches high, having the following:

1. Frame: one piece 3/4" by 3/4 inch stainless steel roll formed frame, with continuous integral stiffener on all sides. Corners shall be heliarc welded, ground and polished smooth. Corners.

2. Back: Back shall be protected by full-size, shock-absorbing, water-resistant, nonabrasive, 3/16" (5mm) thick polyethylene padding. Over which is a galvanized steel back secured to frame with concealed screws.
 3. Mounting: Side brackets with tilting with self-locking mechanism; bottom of mirror mounted to wall with full-length stainless-steel piano hinge.
 4. Mirror glass: 1/4 inch thick glass, ASTM C1048 complying with Class 1 clear, quality q3 glazing select, conforming to ANSI Z97.1, with Class 1, standard commercial quality, electro-copper back-plating protected by a corrosion-resistant zinc-coating.
 5. Acceptable models:
 - a. Bobrick model N°. B-294
 - b. AJW model N°. U702-VC-T
 - c. ASI model N°. 0600TB
 - d. Bradley model N°. 740
 - e. Meek model N°. M4210.
- E. Mop and broom holder: Surface mounted, nominal 34 inch long stainless steel unit with 18 gage 8 inch deep continuous shelf, 4 stainless hooks and 3 mop/broom holders, anti-slip spring loaded, rubber cam mop holders, capable of holding 7/8 to 1-1/4 inch diameter handles.
1. Bobrick model N°. B-239-34.
 2. A&J model N°. UJ45A.
 3. ASI model N°. 1308-3.
 4. Bradley model N°. 9933.
- F. Toilet tissue dispenser, double roll type: Surface-mounted toilet tissue dispenser with cast aluminum bracket, molded and extruded ABS spindles, vandelproof keyed locking mechanism, able to accommodate two 2000 sheet rolls.
1. Bobrick model N°. B-2740.
 2. AJW model N°. U806.
 3. ASI model N°. 0264-1.
 4. Bradley model N°. 5241.

2.4 ADA PIPING PROTECTION

- A. Specified Product (Basis of Design): IPS Corporation, Collierville, TN., product "Soft Guard Plus".
1. Color: White or Black as selected by Architect.
- B. Description: 1/8 inch thick pliable polyvinyl chloride protective cladding on all drainage piping including hot and cold water valve and supplies under lavatories to comply with ADA and UPC standards. Covers shall be secured by custom fit, tamper-resistant snap-to-lock fasteners.
1. Complies with ICC/ANSI A117.1 (sec 606.6).
 2. PVC Base Insulation Material, Class A rated complying with 25 Flame Spread/450 Smoke Index (tested under ASTM E84).

2.5 LOCKS

- A. General: All locks shall be keyed alike. Provide four (4) keys, for lockable accessories, to the Owner.

2.6 INSTALLATION ACCESSORIES

- A. Fasteners, screws, and bolts: Type 304 stainless, tamperproof.
- B. Expansion shields: Fiber, lead or rubber as recommended by accessory manufacturer for component and substrate.

2.7 FABRICATION

- A. Form exposed surfaces from single sheet of stock, free of joints. Form surfaces flat without distortion, scratches or dents. Weld and grind smooth joints of fabricated components.
- B. Back paint components where contact is made with building finishes to prevent electrolysis.
- C. Shop assemble components and package complete with anchors and fittings. Hot dip galvanize exposed and painted ferrous metal and fastening devices. Provide steel anchor plates, adapters, and anchor components for installation.

2.8 FACTORY FINISHING

- A. Ferrous metals: Clean and treat, spray apply one coat of baked-on rust and moisture-resistant primer, followed by two coats of baked-on synthetic enamel, in selected colors. Ensure that finish coating is uniform in color intensity and degree of gloss, throughout.
- B. Chrome/Nickel Plating: ASTM B456, Type SC2, satin finish.
- C. Stainless steel: Number 4 satin finish, except as otherwise specified above under the Article entitled "Toilet Accessories".

PART 3 - EXECUTION**3.1 PREPARATION**

- A. Provide templates and rough-in measurements as required. Deliver inserts and rough-in frames to site at appropriate times for building-in by other trades
- B. Coordinate with trades responsible for providing receiving surfaces on which accessories will be installed.
- C. Exact locations of accessories within each room or area shall be as directed by the Architect.

3.2 INSTALLATION

- A. Perform installation work in accordance with the approved shop drawings and the manufacturer's installation instructions.

- B. Install toilet accessories absolutely level and in true line, securely and rigidly anchored with theft proof fasteners of the size and type most appropriate for the specific receiving surface, concealing the fasteners as far as practicable.

3.3 ADJUSTING

- A. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

3.4 CLEANING

- A. Remove all protective films and coverings from accessories, and clean and polish each piece. Remove all rubbish, packing materials, and debris, caused by the work of this Section.

End of Section

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Section 10 4000
SAFETY SPECIALTIES

PART 1 - GENERAL**1.1 SUMMARY**

- A. Furnish and install:
 - 1. Fire extinguishers, on wall mounted brackets.
 - 2. Fire department access emergency key cabinet.
 - 3. Blade signs for identification of extinguisher locations.

1.2 RELATED REQUIREMENTS

- A. Section 06 1000 - ROUGH CARPENTRY: Wood fire-treated back boards at fire extinguisher locations.
- B. Section 09 29 00 - GYPSUM BOARD: Gypsum wallboard finishes.
- C. Division 21 - FIRE SUPPRESSION: Fire hose connections and related cabinets and accessories.

1.3 REFERENCES

- A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
 - 1. NFPA 10 – Standard for Portable Fire Extinguishers, 2018 Edition.

1.4 SUBMITTALS

- A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:
 - 1. Literature: Manufacturer's product data sheets, indicating fabrication specifications, finishes, dimensions of cabinet and rough opening, and installation instructions.
 - 2. Shop drawings: Details showing unit dimensions, methods of construction, attachment clips and brackets; and complete installation details.
 - 3. Selection samples: Samples indicating metal finishes available for selection by Architect.
 - a. Provide additional samples as requested by Architect to facilitate initial selection of colors and finishes
 - 4. Verification samples: Fire extinguisher cabinet in specified size, finishes, and door type, if requested by Architect.

1.5 REGULATORY REQUIREMENTS

- A. Obtain certificate of compliance from authority having jurisdiction indicating approval of fire extinguisher cabinets and their installed locations.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver cabinets or extinguishers to the site, until all specified submittals have been submitted to, and approved by, the Architect.
- B. Store cabinets and extinguishers inside, under cover, and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.

PART 2 - PRODUCTS**2.1 MANUFACTURERS – EXTINGUISHERS**

- A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
 - 1. J.L. Industries, (Division of Activar Inc.). Bloomington MN.
 - 2. Larsen Manufacturing Co., Minneapolis MN.
 - 3. Potter-Roemer, Union NJ.
 - 4. Amerex Corporation, Trussville, AL (*fire extinguishers only*)

2.2 FIRE EXTINGUISHERS WALL MOUNTING BRACKETS

- A. Wall mounting Bracket: 16 gage steel surface mounted bracket, with red glossy polyester thermo-set coating, equal to the following. Provide with red letter decals spelling "FIRE EXTINGUISHER" applied to wall surface, letter size, style as required by code, location as selected by Architect.
 - 1. JL Industries, model number "MB-810".
 - 2. Larsen model number 864.
 - 3. Potter-Roemer, model number 3903.

2.3 FIRE EXTINGUISHERS

- A. Extinguishers: Non-toxic Multi-purpose dry chemical type (mono ammonium phosphate), 20 pound capacity, multi-purpose rated '10A, 120B:C'; Heavy Duty DOT Steel Cylinder Extinguisher with metal valves and siphon tubes, replaceable molded valve stem seals, corrosion and impact resistant polyester/epoxy paint finish, pull pin-upright squeeze grip operation, and pressure gauges.

2.4 EMERGENCY KEY CABINETS

- A. Fire department emergency access key cabinet ("Knox Box"): Model 3200, Knox Rapid Entry System box, heavy duty, medium capacity (10 keys), surface mounted, as manufactured by The Knox Company, Phoenix, AZ., or equal having the following construction:
 - 1. Housing: 1/4 inch thick plate steel with joints welded.
 - 2. Door: 1/2 inch thick steel plate with neoprene weather seal.
 - 3. Locking: 3 point lock with stainless steel lock cover.
 - 4. Tamper switch: Provide optional UL listed alarm tamper switch.
 - 5. Finish: Black polyester powder coat.

2.5 SIGNAGE

- A. Extinguisher signage: Manufacturer's standard blade type signage white background with red text equal to Larsen Model PTD-108. Provide one sign at each extinguisher location.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
- B. Beginning of installation means acceptance of project conditions.

3.2 INSTALLATION

- A. Install fire extinguisher cabinets, brackets, and key cabinets in accordance with manufacturer's instructions in locations indicated, and as additionally directed by regulatory authority having jurisdiction.
- B. Install level and in true line, with units securely anchored to the surrounding construction. Fit trim pieces accurately and tight to adjacent construction.
 - 1. Maximum variation from plumb and level: 1/8 inch.
 - 2. Maximum offset from true dimensional alignment: 1/4 inch.

3.3 CLEANING AND ADJUSTMENT

- A. Upon completion of the work of this Section in any given area, remove tools, and all packaging and debris from the work area; leave area in broom-clean condition.

End of Section

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Section 13 3419
METAL BUILDING SYSTEMS

PART 1 – GENERAL**1.1 GENERAL PROVISIONS**

- A. The Contract Forms, and Conditions of the Contract as provided by the Construction Manager, and applicable parts of Division 1 - GENERAL REQUIREMENTS, shall be included in and made a part of this Section.
- B. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.

1.2 SUMMARY

- A. The work of this Section consists of prefabricated metal building T-Hanger, complete with folding hanger doors as shown on the Drawings, as specified herein, and as required for a complete and proper installation.
- B. Design, engineer, furnish and install the following:
 - 1. Shop fabricated structural steel building frame.
 - a. Shop primed primary, secondary, supplemental and miscellaneous steel building framing, z-girts, and clips
 - 2. Pre-finished sloped corrugated sheet metal roofing system having exposed fasteners.
 - a. Related flashing and running sheet metal work, for all non-specified locations in conjunction with the roofs, including soffits, gutters and downspouts.
 - 3. Pre-finished corrugated sheet metal wall panel system, having exposed fasteners.
 - 4. Exterior folding hanger doors.
 - 5. Man doors and frames (as specified under Section 08 1113).
 - 6. Sectional Overhead doors (as specified under Section 08 3613).
 - 7. Custom steel diamond plate at recessed slab edge as detailed, and hot-dipped galvanized after assembly. Provide each plate in 3 sections totaling the width indicated to provide for expansion, refer to Drawings for details, deliver to Section 03 3000 Cast-in-Place Concrete for embedment into concrete foundation.
 - 8. Trim at all openings.
 - 9. Secondary and supplemental steel supports for equipment and work of other sections including but not limited to: light fixtures, sprinkler mains, branch lines, supports for heaters, and other items included in the documents.
- C. Furnish the following products to be installed under the designated Sections:
 - 1. Anchor bolts and base plates for placement under Section 03 3000 – CAST-IN-PLACE CONCRETE.

1.3 RELATED REQUIREMENTS

- A. Section 03 0513 - CONCRETE SEALERS.

- B. Section 03 3000 - CAST-IN-PLACE CONCRETE: Concrete footings, foundations, and floor slab.
- C. Section 06 1000 - ROUGH CARPENTRY: Wood blocking, and plywood backer panels for mounting of electrical panelboards, and other equipment.
- D. Section 07 8400 – FIRESTOPPING:
- E. Section 07 9200 - JOINT SEALANTS.
- F. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES: Requirements for metal doors and frames provided under the Work of this Section 13 34 19.
- G. Section 08 3613 - SECTIONAL DOORS: Requirements for Sectional Overhead doors provided under the Work of this Section 13 34 19.
- H. Section 08 7100 - DOOR HARDWARE.
- I. Section 09 2900 - GYPSUM BOARD.
- J. Section 09 6513 - RESILIENT BASE AND ACCESSORIES.
- K. Section 09 9100 - PAINTING:
 - 1. Finish painting of factory primed hollow metal doors and frames.
 - 2. Finish painting structural steel.
 - 3. Finish painting gypsum drywall.
- L. Division 21 - FIRE PROTECTION
- M. Division 22 - PLUMBING
- N. Division 23 — HEATING, VENTILATION AND AIR CONDITIONING: rough-in utilities.
- O. Division 26 — ELECTRICAL: rough-in utilities.

1.4 REFERENCES

- A. Referenced Standards: Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 4200 - REFERENCES. The standards referenced herein are included to establish recognized minimum quality only. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern. Equivalent quality and testing standards will be acceptable, subject to their timely submission, review and acceptance by the Architect.
 - 1. AISI – S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.
 - 2. AAMA 2605 - Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
 - 3. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
 - 4. ASTM A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 5. ASTM A153/A153M – Standard Specification for Zinc-Coating (Hot-Dip) on Iron and Steel Hardware.

6. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
7. ASTM A386 (Withdrawn Standard) – Specification for Zinc Coating (Hot-Dip) on Assembled Steel Products.
8. ASTM A446 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) By The Hot-Dip Process, Structural (Physical) Quality.
9. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
10. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
11. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
12. ASTM A572/A572M - Standard Specification for High Strength Low Alloy Columbium Vanadium Structural Steel.
13. ASTM A653/A653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
14. ASTM C665 – Standard Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
15. ASTM E94/E94M – Standard Guide for Radiographic Examination Using Industrial Radiographic Film.
16. ASTM E164 – Standard Practice for Contact Ultrasonic Testing of Weldments.
17. ASTM E165/A165M – Standard Practice for Liquid Penetrant Testing for General Industry.
18. ASTM E331 – Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Unifrom Static Air Pressure Difference.
19. ASTM E283/E383M – Standard Test Method for Determining rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
20. ASTM E709 – Standard Guide for Magnetic Particle Testing.
21. ASTM F3125/F3125M – Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
22. AWS A2.0 - Standard Welding Symbols.
23. AWS D1.1 - Structural Welding Code – Steel.
24. AWS D1.3, Structural Welding Code - Sheet Steel.
25. FS HH-I-558 - Insulation, Blocks, Boards, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe Fitting Covering, Thermal (Mineral Fiber, Industrial Type).
26. SSPC - Steel Structures Painting Council.
 - a. Society for Protective Coatings:
 - 1) Surface Preparation Specifications:
 - a) SSPC – SP 1 – Solvent Cleaning.
 - b) SSPC – SP 2 – Hand Tool Cleaning.

- c) SSPC – SP 3 – Power Tool Cleaning.
 - 2) Surface Preparation Specifications:
 - a) SSPC-PQ 1, Shop, Field and Maintenance Painting.
 - b. Federal Specifications:
 - 1) TT-P-645, Primer, Paint, Zinc-Chromate, Alkyd Type
 - 27. UL 580 – Standard for Tests for Uplift Resistance of Roof Assemblies.
 - 28. All applicable federal, state and municipal codes, laws and regulations for exits.
- B. General References The following reference materials are hereby made a part of this Section by reference thereto:
- 1. MBMA - Low Rise Building Systems Manual.
- C. Definitions:
- 1. Bay Spacing: Dimension between main frames measured normal to frame (at centerline of frame) for interior bays, and dimension from centerline of first interior main frame measured perpendicular to end wall (outside face of end-wall girt).
 - 2. Building Length: Dimension of the building measured perpendicular to main framing from end wall to end wall (outside face of girt to outside face of girt).
 - 3. Building Width: Dimension of the building measured parallel to main framing from sidewall to sidewall (outside face of girt to outside face of girt).
 - 4. Clear Span: Distance between supports of beams, girders, or trusses (measured from lowest level of connecting area of a column and a rafter frame, or knee).
 - 5. Eave Height: Vertical dimension from finished floor to eave (the line along the sidewall formed by intersection of the planes of the roof and wall).
 - 6. Clear Height under Structure: Vertical dimension from finished floor to lowest point of any part of primary or secondary structure, not including crane supports, located within clear span.
 - 7. Collateral Loads: Dead loads other than those of the metal building system, including, but not limited to: sprinklers, mechanical systems, electrical systems, ceilings and suspended equipment
 - 8. Terminology Standard: Refer to *Low Rise Building Systems Manual* as published by Metal Building Manufacturer's Association (MBMA) for definitions of terms for metal building system construction not otherwise defined in this Section or in referenced standards.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
- 1. General: Coordinate the work of this Section with the respective trades responsible for installing inserts and anchorages furnished by this Section; make arrangements for delivery, receipt and installation of inserts and anchorages to prevent delay of the Work.
 - 2. Submittal of prefabricated engineered building shop drawings shall be coordinated with submittals for concrete foundations. Concrete foundation shop drawings will not be reviewed until prefabricated engineered building

shop drawings have been submitted and approved in order to ensure coordination with foundation construction.

3. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Pre-construction Conference:

1. General Contractor and **ALL** subcontractors, installers, applicators, and vendors are required to have authorized representatives in attendance at mandatory Pre-Construction Conference. This conference specified under Document 00 80 13 – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) is mandated by the FAA and is a review of operational, safety, and performance requirements for the Project. The following subjects will be covered:
 - a. Project Overview
 - b. Labor requirements
 - c. Operation Safety Items
 - d. Construction
 - e. Temporary Facilities and Controls
 - f. Project Closeout:
 - g. The Contractor will be reminded to prepare and submit the required Safety Plan Compliance Document (SPCD) prior to beginning construction.

C. Pre-Installation Meetings: At least two weeks prior to commencing the work of this Section, conduct a pre-installation conference at the Project site. Comply with requirements of Section 01 3216 – CONSTRUCTION PROGRESS SCHEDULE. Coordinate time of meeting to occur prior to installation of work under the related sections named below.

1. Required attendees: Architect, General Contractor, metal building system Installer's Project Superintendent, metal building system manufacturer's technical representative and representatives of other related trades as directed by the Architect or Contractor, and representatives for installers of related work specified under the following Sections:
 - a. Section 03 3000 - CAST-IN-PLACE CONCRETE.
 - b. Section 07 9200 - JOINT SEALANTS.
 - c. Section 08 1113 - HOLLOW METAL DOORS AND FRAMES.
 - d. Section 08 3613 - SECTIONAL OVERHEAD DOORS.
2. Agenda: Review methods and procedures related to pre-engineered building systems including, but not limited to, the following:
 - a. Scheduling of metal building system erection operations.
 - b. Review of staging, material storage locations and temporary protection requirements.
 - c. Coordination of interface work by other trades.
 - 1) Coordinate footings, foundations and other required preparatory work performed by other trades.
 - d. Structural load limitations.
 - 1) Compliance with requirements for support conditions, including alignment between and attachment to, structural members.

- 2) Structural limitations of girts and columns during and after wall panel installation.
- e. Construction schedule. Verify availability of materials and erector's personnel, equipment, and facilities needed to make progress and avoid delays.
- f. Required tests, inspections, and certifications.
- g. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect wall panels.
- h. Protection of completed Work.
- i. Establish weather and working temperature conditions to which Architect and Contractor must agree.
- j. Emergency rain protection and hurricane protection procedures.
- k. Discuss process for manufacturer's inspection and acceptance of completed Work of this Section.

D. Sequencing:

1. Field Measurements: Verify that field measurements are as indicated on shop drawings.

1.6 SUBMITTALS

A. Information and Review Submittals: Submit the following under provisions of Section 01 3000 – ADMINISTRATIVE REQUIREMENTS:

1. Product Data: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for each item furnished hereunder.
 - a. Include data on profiles, component dimensions, fasteners, and sealants.
2. Shop Drawings:
 - a. Elevations, plans and details: 1/4 inch scale elevations and plans, and large scale design details showing framing, and panel attachment methods (both roof and walls); and complete installation details.
 - 1) Indicate assembly dimensions, locations of structural members, connections, attachments, openings, cambers (if required), and both live and dead design loads.
 - 2) Roof and wall panels: Indicate wall and roof system dimensions, panel layout, construction details, anchorages and method of anchorage, method of installation. Show layouts of panels on support framing, details of edge conditions, joints, panel profiles, corners, custom profiles, supports, anchorages, trim, flashings, closures, and special details. Distinguish between factory-assembled, and field-assembled work.
 - 3) Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.
 - 4) Indicate all connections and interface with adjoining work.
 - b. Anchor-Bolt Plans: Indicate anchor bolt locations, settings, sizes and material, column base plate dimensions, sizes, etc. and column base reactions at foundation connections. Submit in advance of erection drawings.

- c. Structural-Framing Drawings: Show complete fabrication of primary and secondary framing. Indicate welds and bolted connections, distinguishing between shop and field applications. Include transverse cross-sections.
- d. Door Schedule: Provide schedule of doors and frames, using the same reference numbers as indicated on Drawings. Include details of reinforcement and installation requirements for finish hardware.
- 3. Selection Samples:
 - a. Sample card indicating Manufacturer's full range of colors available for selection by Architect.
 - b. Provide additional samples as requested by Architect for initial selection of colors and finishes.
- 4. Verification Samples:
 - a. 12 x 12 inch samples of roof and wall panels, illustrating material and finish.
 - 1) Include clips, caps, battens, fasteners, closures, and other exposed panel accessories.
 - b. Trim and Closures: 12 inches (300 mm) long. Include fasteners and other exposed accessories.
 - c. Vapor Retarders: 6-inch (150-mm) square samples.
 - d. Accessories: 12-inch (300-mm) long samples for each type of accessory.
- 5. Certificates:
 - a. Zinc coating: Certify zinc coating on steel panels is the specified thickness.
 - b. Shop Finished Products: Manufacturer's written certification stating that metal building components and all related items to be furnished hereunder, meet or exceed the requirements specified under this Section, and that pre-finishing has been performed as specified.
- 6. Delegated Design Submittals:
 - a. Furnish complete structural design analysis for all structural components of the prefabricated metal buildings.
 - b. Provide manufacturer load tables indicating the selected panel material, configuration and thickness meets the design requirements for the spans shown
- 7. Certificates:
 - a. Certificate of compliance from galvanizer: Submit notarized certificate of compliance with application for payment for galvanizing, signed by galvanizer, indicating compliance with requirements of specifications. Include scope of services provided, and quantity and itemized description of items processed, zinc coating thickness as specified.
 - b. Shop finished products: Manufacturer's written certification stating that metal building components and all related items to be furnished hereunder, meet or exceed the requirements specified under this Section, and that shop finishing has been performed as specified.
- 8. Delegated Design Submittals:

- a. Furnish complete design analysis for all structural components of the prefabricated metal building. The structural engineer shall be registered in the State of Maine and shall state in writing that the structural framing and building components are in compliance with the criteria set forth in the specifications and as indicated on the Drawings and that the foundation design will support the building reactions and other loads imposed by use of the building.
 - b. Provide manufacturer load tables indicating the selected panel material, configuration and thickness meets the design requirements for the spans shown
- 9. Manufacturer's Instructions: Manufacturer's written installation instructions indicating preparation requirements, assembly sequence, special procedures, and field conditions requiring special attention.
- 10. Source Quality Control Submittals:
 - a. Submit list of installations completed within the last three years, include all contacts and references.
- 11. Qualification Submittals:
 - a. Installer/Applicator: Manufacturer's written certification stating that erector is qualified, licensed, authorized and approved to install the building system in accordance with manufacturer's requirements.
 - b. Welder's certificates.
- B. Closeout Submittals: Submit the following under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.
 - 1. Bonds and Warranty Documentation:
 - a. Manufacturer's Warranties and Guarantees as specified elsewhere herein this Section.
 - 2. Record Documentation: Submit accurately record actual locations of concealed utilities.

1.7 QUALITY ASSURANCE

- A. General: Notify the Architect where conflicts apply between referenced standards and existing materials, and existing methods of construction.
 - 1. Fabricate structural steel members in accordance with AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- B. Sole Source:
 - 1. The metal building system shall be designed by the manufacturer as a complete system. All components of the system shall be supplied by or compatible with the metal building system provided by the manufacturer. The building systems shall be provided from a "single source manufacturer" with all required warranties for the complete building system originating from the single source manufacturer.
 - 2. Obtain products required for the Work of this Section from a single manufacturer, or from manufacturers recommended by the prime manufacturer of metal building systems.
- C. Qualifications:

1. Manufacturer Qualifications: A qualified manufacturer and member of the Pre-engineered Building Systems Association.
 - a. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional structural engineer registered in the State of Maine.
2. Installer/Erector: Installer/Erector has technical qualifications, experience, trained personnel and facilities to install specified items.
 - a. Erector: The Erector shall have at least five (5) years' experience of erecting steel building systems and shall be authorized, in writing, by the manufacturer as being trained and qualified to erect their products. The erector shall also be knowledgeable of the AISC "Code of Standard Practice for Steel Buildings and Bridges" and the Metal Building Manufacturer's Association "Metal Building Systems Manual".
3. Welding Qualifications: Welder's shall be AWS D1.1 and D1.4 qualified within the previous 12 months. Qualify welding procedures and personnel according to the following:
 - a. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - b. AWS D1.3, "Structural Welding Code - Sheet Steel."
4. Welders Certificates: Utilize only qualified welders employed on the Work. Submit verification that.
5. Testing Agencies: Qualified according to ASTM E 329 for testing indicated.
6. Licensed Professionals: Design Work under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Maine.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
 1. Do not fabricate or deliver items to the site, until all specified submittals have been submitted to, and approved by, the Architect.
- B. Storage and Handling Requirements:
 1. Store and handle materials following manufacturer's recommended procedures, and in accordance with material safety data sheets.
 2. Protect materials from damage due to moisture, direct sunlight, excessive temperatures, surface contamination, corrosion and damage from construction operations and other causes.
 - a. Stack and cover metal building materials with suitable weather-tight covering.
- C. Damaged material: Remove any damaged or contaminated materials from job site immediately, including materials in broken packages, packages containing water marks, or show other evidence of damage, unless Architect specifically authorizes correction thereof and usage on project.

1.9 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when weather conditions permit panels to be installed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements:

1. Established Dimensions for Panels: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating panels without field measurements, or allow for field trimming panels. Coordinate construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.10 WARRANTY

A. General: Submit the following warranties under provisions of Section 01 7800 - CLOSEOUT SUBMITTALS.

B. Manufacturer Warranty:

1. Provide 5 year unconditional warranty which shall include coverage for weather tightness of building enclosure elements after installation.
2. Roof and Wall Panel Finish Warranty: Manufacturer's standard form PVDF Fluorocarbon System Warranty for film integrity, chalk rating and fade rating in which manufacturer agrees to repair or replace panels that show evidence of deterioration within specified warranty period
3. Provide 5 year warranty which shall include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading.
 - a. Deterioration shall include but is not limited to:
 - 1) Color fading of more than 5 Hunter units when tested according to ASTM D2244.
 - 2) Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - 3) Cracking, checking, peeling or failure of paint to adhere to bare metal.
 - 4) Perforation
 - b. Warranty Period: Film integrity for 45 years and chalk and fade rating for 35 years, and perforation for 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Specified Manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on Erect-A-Tube, Inc., Harvard IL.
- B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
1. Erect-A-Tube, Inc., Harvard IL. (Basis of Design).
 2. Fulfab Inc., Canton, OH.
 3. R&M Steel Company, Caldwell, ID.
 4. Aircraft Structures, Fairfax, MN.

- C. Acceptable Substitutions: The products specified herein establish standards of quality, design and function desired. Other manufacturers will be considered for acceptance per the following:
1. Contractor must provide appropriate product data with bid for the Architect to consider the substitutions as "equal" to the manufacturer and product specified. Submit supporting technical literature, samples, drawings and performance data in order for Architect/Engineer to make a valid comparison of the products involved. Test reports certified by an independent test laboratory must be made available upon request.
 2. Contractor must include unit prices showing any add or deduct costs for all recommended substitutions which have a greater or lesser cost than furnishing and installing the specified manufacturer and product.

2.2 DESCRIPTION

- A. Description: Provide a complete, integrated set of structurally-framed pre-engineered building system manufacturer's standard mutually dependent components and assemblies that form a building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.
1. Provide pre-engineered building system of size and with bay spacings, roof slopes, and spans indicated on Drawings.
 2. Clear span rigid frame and roof truss system.
 3. Primary Framing: Rigid frame of rafter beams and columns, braced end frames, end wall columns, wind and seismic bracing.
 4. Secondary Framing: 8 inch nominal cold-formed steel girt framing and roof purlin framing for vertical panel installation. At horizontal panel areas, secondary framing to be designed, supplied and installed, and shall comprise of 8 inches cold-formed steel stud curtain wall framing.
 5. Wall system: Preformed factory foamed, metal panels of vertical profile and horizontal orientation.
 6. Roof system: Standing seam roof panels, upper and lower layers of insulation, insulated thermal blocking, fabric liner/air and vapor barrier system, and insulation support system.
- B. Regulatory Requirements
1. Conform to applicable code for submission of design calculations, reviewed shop drawings and as required for acquiring permit.
 2. Cooperate with regulatory agency or authority and provide data as requested.

2.3 PERFORMANCE/DESIGN CRITERIA

- A. Delegated Design: Design pre-engineered building systems, including comprehensive engineering analysis by a qualified professional structural engineer, using performance requirements and design criteria indicated.
1. Geotech info: 1,500 psf for bearing for this project. The "sands are loose and there is significant clay thickness, although the clay won't feel much of the building load."
- B. Engineer of Record: The specialty Engineer for the pre-engineered building manufacturer shall be the Structural Engineer of Record (SER) for the steel framed

T-Hanger structure and shall be responsible for all design and construction affidavits, structural tests and special inspections, and all other SER duties required by the Building Code and Building Official.

C. Design Requirements and Loads:

1. Members to withstand dead load, collateral loads, applicable snow load, and design loads due to pressure and suction of wind calculated in accordance with applicable code.
 - a. Metal building components shall be capable of supporting design loads without permanent deformation, loss of watertightness, or disengagement of any part of installation.
 - b. Design metal building systems to withstand the most critical effects of load factors and load combinations.
 - c. Design structural steel sections in accordance with AISC, "Specification for the Design, Fabrication, and Erection of Steel Buildings".
 - d. Design light gage cold formed structural members in accordance with latest edition of AISI, "Specifications for the Design of Light Gage Cold Formed Steel Structural Members".
 - e. Welding shall comply with AWS Standard No. D1.1.
 - f. Building Design and detailing shall comply with OSHA requirements in the applicable standard 29 CFR Part 1926 - "Safety Standards for Steel Erection".
2. Members to withstand progressive snow and live loading, and design loads due to pressure and suction of wind. Loads shall be developed in accordance with MAINE UNIFORM BUILDING AND ENERGY CODE.

D. Design Loading: Refer to Structural Drawings.

1. Wind Design Pressure: Loads shall be developed in accordance with the MAINE UNIFORM BUILDING AND ENERGY CODE and ASCE 7-16, incorporated by reference.
 - a. Basic Wind Speed: 102 miles per hour. (three-second-gust).
 - b. Occupancy Risk Factory I.
 - c. Exposure: "D"
 - d. Snow Loads: 80 pounds per square foot [391 Kg/m²] applied on horizontal projection of roof structure.
 - e. Seismic loading as required by MAINE UNIFORM BUILDING AND ENERGY CODE. Pre-engineered building systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7-16.
2. Collateral Loads: Superimposed dead loads to account for specific architectural, mechanical, electrical, plumbing and fire protection components are noted on relevant plans, sections and details. Component loads may not be complete at the time of drawing issuance and should be verified with the Engineer of Record, prior to fabrication of supporting elements.
 - a. Collateral loads shall be determined based upon MEP, Architectural, and other items to be installed but shall not be assumed less than a minimum uniform load of 10 psf. Purlins shall also be designed to accommodate an additional 150 lb hanging load applied anywhere along the member.
3. Additional Loads: Coordinate with Architectural and MEP drawings for weights of mechanical equipment, and other equipment and appurtenances.

- a. Superimposed dead loads to account for specific architectural, mechanical, electrical, plumbing and fire protection components are noted on relevant plans, sections and details. Component loads may not be complete at the time of Drawing issuance and should be verified with the eor prior to fabrication of supporting elements
 4. Anchor Rod Locations: Anchor rods and structure shall be designed so that anchors have the minimum clearances from the edges of concrete foundations and piers as indicated on the Structural Drawings.
 5. Bracing Locations: The structure shall be designed utilizing the bracing locations indicated on the approved Shop Drawings. If bracing in addition to that shown on the Shop Drawings is required, the additional locations shall be coordinated with the Foundation Designer prior to fabrication of the structure.
 6. Metal building components shall be capable of supporting design loads without permanent deformation, loss of watertightness, or disengagement of any part of installation.
- E. Deflection Limits: Exterior wall and roof system to withstand imposed live and wind loads with maximum allowable deflection of span (L = Span length) not to exceed:
1. Roof framing: $L/360$.
 2. Girts: Horizontal deflection of $L/240$.
 3. Roof Panels: Vertical deflection of $1/240$ of the span.
 4. Walls Panels: Horizontal deflection of $1/240$ of the span.
 5. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
- F. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:
1. Lateral Drift for Earthquake: As required by the Building Code.
 2. Lateral Drift for Wind: Maximum of $1/240$ of the building height.
- G. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.
- H. Assembly to permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to the following temperature ranges:
1. Ambient temperature range: 120 deg F (67 deg C).
 2. Material surfaces: 180 deg F (100 deg C).
- I. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.
- J. Air Infiltration for Wall Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. of wall area when tested according to ASTM E283 at static-air-pressure difference of 1.57 lbf/sq. ft.
- K. Water Penetration for Wall Panels: No water penetration when tested according to ASTM E331 at a wind-load design pressure of not less than 2.86 lbf/sq. ft.
- L. Wind-Uplift Resistance: Provide roof assemblies that comply with UL 580 for Class 90.

2.4 MATERIALS - FRAMING

- A. Structural Steel Members: ASTM A36.
- B. Structural Tubing: ASTM A500, Grade B.
- C. Plate or Bar Stock: ASTM A529.
- D. Anchor Bolts: ASTM A307, unprimed
- E. Bolts, Nuts, and Washers: ASTM A325, galvanized to ASTM A153.
- F. Welding Materials: AWS D1.1; type required for materials being welded.
- G. Primer: SSPC 15, Type 1, Red Oxide.
- H. Grout: Non-shrink type, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 2400 psi (17 MPa) in two days and 7000 psi (48 MPa) in 28 days.

2.5 MATERIALS - WALL AND ROOF SYSTEM

- A. Sheet Steel Stock: ASTM A446 Grade A, galvanized to ASTM A653 G90 designation.
- B. Joint Seal Gaskets: Manufacturer's standard type.
- C. Fasteners: Manufacturer's standard type, galvanized to ASTM A123, 2.0 oz/sq ft (610 g/sq m), finish to match adjacent surfaces when exterior exposed.
- D. Bituminous Paint: Asphaltic type.
- E. Sealants: As specified in Section 07 92 00 – JOINT SEALANTS.
- F. Galvanized Steel Raised-Diamond (Checker) Plate: ASTM A786 hot rolled raised-diamond floor plate, 1/2-inch thickness hot dipped galvanized in compliance with ASTM A123/A123M.

2.6 DOORS AND FRAMES

- A. Metal Doors And Frames: As specified under Section 08 11 13 – HOLLOW METAL DOORS AND FRAMES, and provided as component of Work of this Section 13 34 19.
- B. Sectional Overhead Doors: As specified under Section 08 36 13 – SECTIONAL DOORS, and provided as component of Work of this Section 13 34 19.
 - 1. Overhead Door Frame: Formed steel sections braced to building frame.
- C. Bi-Folding Hanger Doors: Bi-fold doors shall be integral with hangar building design.
 - 1. Framing: Square tube jig, factory welded in full size panels to eliminate any field welding.
 - 2. Door Panels:
 - a. Metal Panels: matching wall panels on building.

- b. Light Panels: Polycarbonate soft white light panels for upper section of bi-fold door. Provide two light panels per bi-fold door.
 - 1) Polycarbonate minimum 0.039 in thickness and to match wall panel coverage of 36 inch width.
 - 2) Seal vertical laps with trim strips.
 - 3. Top hinges factory located to align with pre-located door truss hinges on door header to eliminate field welding.
 - 4. Electric operator: Top mounted operator on center of door truss, provided with adjustable turnbuckles and fastened securely.
 - a. Motor: 3/4 H.P. (minimum) 230 V.A.C. single-phase thermally protected and supplied with a reset button. Motor shall be totally enclosed capacitor start.
 - b. Cable drum shall be a direct drive drum by shaft mounted gearbox. Gearbox shall be oil bath two-stage gearbox, bronze worm gear, hardened steel spur gears, tapered roller and ball bearings.
 - c. Door operator: be factory pre-wired, complete with 24 VAC momentary up and down pressure push button control, magnetic controllers, geared rotary limit switch attached to cable drum designed to coordinate reversing operation, spring set electric brake, and up-stop safety switch; over-ride safety mercury tilt switch to disconnect power in case of over travel.
 - 1) Provide lock out safety switches on manual door latches of bi-fold door so to prevent bi-fold door system from opening unless both latches are unlocked.
 - d. Power connection: heavy-duty 230-volt plug for easy connection.
- D. Door Hardware:
 - 1. Passage doors:
 - a. Lockset
 - b. Closers (doors leading to exterior).
 - c. Weatherstripping.
 - d. Hinges.
 - 2. Sectional Overhead Doors:
 - a. Furnish lock cylinders for sectional door(s).
 - 3. Bi-Folding Hanger Doors:
 - a. 3 inch diameter bottom guide roller with sealed bearing and column followers.
 - b. Manual cam locks of bi-fold door.
 - c. Center cane bolt pin, 1 inch diameter with embedded floor sockets.
 - d. 16 inch minimum center plated door poppers and skid plates.
 - e. Hinge pins: 3/16 inch diameter.
 - f. Cabling: 7x19 galvanized aircraft cables with wire rope clips and thimbles.
 - g. Astragals and weatherstripping:
 - 1) Bottom and top 2-ply rubber.
 - 2) Sides and center 2-ply rubber.

- h. Sheave wheels: 5 inch diameter steel sheave wheels with ball bearings.

2.7 FABRICATION

A. General:

1. Do not fabricate materials (on-site or off-site) until all specified submittals have been submitted to, and approved by, the Architect.
2. General: Coordinate fabrication and erection of work with related work of other trades. Provide cutouts and supplemental reinforcement as required to accommodate materials and work specified in other sections of the specifications.
3. Protection of Dissimilar Metals: Dissimilar materials which are not compatible with adjoining materials when exposed to moisture shall be separated by means of coatings, gaskets, or other effective means.

B. Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

1. Fabricate members in accordance with AISC Specification for plate, bar, tube, or rolled structural shapes.
2. Make shop connections by welding or by using high-strength bolts.
3. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
4. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
5. Weld clips to frames for attaching secondary framing.
6. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication; primer shall be compatible with finish coat specified in Section 09 91 00 – PAINTING.
7. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.
8. Provide framing for door openings.

C. Secondary Structure:

1. Secondary framing: Structural members which carry the loads to the primary framing systems and shall include the purlins, girts, wind bracing and miscellaneous structural members.
2. Purlins shall be nominal 8", 10" or 12" deep "Z" shaped members; and manufactured of 16, 14, or 12 gauge steel designed for specified loads, and shall be fabricated of material based on the requirements of ASTM A1011/A1011M or ASTM A572/A572M as applicable.
3. Exterior wall girts shall be fabricated from 4", 6" square structural weld steel tube or rolling formed CEE sections of ASTM A1011/A1011M or ASTM A572/A572M as applicable, flush mount design.
4. Interior partition girt shall be fabricated from 4" or 6" x 16, 14 or 16 ga. red oxide steel "CEE" sections, when specified.
5. Provide wind bracing, rafter bracing, sheeting angles where required.

- D. Wall and roof systems:
1. Siding: 36 inch width, 24 gauge, minimum 0.028 inch metal thickness, trapizoildal rib profile, on 12 inch centers, equal to Metal Sales, Deer Lake PA., type "PRB" panel having 1-1/4 inch high rib, with lapped edges-fitted with taped sealant gaskets.
 2. Roofing: 36 inch width, 24 gauge, minimum 0.028 inch metal thickness, trapizoildal rib profile on 12 inch centers, equal to Metal Sales, Deer Lake PA., type "PRB" panel having 1-1/4 inch high rib, with lapped edges-fitted with taped sealant gaskets.
 3. Girts/Purlins: Rolled formed structural shape to receive siding, roofing sheets.
 4. Internal and external Corners: Same material thickness and finish as adjacent material, profile brake formed, shop cut and factory mitered to required angles. Back brace mitered internal corners with 26 gage thick sheet.
 5. Expansion Joints: Same material and finish as adjacent material, standard brake formed type, of profile to suit system.
 6. Flashings, Closure Pieces, Fascia, Caps: Same material and finish as adjacent material, profile to suit system.
 7. Fasteners: To maintain load requirements, and weathertight installation, same finish as cladding, non-corrosive type.
 8. Ventilator: Continuous airflow ridge cap, in same gage and finish as roofing panels.
- E. Sheet Metal Accessories: Fabricate trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 4. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application but not less than thickness of metal being secured.

2.8 ACCESSORIES

- A. Building trim shall include eave trim, gable trim, corner trim, service door trim, bi-fold hangar door trim. All trim shall be 26 gauge. and manufactured of flat stock material equal in quality to wall sheets and color as selected from manufacturer's

standard color chart. All trims to be hemmed. Trim pieces shall be packaged for shipment at factory.

- B. Roof caulking shall be at all roof sheet side laps and at pre-formed ridge caps. Roof caulk shall be a tape sealant type and shall be pre-formed butyl rubber base and shall be supplied as a 3/16 inch by 3/8 inch extruded shape.
- C. Inside and outside semi-rigid cross-linked polyethylene foam closure shall be provided as required to provide a bird proof building. Closures are to be provided on bi-fold doors, gable end walls, side walls, roof overhang, eave and rake of end wall. Closure shall be self adhesive.
- D. Fuel containment galvanized angle: Provide 3 by 6 inch by 16 gauge. fuel containment galvanized angle at the base of all interior partition walls to prevent fuel spills from penetrating adjacent units.
 - 1. Include fuel resistant sealant.
 - 2. Anchors by erector.
- E. Base angles: 2 by 4 inch by 16 gauge. R-90 Galvanized base angle for two end walls and short side walls.
 - 1. Include sealant.
 - 2. Anchors by erector.
- F. Fasteners:
 - 1. Roof fasteners: #12 x1 inch length Scotts 310 stainless steel head on carbon steel shank, hex head, with dual seal washer.
 - 2. Roof stitch screws: #12 by 3/4 inch length Scotts 310 stainless steel head screws with washers.
 - 3. Wall fasteners: #12 x1 inch length zinc plated hex head color match self-drilling sheet metal screws with washer.
 - 4. Wall sheet stitch screws: 1/4"-#14 by 3/4 inch length Zinc plated hex head color match self-drilling lap screw with washer.
 - 5. Partition sheet fasteners shall be #12 by 3/4 inch length Zinc plated hex head self-drilling screws.
 - 6. Install all sheet metal screws as shown on approved shop drawings.

2.9 FINISHES

- A. Framing Members (Primary and Secondary), Girts and Purlins: Provide zinc coating for iron and steel fabrications applied by the hot-dip process.
 - 1. Basis of design: Duncan Galvanizing, Everett, MA., product "Duragalv."
 - 2. Comply with ASTM A123 for fabricated products and ASTM A153 for hardware.
 - a. Wherever possible, perform galvanizing after assembly of items.
 - b. If required, plug vent holes after galvanizing and grind smooth. Touch-up with specified liquid zinc coating.
 - 3. Prepare surfaces to be galvanized per SSPC SP2 or SP3 to provide a smooth surface removing all runs, drips, or sags.

4. Galvanizing shall exhibit a rugosity (smoothness) of 16-25 microns or less when measured by a profilometer. This pertains to those elements that are less than 24 pounds per running foot.
 5. Galvanized items shall be straightened to remove all warpage and distortion caused by the galvanization process.
 6. Touch-up all breaks on hot-dip surfaces caused by cutting, welding, drilling or undue abrasion with specified liquid zinc coating. Apply liquid zinc by brush or spray on all damaged areas in two coats to a total dry film thickness of not less than 3 mils. Apply first coat within two hours after damage to hot-dip film to prevent undue oxidation of exposed surface. On all welds remove weld spatter by power wire brushing or equivalent before applying liquid zinc coating. Repair material should extend at least 3 inches beyond all edges of the damaged galvanized area as possible to assure continuity of galvanic protection
- B. Wall and Roof Panels: Coil Coated Polyvinylidene Flouride (PVDF) resin based, high performance thermoplastic organic coating conforming to AAMA A620, AAMA 2605. NAAMM - Metal Finishes Manual, and the following:
1. Resin base of 70 percent PVDF by weight, Arkema, Inc., product "Kynar 500" or Solvay Solexis, Inc. product "Hylar 5000".
 2. Finish Coating shall be manufactured as one of the following products:
 - a. Akzo Nobel; product: "Trinar Ultra."
 - b. P.P.G. Industries Inc.; product "Duranar."
 - c. Valspar Corp., product: "Fluropon."
 3. Surface Preparation: Properly clean aluminum with inhibited chemical cleaner and pretreat with acid chromate-fluoride-phosphate conversion coating, in accordance with Aluminum Association method AA-C12C42.
 4. Prime all surfaces with a corrosion resistant, epoxy-based primer compatible with finish coating, averaging 0.2 to 0.3 mils dry film thickness, fully oven-cured.
 5. On finished side of coil, provide one color coat, of polyvinylidene flouride enamel averaging 0.7 to 0.8 mil dry film thickness on all exposed surfaces, including all exposed screws, fastenings.
 - a. On reverse side of coil provide off-white washcoat.
 6. Color and Appearance: Color shall be selected by Architect from paint manufacturer's full range of standard (non-metallic, non-mica) colors. The available library of standard colors shall not be less than 16 colors.

2.10 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to evaluate product.
- B. Testing: Test and inspect shop connections for pre-engineered buildings according to the following:
1. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM F3125, grade A490 Bolts."
 2. Welded Connections: In addition to visual inspection, shop-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:

- a. Liquid Penetrant Inspection: ASTM E165.
 - b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E164.
 - d. Radiographic Inspection: ASTM E94.
- C. Product will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.
- 1. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position.
 - 2. Beginning of installation means acceptance of existing substrate and project conditions.

3.2 ERECTION - FRAMING

- A. General:
- 1. Erect pre-engineered building system according to manufacturer's written erection instructions and erection drawings. Refer to FAA 7460 for requirements pertaining to cranes.
 - 2. Erect framing in accordance with AISC Specification.
 - a. Bolt settings and other dimensions shall be held to a tolerance of plus or minus 3 mm (1/8-inch). Use templates or other gaging devices to assure accurate spacing of anchor bolts. Bolt field connections unless otherwise indicated on approved shop drawings.
 - b. Building erection shall comply with the applicable standards listed in 29 CFR Part 1926 - "Safety Standards for Steel Erection".
 - 3. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as indicated on approved shop drawings.
 - 4. Do not field cut, drill, or alter structural members without written approval from pre-engineered building system manufacturer's professional engineer.
- B. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
- 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.

3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 1. Level and plumb individual members of structure.
 2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.
- D. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.
 1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for bolt type and joint type specified.
 - a. Joint Type: Snug tightened or pretensioned.
- E. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.
- F. After erection, prime welds, abrasions, and surfaces not shop primed.

3.3 ERECTION - WALL AND ROOFING SYSTEMS

- A. General: Install in accordance with manufacturer's instructions.
- B. General: Install metal panels in orientation, sizes, and locations indicated on approved shop drawings and in accordance with manufacturer's instructions. Install panels perpendicular to girts and subgirts, unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 1. Field cutting of metal panels by torch is not permitted.
 2. Shim or otherwise plumb substrates receiving metal panels.
 3. Rigidly fasten base end of metal panels and allow eave end free movement due to thermal expansion and contraction. Predrill panels.
 4. Flash and seal metal panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until weather barrier and flashings that will be concealed by metal panels are installed.
 5. Install screw fasteners in predrilled holes.
 6. Locate and space fastenings in uniform vertical and horizontal alignment.
 7. Install flashing and trim as metal panel work proceeds.
 8. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.

9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated or, if not indicated, as necessary for waterproofing.
 10. Align bottom of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal panel manufacturer.
- D. Install attachment system required to support all panels and to provide a complete weathertight wall system, including subgirts, perimeter extrusions, tracks, drainage channels, panel clips, and anchor channels.
1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.
 2. Do not begin installation until weather barrier and flashings that will be concealed by composite panels are installed.

3.4 INSTALLATION - ACCESSORIES

- A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
 3. Provide concealed fasteners except where noted on approved shop drawings.
 4. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather

resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

- C. Install passage doors, overhead doors, and bi-fold hanger doors, in accordance with manufacturers instructions and as additionally specified.
- D. Seal wall and roof accessories watertight and weather tight with sealant, in accordance with Section 07 92 00.

3.5 TOLERANCES

- A. Framing Members, maximum variation from plumb or level: 1/4 inch (6 mm) from level; 1/8 inch (3 mm) from plumb.
- B. Siding and Roofing, maximum offset: 1/8 inch (3 mm) from true position

3.6 FIELD QUALITY CONTROL

- A. Field inspection will be performed under the provisions of Section 01 45 33 - CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES.
- B. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Inspection of fabricators.
 - 2. Steel frame construction.
- C. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- D. The pre-engineered building structural engineer of record or his delegated representative shall visit the site a minimum of two times during construction, once during performance of the work and once after the work is complete.
- E. Tests and Inspections:
 - 1. Shop-Bolted Connections (all): Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM F3125, grade A490 Bolts."
 - 2. High-Strength, Field-Bolted Connections: Connections shall be tested and inspected during installation according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
 - 3. Welded Connections: In addition to visual inspection, field-welded connections shall be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at inspector's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.
- F. Product will be considered defective if it does not pass tests and inspections.

- G. Prepare test and inspection reports.

3.7 ADJUSTING

- A. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.
- B. Door Hardware: Adjust and check each operating item of door hardware and each door to ensure proper operation and function of every unit. Replace units that cannot be adjusted to operate as intended.
- C. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet noncumulative, on level, plumb, and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING

- A. Upon completion of the work of this Section in any given area, remove tools, equipment and all rubbish and debris from the work area; leave area in broom-clean condition.

3.9 PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A780 and manufacturer's written instructions.
- B. Touchup Painting: After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.
 - 1. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
 - 2. Apply a compatible primer of same type and color as shop primer used on adjacent surfaces.
- C. Wall Panels: Replace wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.
- D. Doors and Frames: Immediately after installation, sand rusted or damaged areas of prime coat until smooth and apply touchup of compatible air-drying primer.
 - 1. Immediately before final inspection, remove protective wrappings from doors and frames.

End of Section

SECTION 22 0523**GENERAL-DUTY VALVES FOR PLUMBING PIPING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Applications.
- B. General requirements.
- C. Ball valves.

1.02 REFERENCE STANDARDS

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- B. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators - Welding Brazing and Fusing Qualifications; 2019.
- C. MSS SP-72 - Ball Valves with Flanged or Butt-Welding Ends for General Service; 2010a.
- D. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.
- E. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- F. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

- A. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.

1.04 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Obtain valves for each valve type from single manufacturer.
 - 2. Company must specialize in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Welding Materials and Procedures: Comply with ASME BPVC-IX.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Minimize exposure of operable surfaces by setting plug and ball valves to open position.
 - 2. Protect valve parts exposed to piped medium against rust and corrosion.
 - 3. Protect valve piping connections such as grooves, weld ends, threads, and flange faces.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection and protect flanges and specialties from dirt.
 - a. Provide temporary inlet and outlet caps.
 - b. Maintain caps in place until installation.
 - 2. Store valves in shipping containers and maintain in place until installation.
 - a. Store valves indoors in dry environment.
 - b. Store valves off the ground in watertight enclosures when indoor storage is not an option.

PART 2 PRODUCTS**2.01 APPLICATIONS**

- A. Listed pipe sizes shown using nominal pipe sizes (NPS) and nominal diameter (DN).
- B. Provide the following valves for the applications if not indicated on drawings:
- C. Required Valve End Connections for Non-Wafer Types:
 - 1. Copper Tube:
 - a. 2 NPS (50 DN) and Smaller: solder-joint valve-end

- D. Domestic, Hot and Cold Water Valves:
 - 1. 2 NPS (50 DN) and Smaller:
 - a. Bronze and Brass: Provide with solder-joint ends.
 - b. Ball: Two piece, full port, brass with brass trim.

2.02 GENERAL REQUIREMENTS

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
 - 1. Hand Lever: Quarter-turn valves 6 NPS (150 DN) and smaller.
- D. Valve-End Connections:
 - 1. Solder Joint Connections: ASME B16.18.
- E. General ASME Compliance:
 - 1. Solder-joint Connections: ASME B16.18.
- F. Potable Water Use:
 - 1. Certified: Approved for use in compliance with NSF 61 and NSF 372.
 - 2. Lead-Free Certified: Wetted surface material includes less than 0.25 percent lead content.
- G. Bronze Valves:
 - 1. Copper alloys containing more than 15 percent zinc are not permitted.
- H. Source Limitations: Obtain each valve type from a single manufacturer.

2.03 BRONZE BALL VALVES

- A. Two Piece, Full Port with Bronze Trim:
 - 1. Comply with MSS SP-110.
 - 2. WSP Rating: 150 psi (1035 kPa).
 - 3. WOG Rating: 600 psi (4140 kPa).
 - 4. Body: Forged bronze or dezincified-brass alloy.
 - 5. Ends Connections: Pipe thread or solder.
 - 6. Seats: PTFE.
 - 7. Stem: Bronze, blowout proof.
 - 8. Ball: Chrome plated brass.
 - 9. Operator: Provide lockable handle and stem extension.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Discard all packing materials and verify that valve interior, including threads and flanges are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.
- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

3.02 INSTALLATION

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.
- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

END OF SECTION

SECTION 22 0529**HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Pipe hangers.
- B. Pipe supports, guides, shields, and saddles.
- C. Support and attachment components for equipment, piping, and other plumbing work.

1.02 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General - Purpose Piping; 2014.
- D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- E. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2018).
- F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.
- G. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures; 1999 (Reapproved 2018).
- H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.
- J. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- L. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- M. FM (AG) - FM Approval Guide; current edition.
- N. MFMA-4 - Metal Framing Standards Publication; 2004.
- O. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- P. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- Q. UL (DIR) - Online Certifications Directory; Current Edition.
- R. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems and post-installed concrete and masonry anchors.

1.04 QUALITY ASSURANCE

- A. Comply with applicable building code.

- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Installer Qualifications for Powder-Actuated Fasteners (when specified): Certified by fastener system manufacturer with current operator's license.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 PIPE HANGERS

- A. Band Hangers, Adjustable:
 - 1. Manufacturers:
 - a. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.
 - b. Gripple, Inc; Universal Clamp (Threaded): www.gripple.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
 - d. Source Limitations: Furnish hardware, fittings, and accessories from single manufacturer.
 - 2. MSS SP-58 type 7 or 9, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.
- B. J-Hangers, Adjustable:
 - 1. Manufacturers:
 - a. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.
 - b. FNW; 7025: www.fnw.com/#sle.
 - c. Unistrut, a brand of Atkore International, Inc: www.unistrut.com/#sle.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
 - 2. MSS SP-58 type 5, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.
 - 3. Felt-Lined: Provide for uninsulated pipe to reduce noise and prevent static issues.
- C. Swivel Ring Hangers, Adjustable:
 - 1. Manufacturers:
 - a. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.
 - b. FNW; 7010: www.fnw.com/#sle.
 - c. Source Limitations: Furnish hardware, fittings, and accessories from single manufacturer.
 - 2. MSS SP-58 type 10, epoxy-painted, zinc-colored.
 - 3. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
 - 4. FM (AG) and UL (DIR) listed for specific pipe size runs and loads.
 - 5. Felt-Lined: Provide for uninsulated pipe to reduce noise and prevent static issues.
- D. Clevis Hangers, Adjustable:
 - 1. Manufacturers:
 - a. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.
 - b. FNW; 7005: www.fnw.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
 - d. Source Limitations: Furnish hardware, fittings, and accessories from single manufacturer.
 - 2. Copper Tube: MSS SP-58 type 1, epoxy-plated copper.

2.02 PIPE SUPPORTS, GUIDES, SHIELDS, AND SADDLES

- A. Dielectric Barriers: Provide between metallic supports and metallic piping and associated items of dissimilar type; acceptable dielectric barriers include rubber or plastic sheets or coatings attached securely to pipe or item.
- B. Stanchions:

1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
 2. Provide coated or plated saddles to isolate steel hangers from dissimilar metal tube or pipe.
 3. For pipe runs, use stanchions of same type and material where vertical adjustment is required for stationary pipe.
- C. U-Bolts:
1. MSS SP-58 type 24, carbon steel u-bolt for pipe support or anchoring.
- D. Pipe Shields for Insulated Piping:
1. MSS SP-58 type 40, ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.
 2. General Construction and Requirements:
 - a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
 - b. Shields Material: UV-resistant polypropylene with glass fill.
 - c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch (321 mm).
 - d. Service Temperature: Minus 40 to 178 degrees F (Minus 40 to 81 degrees C).
 - e. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
- E. Pipe Supports:
1. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
 2. Liquid Temperatures Up to 122 degrees F (50 degrees C):
 - a. Overhead Support: MSS SP-58 types 1, 3 through 12 clamps.
 - b. Support From Below: MSS SP-58 types 35 through 38.
- F. Pipe Supports, Thermal Insulated:
1. General Requirements:
 - a. Insulated pipe supports to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
 - b. Surface Burning Characteristics: Flame spread index/smoke developed index of 5/30, maximum, when tested in accordance with ASTM E84 or UL 723.
 - c. Provide pipe supports for 1/2 to 30 inch (15 to 750 mm, DN) iron pipes.
 - d. Insulation inserts to consist of rigid phenolic foam insulation surrounded by 360 degree, PVC jacketing.
 2. PVC Jacket:
 - a. Pipe insulation protection shields to be provided with ball bearing hinge and locking seam.
 - b. Moisture Vapor Transmission: 0.0071 perm inch (0.0092 ng/Pa s m), when tested in accordance with ASTM E96/E96M.
 - c. Minimum Thickness: 60 mil, 0.06 inch (1.524 mm).
- G. Copper Pipe Supports:
1. Manufacturers:
 - a. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.
 - b. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - c. Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by single manufacturer.

2.03 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be

- supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
4. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
 5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
 - b. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - c. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Metal Channel (Strut) Framing Systems:
1. Provide factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
 2. Comply with MFMA-4.
 3. Channel Material:
 - a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
 4. Minimum Channel Thickness: Steel sheet, 12 gage, 0.1046 inch (2.66 mm).
 5. Minimum Channel Dimensions: 1-5/8 inch (41 mm) width by 13/16 inch (21 mm) height.
- C. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
 - a. Piping up to 1 inch (27 mm) nominal: 1/4 inch (6 mm) diameter.
 - b. Piping larger than 1 inch (27 mm) nominal: 3/8 inch (10 mm) diameter.
- D. Pipe Supports:
1. Liquid Temperatures Up To 122 degrees F (50 degrees C):
 - a. Overhead Support: MSS SP-58 Types 1, 3 through 12.
 - b. Support From Below: MSS SP-58 Types 35 through 38.
- E. Pipe Stanchions: For pipe runs, use stanchions of same type and material where vertical adjustment is required for stationary pipe.
1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
 2. Provide coated or plated saddles to isolate steel hangers from dissimilar metal tube or pipe.
- F. Beam Clamps: MSS SP-58 Types 19 through 23, 25 or 27 through 30 based on required load.
1. Material: ASTM A36/A36M carbon steel or ASTM A181/A181M forged steel.
 2. Provide clamps with hardened steel cup-point set screws and lock-nuts for anchoring in place.
- G. Riser Clamps:
1. Provide copper plated clamps for copper tubing support.
 2. For insulated pipe runs, provide two bolt-type clamps designed for installation under insulation.
- H. Pipe Hangers: For a given pipe run, use hangers of the same type and material.
1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
 2. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.
- I. Dielectric Barriers: Provide between metallic supports and metallic piping and associated items of dissimilar type; acceptable dielectric barriers include rubber or plastic sheets or coatings attached securely to pipe or item.
- J. Pipe Shields for Insulated Piping:
1. General Construction and Requirements:
 - a. Surface Burning Characteristics: Comply with 1 or 1.
 - b. Shields Material: UV-resistant polypropylene with glass fill.
 - c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch (321 mm).

- d. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
 - e. Maximum Service Temperature: 178 degrees F (81 degrees C).
 - f. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
- K. Anchors and Fasteners:
- 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
 - 2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
 - 3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
 - 4. Hollow Masonry: Use toggle bolts.
 - 5. Hollow Stud Walls: Use toggle bolts.
 - 6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
 - 7. Sheet Metal: Use sheet metal screws.
 - 8. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
 - a. Comply with MFMA-4.
 - b. Channel Material: Use galvanized steel.
 - c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.
- L. Pipe Installation Accessories:
- 1. Copper Pipe Supports:
 - a. Manufacturers:
 - 1) HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - 2) Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by a single manufacturer.
 - 2. Overhead Pipe Supports:
 - a. Manufacturers:
 - 1) HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - 2) Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by a single manufacturer.
 - 3. Plenum Pipe Supports:
 - a. Manufacturers:
 - 1) HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - 2) Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by a single manufacturer.
 - 4. Inserts and Clamps:
 - a. Manufacturers:
 - 1) HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - 2) Source Limitations: Furnish supports, associated fittings, accessories, and hardware produced by a single manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- C. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- D. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

- E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- F. Provide thermal insulated pipe supports complete with hangers and accessories. Install thermal insulated pipe supports during the installation of the piping system.
- G. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Preset Concrete Inserts: Use manufacturer-provided closure strips to inhibit concrete seepage during concrete pour.
- I. Secure fasteners according to manufacturer's recommended torque settings.
- J. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

- A. Inspect support and attachment components for damage and defects.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 22 0553**IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Pipe markers.

1.02 REFERENCE STANDARDS

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2015.

1.03 SUBMITTALS

- A. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.

PART 2 PRODUCTS**2.01 PLUMBING COMPONENT IDENTIFICATION GUIDELINE**

- A. Pipe Markers: 3/4 inch (20 mm) diameter and higher.

2.02 IDENTIFICATION APPLICATIONS

- A. Piping: Pipe markers.

2.03 PIPE MARKERS

- A. Manufacturers:
 - 1. Brady Corporation: www.bradycorp.com/#sle.
 - 2. Brimar Industries, Inc: www.pipemarker.com/#sle.
 - 3. Craftmark Pipe Markers: www.craftmarkid.com/#sle.
 - 4. Kolbi Pipe Marker Co: www.kolbipipemarkers.com/#sle.
 - 5. Seton Identification Products: www.seton.com/#sle.
- B. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- C. Color code as follows:
 - 1. Potable, Cooling, Boiler, Feed, Other Water: Green with white letters.

PART 3 EXECUTION**3.01 PREPARATION**

- A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION

- A. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

END OF SECTION

SECTION 22 0719
PLUMBING PIPING INSULATION

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Flexible elastomeric cellular insulation.
- B. Piping insulation.
- C. Jacketing and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.

1.03 REFERENCE STANDARDS

- A. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019.
- B. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2020.
- C. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2019.
- D. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2018).
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- G. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.05 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum three years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.07 FIELD CONDITIONS

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS**2.01 REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER

- A. Manufacturers:
 - 1. CertainTeed Corporation: www.certainteed.com/#sle.
 - 2. Johns Manville Corporation: www.jm.com/#sle.
 - 3. Knauf Insulation; Earthwool 1000 Degree Pipe Insulation: www.knaufinsulation.com/#sle.
 - 4. Owens Corning Corporation; Fiberglas Pipe Insulation ASJ: www.ocbuildingspec.com/#sle.

5. Owens Corning Corporation; VaporWick Pipe Insulation: www.ocbuildingspec.com/#sle.
- B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible, with wicking material to transport condensed water to the outside of the system for evaporation to the atmosphere.
 1. K (Ksi) Value: ASTM C177, 0.23 at 75 degrees F (0.034 at 24 degrees C).
 2. Maximum Service Temperature: 220 degrees F (104 degrees C).
 3. Maximum Moisture Absorption: 0.2 percent by volume.
- C. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches (0.029 ng/Pa s m).
- D. Tie Wire: 0.048 inch (1.22 mm) stainless steel with twisted ends on maximum 12 inch (300 mm) centers.
- E. Vapor Barrier Lap Adhesive: Compatible with insulation.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

- A. Manufacturers:
 1. Aeroflex USA; AEROFLEX Self-Seal: www.aeroflexusa.com/#sle.
 2. Armacell LLC; AP Armaflex: www.armacell.us/#sle.
 3. K-Flex USA LLC; Insul-Tube: www.kflexusa.com/#sle.
- B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
 1. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
 2. Maximum Service Temperature: 220 degrees F (104 degrees C).
 3. Connection: Waterproof vapor barrier adhesive.
- C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

2.04 JACKETING AND ACCESSORIES

- A. ABS Plastic Jacket:
 1. Manufacturers:
 2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
 - a. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
 - b. Maximum Service Temperature: 180 degrees F (82 degrees C).
 - c. Moisture Vapor Permeability: 0.012 perm inch (0.018 ng/(Pa s m)), when tested in accordance with ASTM E96/E96M.
 - d. Thickness: 30 mil, 0.03 inch (0.75 mm).
 - e. Connections: Brush on welding adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Exposed Piping: Locate insulation and cover seams in least visible locations.
- C. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- D. Glass fiber insulated pipes conveying fluids below ambient temperature:
 1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
 2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.

- E. For hot piping conveying fluids 140 degrees F (60 degrees C) or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
- F. Glass fiber insulated pipes conveying fluids above ambient temperature:
 - 1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
 - 2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
- G. Inserts and Shields:
 - 1. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
 - 2. Insert Location: Between support shield and piping and under the finish jacket.
 - 3. Insert Configuration: Minimum 6 inches (150 mm) long, of same thickness and contour as adjoining insulation; may be factory fabricated.
- H. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, refer to Section 07 8400.

3.03 SCHEDULES

- A. Domestic Hot Water Supply:
 - 1. Glass Fiber Insulation:
 - a. Pipe Size Range: all inch.
 - b. Thickness: 1 inch.
- B. Domestic Hot Water Recirculation:
 - 1. Glass Fiber Insulation:
 - a. Pipe Size Range: All sizes.
 - b. Thickness: 1 inch.
- C. Domestic Cold Water:
 - 1. Glass Fiber Insulation:
 - a. Pipe Size Range: All sizes.
 - b. Thickness: 1 inch.

END OF SECTION

SECTION 22 1005
PLUMBING PIPING

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Sanitary waste piping, buried within 5 feet (1500 mm) of building.
- B. Domestic water piping, buried within 5 feet (1500 mm) of building.
- C. Pipe, pipe fittings, specialties, and connections for piping systems.
 - 1. Sanitary sewer.
 - 2. Domestic water.
 - 3. Flanges, unions, and couplings.
 - 4. Pipe hangers and supports.

1.02 REFERENCE STANDARDS

- A. ASME B31.9 - Building Services Piping; 2017.
- B. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators - Welding Brazing and Fusing Qualifications; 2019.
- C. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2020.
- D. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2016.
- E. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2016.
- F. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2020a.
- G. ASTM D2239 - Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Inside Diameter; 2012a.
- H. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2012 (Reapproved 2018).
- I. ASTM D2609 - Standard Specification for Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe; 2015.
- J. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2014.
- K. ASTM D2855 - Standard Practice for the Two-Step (Primer & Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2015.
- L. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2016.
- M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- N. ASTM F876 - Standard Specification for Crosslinked Polyethylene (PEX) Tubing; 2019a.
- O. ASTM F1960 - Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing; 2019a.
- P. AWWA C651 - Disinfecting Water Mains; 2014.
- Q. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.
- R. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.

- S. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- T. NSF 372 - Drinking Water System Components - Lead Content; 2016.
- U. PPI TR-4 - PPI Listing of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure Design Basis (PDB), and Minimum Required Strength (MRS) Ratings For Thermoplastic Piping Materials or Pipe; 2017.
- V. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with applicable codes.
- B. Valves: Manufacturer's name and pressure rating marked on valve body.
- C. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.
- D. Welder Qualifications: Certified in accordance with ASME BPVC-IX.
- E. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.06 FIELD CONDITIONS

- A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.
- B. Plenum-Installed Acid Waste Piping: Flame-spread index equal or below 25 and smoke-spread index equal or below 50 according to ASTM E84 or UL 723 tests.

2.02 SANITARY WASTE PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING

- A. Cast Iron Pipe: ASTM A74 service weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.
- B. PVC Pipe: ASTM D2665 or ASTM D3034.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 SANITARY SEWER PIPING, ABOVE GRADE

- A. Cast Iron Pipe: CISPI 301, hubless, service weight.
 - 1. Fittings: Cast iron.
 - 2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

- B. Copper Tube: ASTM B306, DWV.
 - 1. Fittings: ASME B16.29, wrought copper, or ASME B16.32, solvent.
 - 2. Joints: ASTM B32, alloy Sn50 solder.
- C. PVC Pipe: ASTM D2665.
 - 1. Fittings: PVC.
 - 2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.04 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING

- A. PE Pipe: ASTM D2239.
 - 1. Fittings: ASTM D2609, PE.
 - 2. Joints: Mechanical with stainless steel clamp.
- B. Cross-Linked Polyethylene (PEX) Pipe: ASTM F876 or ASTM F877.
 - 1. PPI TR-4 Pressure Design Basis:
 - a. 160 psig (1102 kPa) at maximum 73 degrees F (23 degrees C).
 - 2. Fittings: Brass and engineered polymer (EP) ASTM F1960.
 - 3. Joints: Mechanical compression fittings.

2.05 DOMESTIC WATER PIPING, ABOVE GRADE

- A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).
 - 1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
 - 2. Joints: ASTM B32, alloy Sn95 solder.
- B. CPVC Pipe: ASTM D2846/D2846M, ASTM F441/F441M, or ASTM F442/F442M.
 - 1. Fittings: CPVC; ASTM D2846/D2846M, ASTM F437, ASTM F438, or ASTM F439.
 - 2. Joints: ASTM D2846/D2846M, solvent weld with ASTM F493 solvent cement.
 - 3. Design basis for pipe and fittings: Flowguard Gold.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt, on inside and outside, before assembly.
- C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
- D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
- E. Group piping whenever practical at common elevations.
- F. Provide access where valves and fittings are not exposed.
- G. Provide support for utility meters in accordance with requirements of utility companies.
- H. Install water piping to ASME B31.9.
- I. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
- J. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
- K. Sleeve pipes passing through partitions, walls, and floors.
- L. Inserts:

1. Provide inserts for placement in concrete formwork.
 2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
- M. Pipe Hangers and Supports:
1. Install in accordance with ASME B31.9.
 2. Support horizontal piping as indicated.
 3. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.
 4. Place hangers within 12 inches (300 mm) of each horizontal elbow.
 5. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
 6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
 7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
 8. Provide copper plated hangers and supports for copper piping.
 9. Support cast iron drainage piping at every joint.

3.04 APPLICATION

- A. Use grooved mechanical couplings and fasteners only in accessible locations.
- B. Install unions downstream of valves and at equipment or apparatus connections.
- C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- D. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

3.05 TOLERANCES

- A. Drainage Piping: Establish invert elevations within 1/2 inch (10 mm) vertically of location indicated and slope to drain at minimum of 1/4 inch per foot (1:50) slope.
- B. Water Piping: Slope at minimum of 1/8 inch per foot (1:0) and arrange to drain at low points.

3.06 FIELD TESTS AND INSPECTIONS

- A. Verify and inspect systems according to requirements by the Authority Having Jurisdiction. In the absence of specific test and inspection procedures proceed as indicated below.
- B. Domestic Water Systems:
 1. Perform hydrostatic testing for leakage prior to system disinfection.
 2. Test Preparation: Close each fixture valve or disconnect and cap each connected fixture.
 3. General:
 - a. Fill the system with water and raise static head to 10 psi (345 kPa) above service pressure. Minimum static head of 50 to 150 psi (345 to 1,034 kPa). As an exception, certain codes allow a maximum static pressure of 80 psi (551.6 kPa).
- C. Test Results: Document and certify successful results, otherwise repair, document, and retest.

3.07 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Disinfect water distribution system.
- B. Prior to starting work, verify system is complete, flushed, and clean.
- C. Ensure acidity (pH) of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
- D. Inject disinfectant, free chlorine in liquid, powder, tablet, or gas form throughout system to obtain 50 to 80 mg/L residual.
- E. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
- F. Maintain disinfectant in system for 24 hours.

- G. If final disinfectant residual tests less than 25 mg/L, repeat treatment.
- H. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.
- I. Take samples no sooner than 24 hours after flushing, from 10 percent of outlets and from water entry, and analyze in accordance with AWWA C651.

3.08 SERVICE CONNECTIONS

- A. Provide new sanitary sewer services. Before commencing work, check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
- B. Provide new water service complete with approved double check backflow preventer and water meter with by-pass valves, pressure reducing valve, and sand strainer.
 - 1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Calk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.
 - 2. Provide 18 gauge, 0.0478-inch (1.21 mm) galvanized sheet metal sleeve around service main to 6 inch (150 mm) above floor and 6 feet (1800 mm) minimum below grade. Size for minimum of 2 inches (50 mm) of loose batt insulation stuffing.

3.09 SCHEDULES

- A. Pipe Hanger Spacing:
 - 1. Metal Piping:
 - a. Pipe Size: 1/2 inches (15 mm) to 1-1/4 inches (32 mm):
 - 1) Maximum Hanger Spacing: 6.5 ft (2 m).
 - 2) Hanger Rod Diameter: 3/8 inches (9 mm).
 - 2. Plastic Piping:
 - a. All Sizes:
 - 1) Maximum Hanger Spacing: 6 ft (1.8 m).
 - 2) Hanger Rod Diameter: 3/8 inch (9 mm).

END OF SECTION

SECTION 22 1006
PLUMBING PIPING SPECIALTIES

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Drains.
- B. Cleanouts.
- C. Double check valve assemblies.
- D. Trap-seal primers.

1.02 REFERENCE STANDARDS

- A. ASME A112.6.3 - Floor and Trench Drains; 2019.
- B. ASSE 1012 - Performance Requirements for Backflow Preventers with an Intermediate Atmospheric Vent; 2009.
- C. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- D. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with not less than three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept specialties on site in original factory packaging. Inspect for damage.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS****2.02 DRAINS**

- A. Manufacturers:
 - 1. Watts: www.watts.com
 - 2. Zurn Industries, LLC: www.zurn.com/#sle.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Floor Drain (FD-1):
 - 1. ASME A112.6.3; lacquered cast iron or stainless steel, two piece body with double drainage flange, weep holes, reversible clamping collar, and round, adjustable nickel-bronze strainer.

2.03 CLEANOUTS

- A. Manufacturers:
 - 1. Jay R. Smith Manufacturing Company: www.jrsmith.com/#sle.
 - 2. Watts: www.watts.com
 - 3. MIFAB, Inc: www.mifab.com/#sle.
 - 4. Zurn Industries, LLC: www.zurn.com/#sle.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Cleanouts at Interior Finished Floor Areas (CO-1):
 - 1. Lacquered cast iron body with anchor flange, reversible clamping collar, threaded top assembly, and round gasketed scored cover in service areas and round gasketed depressed cover to accept floor finish in finished floor areas.

2.04 DOUBLE CHECK-VALVE ASSEMBLIES

- A. Manufacturers:
 - 1. Apollo Valves: www.apollovalves.com/#sle.
 - 2. Watts Regulator Company, a part of Watts Water Technologies: www.wattsregulator.com/#sle.
 - 3. Zurn Industries, LLC; 350AST: www.zurn.com/#sle.
- B. Double Check Valve Assembly (DCV-1):
 - 1. ASSE 1012; cast bronze body with corrosion resistant internal parts and stainless steel springs; two independently operating check valves with intermediate atmospheric vent.
 - 2. Size: 3/4 to 2 inch, NPS (20 to 50 mm, DN) assembly with threaded full port ball valves.
 - 3. Maximum Working Parameters: 175 psi (1,207 kPa) at 180 degrees F (82.2 degrees C).
 - 4. Accessories: Provide lead-free Y-strainer and pit-mounted protective enclosure.

2.05 TRAP-SEAL PRIMERS

- A. Description: (TP-1): Pressure drop activated trap primer.
 - 1. Construction: C693 lead-free brass body; EPDM O-rings; Dow #7 Silicone; #60 stainless steel mesh; stainless steel adjustment screw.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- C. Install floor cleanouts at elevation to accommodate finished floor.

END OF SECTION

SECTION 22 3000
PLUMBING EQUIPMENT

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Residential electric water heaters.
- B. Diaphragm-type compression tanks.
- C. In-line circulator pumps.

1.02 REFERENCE STANDARDS

- A. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels; 2023.
- C. UL 174 - Standard for Household Electric Storage Tank Water Heaters; Current Edition, Including All Revisions.
- D. UL 1995 - Heating and Cooling Equipment; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittals procedures.
- B. Product Data:
 - 1. Provide dimension drawings of water heaters indicating components and connections to other equipment and piping.
 - 2. Provide electrical characteristics and connection requirements.
- C. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS**2.01 WATER HEATERS**

- A. Residential Electric Water Heaters: (DWH-1)
 - 1. Type: Automatic, electric, vertical storage.
 - 2. Minimum Efficiency Required: ASHRAE Std 90.1 I-P.
 - 3. Electrical Characteristics:
 - 4. Tank: Glass lined welded steel, thermally insulated with one inch (25 mm) thick glass fiber; encased in corrosion-resistant steel jacket; baked-on enamel finish.
 - 5. Controls: Automatic water thermostat with externally adjustable temperature range from 120 to 170 degrees F (49 to 77 degrees C), flanged or screw-in nichrome elements, enclosed controls and electrical junction box and operating light. Wire double element units so elements do not operate simultaneously.
 - 6. Accessories:
 - a. Water Connections: Brass.
 - b. Dip Tube: Brass.
 - c. Drain valve.

- d. Anode: Magnesium.
- e. Temperature and Pressure Relief Valve: ASME labeled.

2.02 DIAPHRAGM-TYPE COMPRESSION TANKS

- A. Construction: Welded steel, tested and stamped in accordance with ASME BPVC-VIII-1; supplied with National Board Form U-1, rated for working pressure of 125 psig (860 kPa), with flexible EPDM diaphragm sealed into tank, and steel legs or saddles.

2.03 IN-LINE CIRCULATOR PUMPS

- A. Casing: Bronze, rated for 125 psig (860 kPa) working pressure, with stainless steel rotor assembly.
- B. Impeller: Bronze.
- C. Shaft: Alloy steel with integral thrust collar and two oil lubricated bronze sleeve bearings.
- D. Seal: Carbon rotating against a stationary ceramic seat.
- E. Drive: Flexible coupling.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install plumbing equipment in accordance with manufacturer's instructions, as required by code, and complying with conditions required for applicable certifications.
- B. Electrical Work: Provide manual control and protective devices with associated wiring to interconnect related interfaced devices required for specified operation.
- C. Coordinate system, equipment, and piping work with applicable electrical, fuel, gas, vent, drain, and waste support interconnections as included or provided by other trades.
- D. Domestic Water Storage Tanks:
 - 1. Provide steel pipe support, independent of building structural framing members.
 - 2. Clean and flush prior to delivery to site. Seal until pipe connections are made.
- E. Pumps:
 - 1. Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.

3.02 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.

END OF SECTION

**SECTION 22 4000
PLUMBING FIXTURES**

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Water closets
- B. Tank type water closets.
- C. Lavatories
- D. Mop sinks.

1.02 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASHRAE Std 18 - Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration; 2013.
- C. ASME A112.6.1M - Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).
- D. ASME A112.18.1 - Plumbing Supply Fittings; 2018, with Errata.
- E. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2018.
- F. NSF 61 - Drinking Water System Components - Health Effects; 2019.
- G. NSF 372 - Drinking Water System Components - Lead Content; 2016.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept fixtures on site in factory packaging. Inspect for damage.
- B. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty for electric water cooler.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Potable Water Systems: Provide plumbing fittings and faucets that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 TANK TYPE WATER CLOSETS

- A. Floor-Mounted Bowl:(WC-1)
 - 1. ASME A112.19.2; siphon jet, vitreous china, 16.5 inches (420 mm) high, close-coupled closet combination with elongated rim, insulated vitreous china closet tank with fittings and lever flushing valve, bolt caps, vandalproof cover locking device.
 - 2. Water Consumption: 1.28 gal (4.8 L) per flush, maximum.
 - 3. Tank Height 30"

4. Trapway Outlet: 4 inch (100 mm, DN).
- B. Toilet Seats:
 1. Plastic: Solid, white, elongated, closed front, slow-closing self sustaining hinged seat cover,, and brass bolts with covers.

2.03 LAVATORIES

- A. Manufacturers:
 1. American Standard, Inc: www.americanstandard-us.com/#sle.
 2. Kohler Company: www.kohler.com/#sle.
 3. Zurn Industries, LLC: www.zurn.com/#sle.
- B. Wall-Hung Basin:
 1. Vitreous China, Grade A: ASME A112.19.2; white, rectangular commercial-grade sink with predrilled holes, rear-center drain, front overflow, and hanger. Size 21-1/4" x 18-1/4" with 4-inch (100 mm) centerset spacing.
 2. Carrier:
 - a. ASME A112.6.1M; cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded studs for fixture hanger, bearing plate and studs.
 - b. Manufacturers:
 - 1) Jay R. Smith MFG. Co: www.jrsmith.com/#sle.
 - 2) JOSAM Company: www.josam.com/#sle.
 - 3) Zurn Industries, LLC; Z1231: www.zurn.com/#sle.
 - 4) Substitutions: See Section 01 6000 - Product Requirements.
- C. Supply Faucet: ASME A112.18.1; chrome plated combination supply fitting with pop-up waste, water economy aerator with maximum flow of 1.5 gpm, single lever handle. Factory integral scald protection and check valve
- D. Provide lavatory with combination stop and strainer.
- E. Accessories:
 1. Chrome-plated 17 gauge, 0.0538 inch (1.37 mm) brass P-trap with clean-out plug and arm with escutcheon.
 2. Wheel handle stops.
 3. Flexible supplies.

2.04 MOP SINKS

- A. Bowl: 24 by 24 by 10 inches high, white molded stone, floor mounted, with 1-inch wide shoulders, vinyl bumper guard, stainless steel strainer.
- B. Trim: ASME A112.18.1 exposed wall type supply with cross handles, spout wall brace, vacuum breaker, hose end spout, strainers, eccentric adjustable inlets, integral screwdriver stops with covering caps and adjustable threaded wall flanges.
- C. Accessories:
 1. 5 feet (1.5 m) of 1/2 inch (13 mm) diameter plain end reinforced plastic hose.
 2. Hose clamp hanger.
 3. Mop hanger.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that walls and floor finishes are prepared and ready for installation of fixtures.
- B. Verify that electric power is available and of the correct characteristics.
- C. Confirm that millwork is constructed with adequate provision for the installation of counter top lavatories and sinks.

3.02 PREPARATION

- A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.03 INSTALLATION

- A. Install each fixture with trap, easily removable for servicing and cleaning.
- B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
- C. Install components level and plumb.
- D. Install and secure fixtures in place with wall supports and bolts.
- E. Solidly attach water closets to floor with lag screws. Lead flashing is not intended to hold fixture in place.

3.04 INTERFACE WITH WORK OF OTHER SECTIONS

- A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.05 ADJUSTING

- A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.06 CLEANING

- A. Clean plumbing fixtures and equipment.

3.07 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.
- B. Do not permit use of fixtures by construction personnel.
- C. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 23 0513**COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. General construction and requirements.
- B. Applications.
- C. Single phase electric motors.

1.02 REFERENCE STANDARDS

- A. NEMA MG 1 - Motors and Generators; 2018.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.

1.04 QUALITY ASSURANCE

- A. Comply with NFPA 70.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS**2.01 GENERAL CONSTRUCTION AND REQUIREMENTS**

- A. Construction:
 - 1. Open drip-proof type except where specifically noted otherwise.
 - 2. Design for continuous operation in 104 degrees F (40 degrees C) environment.
 - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- B. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- C. Wiring Terminations:
 - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.02 APPLICATIONS**2.03 SINGLE PHASE POWER - SPLIT PHASE MOTORS**

- A. Starting Torque: Less than 150 percent of full load torque.
- B. Starting Current: Up to seven times full load current.
- C. Breakdown Torque: Approximately 200 percent of full load torque.
- D. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve or ball bearings.

- E. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

2.04 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

- A. Starting Torque: Exceeding one fourth of full load torque.
- B. Starting Current: Up to six times full load current.
- C. Multiple Speed: Through tapped windings.
- D. Open Drip-proof or Enclosed Air Over Enclosure: Class A (50 degrees C temperature rise) insulation, minimum 1.0 Service Factor, prelubricated sleeve or ball bearings, automatic reset overload protector.

2.05 SINGLE PHASE POWER - CAPACITOR START MOTORS

- A. Starting Torque: Three times full load torque.
- B. Starting Current: Less than five times full load current.
- C. Pull-up Torque: Up to 350 percent of full load torque.
- D. Breakdown Torque: Approximately 250 percent of full load torque.
- E. Motors: Capacitor in series with starting winding; provide capacitor-start/capacitor-run motors with two capacitors in parallel with run capacitor remaining in circuit at operating speeds.
- F. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve bearings.
- G. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- C. Check line voltage and phase and ensure agreement with nameplate.

END OF SECTION

SECTION 23 0593**TESTING, ADJUSTING, AND BALANCING FOR HVAC****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Testing, adjustment, and balancing of air systems.

1.02 REFERENCE STANDARDS

- A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.
- B. ASHRAE Std 110 - Methods of Testing Performance of Laboratory Fume Hoods; 2016, with Errata.
- C. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008, with Errata (2019).
- D. NEBB (TAB) - Procedural Standard for Testing Adjusting and Balancing of Environmental Systems; 2019.
- E. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2023.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
 - 1. Include at least the following in the plan:
 - a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
 - b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
 - c. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
 - d. Final test report forms to be used.
 - e. Procedures for formal deficiency reports, including scope, frequency and distribution.
- C. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
 - 1. Revise TAB plan to reflect actual procedures and submit as part of final report.
 - 2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
 - 3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
 - 4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
 - 5. Units of Measure: Report data in both I-P (inch-pound) and SI (metric) units.

PART 2 PRODUCTS - NOT USED**PART 3 EXECUTION****3.01 GENERAL REQUIREMENTS**

- A. Perform total system balance in accordance with one of the following:
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
 - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.

3.02 EXAMINATION

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
 - 1. Systems are started and operating in a safe and normal condition.
 - 2. Temperature control systems are installed complete and operable.
 - 3. Proper thermal overload protection is in place for electrical equipment.
 - 4. Duct systems are clean of debris.
 - 5. Fans are rotating correctly.
 - 6. Air outlets are installed and connected.
- B. Beginning of work means acceptance of existing conditions.

3.03 PREPARATION

- A. Hold a pre-balancing meeting at least one week prior to starting TAB work.
 - 1. Require attendance by all installers whose work will be tested, adjusted, or balanced.

3.04 ADJUSTMENT TOLERANCES

- A. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.05 RECORDING AND ADJUSTING

- A. Ensure recorded data represents actual measured or observed conditions.
- B. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- C. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- D. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.06 AIR SYSTEM PROCEDURE

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
- B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Measure air quantities at air inlets and outlets.
- D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
- F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

3.07 SCOPE

- A. Test, adjust, and balance the following:
 - 1. Fans.

3.08 MINIMUM DATA TO BE REPORTED

- A. Exhaust Fans:
 - 1. Location.
 - 2. Manufacturer.
 - 3. Model number.
 - 4. Serial number.
 - 5. Air flow, specified and actual.

6. Total static pressure (total external), specified and actual.
7. Fan RPM.

END OF SECTION

SECTION 23 0713
DUCT INSULATION

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Duct insulation.

1.02 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- B. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- E. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.
- F. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.04 QUALITY ASSURANCE

- A. Applicator Qualifications: Company specializing in performing the type of work specified in this section, with minimum 3 years of experience and approved by manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.
- B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.06 FIELD CONDITIONS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS**2.01 REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER, FLEXIBLE

- A. Manufacturer:
 - 1. CertainTeed Corporation: www.certainteed.com/#sle.
 - 2. Johns Manville: www.jm.com/#sle.
 - 3. Knauf Insulation: www.knaufinsulation.com/#sle.
 - 4. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
 - 5. Substitutions: See Section 01 6000 - Product Requirements.
- B. Insulation: ASTM C553; flexible, noncombustible blanket.
 - 1. K (Ksi) value: 0.36 at 75 degrees F (0.052 at 24 degrees C), when tested in accordance with ASTM C518.

2. Maximum Water Vapor Absorption: 5.0 percent by weight.
- C. Vapor Barrier Jacket:
 1. Kraft paper with glass fiber yarn and bonded to aluminized film.
 2. Moisture Vapor Permeability: 0.02 perm inch (0.029 ng/(Pa s m)), when tested in accordance with ASTM E96/E96M.
 3. Secure with pressure-sensitive tape.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Test ductwork for design pressure prior to applying insulation materials.
- B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Insulated Ducts Conveying Air Below Ambient Temperature:
 1. Provide insulation with vapor barrier jackets.
 2. Finish with tape and vapor barrier jacket.
 3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
 4. Insulate entire system, including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
- D. Insulated Ducts Conveying Air Above Ambient Temperature:
 1. Provide with or without standard vapor barrier jacket.
 2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
- E. Slope exterior ductwork to shed water.

3.03 SCHEDULES

- A. Exhaust Ducts Within 10 ft (3 m) of Exterior Openings: 2" THICK

END OF SECTION

SECTION 23 3100
HVAC DUCTS AND CASINGS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Metal ducts.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.
- C. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2024.
- D. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for duct materials.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of documented experience.

1.05 FIELD CONDITIONS

- A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
- B. Maintain temperatures within acceptable range during and after installation of duct sealants.

1.06 WARRANTY

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS**2.01 GENERAL REQUIREMENTS**

- A. Provide UL Class 1 ductwork, fittings, hangers, supports, and appurtenances in accordance with NFPA 90A and SMACNA (DCS) guidelines unless stated otherwise.
- B. Provide metal duct unless otherwise indicated. Fibrous glass duct can be substituted at the Contractor's option.
- C. Acoustical Treatment: Provide sound-absorbing liners and sectional silencers for metal-based ducts in compliance with Section 23 3319.
- D. Duct Shape and Material in accordance with Allowed Static Pressure Range:
- E. Duct Sealing and Leakage in accordance with Static Pressure Class:
 - 1. Duct Pressure Class and Material for Common Mechanical Ventilation Applications:
 - a. Supply Air: 1/2 in-wc (125 Pa) pressure class, galvanized steel.
 - b. General Exhaust Air: 1/2 in-wc (125 Pa) pressure class, galvanized steel.
- F. Duct Fabrication Requirements:
 - 1. Duct and Fitting Fabrication and Support: SMACNA (DCS) including specifics for continuously welded round and oval duct fittings.
 - 2. Use reinforced and sealed sheet-metal materials at recommended gauges for indicated operating pressures or pressure class.
 - 3. Construct tees, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide airfoil turning vanes of perforated metal with glass fiber insulation.

4. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
5. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
6. Provide turning vanes of perforated metal with glass fiber insulation when an acoustical lining is required.
7. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.02 METAL DUCTS

- A. Material Requirements:
 1. Galvanized Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
- B. Round Metal Ducts:
 1. Round Single Wall Duct: Round lock seam duct with galvanized steel outer wall.
 2. Round Connection System: Interlocking duct connection system in accordance with SMACNA (DCS).

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install, support, and seal ducts in accordance with SMACNA (DCS).
- B. Install products following the manufacturer's instructions.
- C. Comply with safety standards NFPA 90A and NFPA 90B.
- D. Duct sizes indicated are precise inside dimensions. For lined ducts, maintain sizes inside lining.
- E. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

END OF SECTION

SECTION 23 3423
HVAC POWER VENTILATORS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Ceiling exhaust fans.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on fans and accessories, including fan curves with specified operating point plotted, power, rpm, sound power levels at rated capacity, and electrical characteristics and connection requirements.

PART 2 PRODUCTS**2.01 CEILING EXHAUST FANS**

- A. Manufacturers:
 - 1. Carnes, a division of Carnes Company Inc: www.carnes.com/#sle.
 - 2. Greenheck Fan Corporation: www.greenheck.com/#sle.
 - 3. PennBarry, Division of Air System Components: www.pennbarry.com/#sle.
 - 4. Twin City Fan & Blower; T: www.tcf.com/#sle.
- B. Centrifugal Fan Unit: Direct driven with galvanized steel housing, resiliently mounted motor, gravity backdraft damper in discharge.
- C. Grille: Molded white plastic.
- D. Sheaves: Cast iron or steel, dynamically balanced, bored to fit shafts and keyed; variable and adjustable pitch motor sheaves selected so required rpm is reached with sheaves set at mid-position; fan shaft with self-aligning pre-lubricated ball bearings.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Hung Ceiling Fans:
 - 1. Install fans with resilient mountings and flexible electrical leads, see Section 23 0548.
 - 2. Install flexible connections between fan and ductwork; see Section 23 3300. Ensure metal bands of connectors are parallel with minimum 1 inch (25 mm) flex between ductwork and fan while running.

END OF SECTION

SECTION 23 8200
CONVECTION HEATING AND COOLING UNITS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Electric wall heaters.

1.02 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.
- C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide typical catalog of information including arrangements.

PART 2 PRODUCTS**2.01 ELECTRIC WALL HEATERS**

- A. Provide products listed, classified, and labeled by Underwriters Laboratories Inc. (UL), Intertek (ETL), or testing firm acceptable to authority having jurisdiction as suitable for purpose indicated.
- B. Heating Element Assembly:
 - 1. Thermal safety cut-out within electric terminal box with automatically reset switch located near electric terminal box.
 - 2. Horizontal Projection Units:
 - a. Steel fins copper brazed to steel sheath and epoxy sealed for moisture resistance.
- C. Housing:
 - 1. Suitable for wall mount using provided hardware appendages.
 - 2. Horizontal Projection Units:
 - a. Construction materials to consist of aluminum frame with high gloss baked enamel finish.
 - b. Provide with factory accessories for wall mounting.
 - c. Provisions for access to internal components for maintenance, adjustments, and repair.
- D. Air Inlets and Outlets:
 - 1. Inlets: Provide stamped louvers or protective grilles with fan blade guard.
 - 2. Outlets: Provide diffuser cones, directional louvers, or radial diffusers.
- E. Fan: Factory balanced, direct drive, axial type with fan guard.
- F. Motor: Totally enclosed, thermally protected, and provided with permanently lubricated bearings. provide thermal overload safety shutdown.
- G. Controls:
 - 1. Factory internal thermostat

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that surfaces are suitable for installation.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Install equipment exposed to finished areas after walls and ceilings are finished and painted.
- C. Do not damage equipment or finishes.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.

3.04 CLEANING

- A. See Section 01 7419 - Construction Waste Management and Disposal for additional requirements.
- B. After construction and painting is completed, clean exposed surfaces of units.
- C. Vacuum clean coils and inside of units.
- D. Touch-up marred or scratched surfaces of factory-finished cabinets using finish materials furnished by the manufacturer.

3.05 PROTECTION

- A. Provide finished cabinet units with protective covers during the balance of construction.

END OF SECTION

SECTION 26 0519**LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Single conductor building wire.
- B. Wiring connectors.
- C. Electrical tape.
- D. Heat shrink tubing.
- E. Wire pulling lubricant.
- F. Cable ties.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2023.
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).
- D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).
- E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2017.
- F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2020.
- G. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- H. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.
- I. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- K. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- L. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- M. UL 267 - Outline of Investigation for Wire-Pulling Compounds; Current Edition, Including All Revisions.
- N. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- O. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
- P. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.
- Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
- B. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

- A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F (-10 degrees C), unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS**2.01 CONDUCTOR AND CABLE APPLICATIONS**

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.
- D. Metal-clad cable is not permitted.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Provide conductors and cables with lead content less than 300 parts per million.
- D. Provide new conductors and cables manufactured not more than one year prior to installation.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

- F. Comply with NEMA WC 70.
- G. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- H. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- I. Conductors for Grounding and Bonding: Also comply with Section 26 0526.
- J. Conductor Material:
 - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
 - 3. Tinned Copper Conductors: Comply with ASTM B33.
- K. Minimum Conductor Size:
 - 1. Branch Circuits: 12 AWG.
 - a. Exceptions:
 - 1) 20 A, 120 V circuits longer than 75 feet (23 m): 10 AWG, for voltage drop.
 - 2) 20 A, 120 V circuits longer than 150 feet (46 m): 8 AWG, for voltage drop.
 - 2. Control Circuits: 14 AWG.
- L. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- M. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - 3. Color Code:
 - a. 240/120 V, 1 Phase, 3 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Neutral/Grounded: White.
 - b. Equipment Ground, All Systems: Green.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Manufacturers:
 - 1. Copper Building Wire:
 - a. Cerro Wire LLC: www.cerrowire.com/#sle.
 - b. General Cable Technologies Corporation: www.generalcable.com/#sle.
 - c. Southwire Company: www.southwire.com/#sle.
- B. Description: Single conductor insulated wire.
- C. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
 - 2. Control Circuits: Stranded.
- D. Insulation Voltage Rating: 600 V.
- E. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
 - a. Size 4 AWG and Larger: Type XHHW-2.
 - b. Installed Underground: Type XHHW-2.
 - c. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 90 degrees C; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

2.04 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Connectors for Grounding and Bonding: Comply with Section 26 0526.
- C. Wiring Connectors for Splices and Taps:
 - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
 - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
- D. Wiring Connectors for Terminations:
 - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
 - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
 - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
 - 4. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.
 - 5. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
 - 6. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.
 - 7. Conductors for Control Circuits: Use crimped terminals for all connections.
- E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
- F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
- G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F (105 degrees C) for standard applications and 302 degrees F (150 degrees C) for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
 - 1. Manufacturers:
 - a. 3M: www.3m.com/#sle.
 - b. Ideal Industries, Inc: www.idealindustries.com/#sle.
 - c. NSI Industries LLC: www.nsiindustries.com/#sle.
- H. Mechanical Connectors: Provide bolted type or set-screw type.
 - 1. Manufacturers:
 - a. Burndy LLC: www.burndy.com/#sle.
 - b. nVent ILSCO: www.ilsco.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
- I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
 - 1. Manufacturers:
 - a. Burndy LLC: www.burndy.com/#sle.
 - b. nVent ILSCO: www.ilsco.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
- J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
 - 1. Manufacturers:
 - a. Burndy LLC: www.burndy.com/#sle.
 - b. IlSCO: www.ilsco.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.

2.05 ACCESSORIES

- A. Electrical Tape:
 - 1. Manufacturers:
 - a. 3M: www.3m.com/#sle.
 - b. Plymouth Rubber Europa: www.plymouthrubber.com/#sle.
 - 2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
 - 3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
 - 4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil (0.76 mm); suitable for continuous temperature environment up to 194 degrees F (90 degrees C) and short-term 266 degrees F (130 degrees C) overload service.
 - 5. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil (3.2 mm); suitable for continuous temperature environment up to 176 degrees F (80 degrees C).
 - 6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil (2.3 mm).
- B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
 - 1. Manufacturers:
 - a. 3M: www.3m.com/#sle.
 - b. Burndy LLC: www.burndy.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
- C. Wire Pulling Lubricant:
 - 1. Manufacturers:
 - a. 3M: www.3m.com/#sle.
 - b. American Polywater Corporation: www.polywater.com/#sle.
 - c. Ideal Industries, Inc: www.idealindustries.com/#sle.
 - 2. Listed and labeled as complying with UL 267.
 - 3. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
 - 4. Suitable for use at installation temperature.
- D. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as indicated.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

- A. Circuiting Requirements:
 - 1. Unless dimensioned, circuit routing indicated is diagrammatic.

2. When circuit destination is indicated without specific routing, determine exact routing required.
 3. Arrange circuiting to minimize splices.
 4. Include circuit lengths required to install connected devices within 10 ft (3.0 m) of location indicated.
 5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
 6. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is not permitted.
 7. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
- C. Perform work in accordance with NECA 1 (general workmanship).
- D. Installation in Raceway:
1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 2. Pull all conductors and cables together into raceway at same time.
 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- E. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- F. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- G. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.
- H. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet (1.5 m) of slack.
- I. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- J. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- K. Make wiring connections using specified wiring connectors.
1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 3. Do not remove conductor strands to facilitate insertion into connector.
 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- L. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.

- a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
- 2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
 - b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
- 3. Wet Locations: Use heat shrink tubing.
- M. Insulate ends of spare conductors using vinyl insulating electrical tape.
- N. Identify conductors and cables in accordance with Section 26 0553.
- O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- P. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
 - 1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.
- C. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 26 0526**GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground bars.
- E. Ground rod electrodes.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
- B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- C. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2022.
- D. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify exact locations of underground metal water service pipe entrances to building.
 - 2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
 - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.
- B. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Installer Qualifications for Signal Reference Grids: Company with minimum five years documented experience with high frequency grounding systems.

- E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- D. Grounding System Resistance:
1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
 2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
- E. Grounding Electrode System:
1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
 - a. Provide continuous grounding electrode conductors without splice or joint.
 - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
 2. Metal Underground Water Pipe(s):
 - a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet (3.0 m) at an accessible location not more than 5 feet (1.5 m) from the point of entrance to the building.
 - b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
 - c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
 3. Metal In-Ground Support Structure:
 - a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.
 4. Concrete-Encased Electrode:
 - a. Provide connection to concrete-encased electrode consisting of not less than 20 feet (6.0 m) of either steel reinforcing bars or bare copper conductor not smaller than 4 AWG embedded within concrete foundation or footing that is in direct contact with earth in accordance with NFPA 70.
 5. Ground Rod Electrode(s):
 - a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
 - b. Space electrodes not less than 10 feet (3.0 m) from each other and any other ground electrode.
 - c. Where location is not indicated, locate electrode(s) at least 5 feet (1.5 m) outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.

6. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
 7. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
 - a. Ground Bar Size: 1/4 by 2 by 12 inches (6 by 50 by 300 mm) unless otherwise indicated or required.
 - b. Where ground bar location is not indicated, locate in accessible location as near as possible to service disconnect enclosure.
 - c. Ground Bar Mounting Height: 18 inches (450 mm) above finished floor unless otherwise indicated.
- F. Bonding and Equipment Grounding:
1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
 4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
 5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
 7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
 - a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
 8. Provide bonding for metal building frame.
 9. Provide bonding for metal siding not effectively bonded through attachment to metal building frame.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:
1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
 2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
 3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

4. Manufacturers - Mechanical and Compression Connectors:
 - a. Burndy LLC: www.burndy.com/#sle.
 - b. nVent ERICO: www.nvent.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 5. Manufacturers - Exothermic Welded Connections:
 - a. Burndy LLC: www.burndy.com/#sle.
 - b. nVent ERICO; Cadweld: www.nvent.com/#sle.
 - c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.
- D. Ground Bars:
1. Description: Copper rectangular ground bars with mounting brackets and insulators.
 2. Size: As indicated.
 3. Holes for Connections: As indicated or as required for connections to be made.
 4. Manufacturers:
 - a. Harger Lightning & Grounding: www.harger.com/#sle.
 - b. nVent ERICO: www.nvent.com/#sle.
 - c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.
- E. Ground Rod Electrodes:
1. Comply with NEMA GR 1.
 2. Material: Copper-bonded (copper-clad) steel.
 3. Size: 3/4 inch (19 mm) diameter by 10 feet (3.0 m) length, unless otherwise indicated.
 4. Manufacturers:
 - a. Galvan Industries, Inc: www.galvanelectrical.com/#sle.
 - b. Harger Lightning & Grounding: www.harger.com/#sle.
 - c. nVent ERICO: www.nvent.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as indicated.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
 1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches (150 mm) below finished grade.
- D. Make grounding and bonding connections using specified connectors.
 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.

- 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section 26 0553.

3.03 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS except Section 4.
- B. Perform inspections and tests listed in NETA ATS, Section 7.13.
- C. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
- D. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION

SECTION 26 0529**HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS****PART 2 PRODUCTS****1.01 SUPPORT AND ATTACHMENT COMPONENTS**

- A. General Requirements:
 - 1. Comply with the following. Where requirements differ, comply with most stringent.
 - a. NFPA 70.
 - b. Requirements of authorities having jurisdiction.
 - 2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
 - 3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
 - 4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for load to be supported with minimum safety factor of _____. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - 6. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
 - a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
 - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.
- D. Metal Channel/Strut Framing Systems:
 - 1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
 - 2. Comply with MFMA-4.
- E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.
- F. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.

END OF SECTION

SECTION 26 0533.13

CONDUIT FOR ELECTRICAL SYSTEMS

PART 2 PRODUCTS

1.01 CONDUIT - GENERAL REQUIREMENTS

- A. Comply with NFPA 70.
- B. Provide conduit, fittings, supports, and accessories required for complete raceway system.
- C. Provide products listed, classified, and labeled as suitable for purpose intended.
- D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

END OF SECTION

SECTION 26 0533.16
BOXES FOR ELECTRICAL SYSTEMS

PART 2 PRODUCTS**1.01 BOXES**

- A. General Requirements:
 - 1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 - 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 - 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 - 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
 - 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 - 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 - 3. Use suitable concrete type boxes where flush-mounted in concrete.
 - 4. Use suitable masonry type boxes where flush-mounted in masonry walls.
 - 5. Use raised covers suitable for the type of wall construction and device configuration where required.
 - 6. Use shallow boxes where required by the type of wall construction.
 - 7. Do not use "through-wall" boxes designed for access from both sides of wall.
 - 8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 - 9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 - 10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 - 11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
 - 12. Wall Plates: Comply with Section 26 2726.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
 - 1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 - 2. NEMA 250 Environment Type, Unless Otherwise Indicated:
 - 3. Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.

END OF SECTION

SECTION 26 0553**IDENTIFICATION FOR ELECTRICAL SYSTEMS****PART 2 PRODUCTS****1.01 IDENTIFICATION REQUIREMENTS**

- A. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - 2. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70, including but not limited to the following.
 - a. Service equipment.
 - b. Industrial control panels.
 - c. Motor control centers.
 - d. Elevator control panels.
 - e. Industrial machinery.
- B. Identification for Conductors and Cables:
 - 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
 - 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

1.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 - 1. Materials:
- B. Identification Labels:
 - 1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

1.03 WARNING SIGNS AND LABELS

- A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- B. Warning Signs:
 - 1. Materials:
 - 2. Minimum Size: 7 by 10 inches (178 by 254 mm) unless otherwise indicated.
- C. Warning Labels:
 - 1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
 - 2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
 - 3. Minimum Size: 2 by 4 inches (51 mm by 102 mm) unless otherwise indicated.

END OF SECTION

SECTION 26 0923
LIGHTING CONTROL DEVICES

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Occupancy sensors.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- C. Section 26 0529 - Hangers and Supports for Electrical Systems.
- D. Section 26 0533.16 - Boxes for Electrical Systems.
- E. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- F. Section 26 2726 - Wiring Devices: Devices for manual control of lighting, including wall switches.
- G. Section 26 5100 - Interior Lighting.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate placement of lighting control devices with millwork, furniture, equipment and other potential conflicts.
 - 2. Coordinate placement of wall switch occupancy sensors with installed door swings.
 - 3. Coordinate placement of occupancy sensors with millwork, furniture, equipment and other potential obstructions to motion detection coverage.
 - 4. Coordinate lighting control device product selections with luminaire characteristics; see Section 26 5100 and lighting fixture schedule.
 - 5. Notify Architect of conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Include ratings, operating modes or sequence of functions, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
- B. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Operation and Maintenance Data: Include detailed information on device programming and setup.

1.06 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- C. Product Evaluation and Listing Organization Qualifications: Organization engaged in evaluation of products and services, including those recognized by OSHA as Nationally Recognized Testing Laboratories (NRTL), and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Store products in clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. Provide five year manufacturer warranty for occupancy sensors.

PART 2 PRODUCTS**2.01 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS**

- A. Provide products listed, classified, and labeled as suitable for purpose intended.
- B. Unless specifically indicated as excluded, provide components necessary for complete operating system including, but not limited to, conduit, wiring, connectors, hardware, and accessories.

2.02 OCCUPANCY SENSORS

- A. Manufacturers:
 - 1. Acuity Brands, Inc: www.acuitybrands.com/#sle.
 - 2. Hubbell Incorporated: www.hubbell.com/#sle.
 - 3. Legrand North America, Inc: www.legrand.us/#sle.
- B. General Requirements:
 - 1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.
 - 2. Sensor Technology:
 - a. Passive Infrared (PIR) Occupancy Sensors: Designed to detect occupancy by sensing movement of thermal energy between zones.
 - 3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.
 - 4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during adjustable turn-off delay time interval.
 - 5. Passive Infrared Lens Field of View: Field customizable by addition of factory masking material, adjustment of integral blinders, or similar means to block motion detection in selected areas.
 - 6. Turn-Off Delay: Field adjustable, with time delay settings up to 30 minutes.
 - 7. Sensitivity: Field adjustable.
 - 8. Compatibility (Non-Dimming Sensors): Suitable for controlling incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
 - 9. Load Rating for Line Voltage Occupancy Sensors: As required to control load indicated on drawings.
- C. Wall Switch Occupancy Sensors:
 - 1. General Requirements:
 - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode.
 - b. Unless otherwise indicated or required to control load indicated on drawings, provide line voltage units with self-contained relay.

- c. Operation: Field selectable to operate either as occupancy sensor (automatic on/off) or as vacancy sensor (manual-on/automatic off).
 - d. Manual-Off Override Control: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during delayed-off time interval.
 - e. Finish: Color to be selected.
2. Passive Infrared/Ultrasonic Dual Technology Wall Switch Occupancy Sensors: Capable of detecting motion within area of 900 square feet (83.6 sq m).

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
- F. Verify that service voltage and ratings of lighting control devices are appropriate for service voltage and load requirements at location to be installed.
- G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Install lighting control devices in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes as required for installation of lighting control devices; see Section 26 0533.16.
 - 1. Mounting Heights: Unless otherwise indicated, as follows:
 - a. Wall Switch Occupancy Sensors: 48 inches (1.2 m) above finished floor.
 - 2. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
- C. Maintain separation of remote-control, signaling, and power-limited circuits.
 - 1. See manufacturer instructions and Section 26 0519 for control wiring conductors, wiring methods, and identification requirements.
- D. Install lighting control devices in accordance with manufacturer's instructions.
- E. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- F. Install lighting control devices plumb and level, and held securely in place.
- G. Where required and not furnished with lighting control device, provide wall plate; see Section 26 2726.
- H. Provide required supports; see Section 26 0529.
- I. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.

J. Occupancy Sensor Locations:

1. Location Adjustments: Within design intent, reasonably minor adjustments to locations may be made in order to optimize coverage and avoid conflicts or problems affecting coverage.
2. Locate ultrasonic and dual technology passive infrared/ultrasonic occupancy sensors minimum of 4 feet (1.2 m) from air supply ducts or other sources of heavy air flow and as per manufacturer's recommendations, in order to minimize false triggers.

3.04 FIELD QUALITY CONTROL

- A. Inspect each lighting control device for damage and defects.
- B. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area.
- C. Correct wiring deficiencies and replace damaged or defective conductors, cables, and lighting control devices.

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.
- C. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.

3.06 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of lighting control devices to Architect, and correct deficiencies or make adjustments as directed.

END OF SECTION

**SECTION 26 2416
PANELBOARDS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Lighting and appliance panelboards.
- B. Load centers.
- C. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 4300 - Surge Protective Devices.

1.03 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; 2013e, with Amendments (2022).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2015.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- E. NEMA PB 1 - Panelboards; 2011.
- F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 1000 Volts or Less; 2023.
- G. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- K. UL 67 - Panelboards; Current Edition, Including All Revisions.
- L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
- M. UL 869A - Reference Standard for Service Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
 - 4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.

5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. Panelboard Keys: Two of each different key.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Maintain ambient temperature within the following limits during and after installation of panelboards:
 1. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton Corporation: www.eaton.com/#sle.
- B. Schneider Electric: www.se.com/#sle.
- C. Siemens Industry, Inc: www.new.siemens.com/#sle.

2.02 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 1. Altitude: Less than 6,600 feet (2,000 m).
 2. Ambient Temperature:
 - a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).

- C. Short Circuit Current Rating:
 - 1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- D. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
- E. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- F. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- G. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
 - 2. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- H. Conductor Terminations: Suitable for use with the conductors to be installed.
- I. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - a. Indoor Clean, Dry Locations: Type 1.
 - b. Outdoor Locations: Type 3R.
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - b. Provide painted steel boxes for surface-mounted panelboards, finish to match fronts.
 - 3. Fronts:
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
 - c. Finish for Painted Steel Fronts: Manufacturer's standard grey unless otherwise indicated.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- J. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.
- K. Surge Protective Devices: Where factory-installed, internally mounted surge protective devices are provided in accordance with Section 26 4300, list and label panelboards as a complete assembly including surge protective device.

2.03 LIGHTING AND APPLIANCE PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Conductor Terminations:
 - 1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
 - 2. Main and Neutral Lug Type: Mechanical.
- C. Bussing:
 - 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
 - 2. Phase and Neutral Bus Material: Copper.
 - 3. Ground Bus Material: Copper.
- D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.
- E. Enclosures:
 - 1. Provide surface-mounted or flush-mounted enclosures as indicated.

2. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
3. Provide clear plastic circuit directory holder mounted on inside of door.

2.04 LOAD CENTERS

- A. Description: Circuit breaker type load centers listed and labeled as complying with UL 67; ratings, configurations, and features as indicated on the drawings.
- B. Bussing:
 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
 2. Bus Material: Copper.
- C. Circuit Breakers: Thermal magnetic plug-in type.
- D. Enclosures:
 1. Provide surface-mounted enclosures unless otherwise indicated.
 2. Fronts: Provide cover without door to cover access to load terminals, wiring gutters, and other live parts, with exposed access to overcurrent protective device handles.
 3. Provide circuit directory label on inside of door or individual circuit labels adjacent to circuit breakers.

2.05 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 2. Interrupting Capacity:
 - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating not less than the available let thru current at the service
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 3. Conductor Terminations:
 - a. Provide mechanical lugs unless otherwise indicated.
 - b. Lug Material: Copper, suitable for terminating copper conductors only.
 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
 5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
 6. Do not use tandem circuit breakers.
 7. Do not use handle ties in lieu of multi-pole circuit breakers.

2.06 SOURCE QUALITY CONTROL

- A. Factory test panelboards according to NEMA PB 1.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.

- C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.
- D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- E. Provide required support and attachment in accordance with Section 26 0529.
- F. Install panelboards plumb.
- G. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- H. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches (2000 mm) above the floor or working platform.
- I. Provide grounding and bonding in accordance with Section 26 0526.
- J. Install all field-installed branch devices, components, and accessories.
- K. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- L. Provide filler plates to cover unused spaces in panelboards.

3.03 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for all main circuit breakers and circuit breakers larger than _____ amperes. Tests listed as optional are not required.
- C. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
- B. Adjust alignment of panelboard fronts.
- C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

3.05 CLEANING

- A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 2726
WIRING DEVICES

PART 2 PRODUCTS

1.01 WIRING DEVICES - GENERAL REQUIREMENTS

- A. Provide wiring devices suitable for intended use with ratings adequate for load served.

END OF SECTION

SECTION 26 2813**FUSES****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fuses.

1.02 RELATED REQUIREMENTS

- A. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- B. Section 26 2913 - Enclosed Controllers: Fusible switches.

1.03 REFERENCE STANDARDS

- A. NEMA FU 1 - Low Voltage Cartridge Fuses; 2012.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements; Current Edition, Including All Revisions.
- D. UL 248-12 - Low-Voltage Fuses - Part 12: Class R Fuses; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate fuse clips furnished in equipment provided under other sections for compatibility with indicated fuses.
 - a. Fusible Switches for Enclosed Motor Controllers: See Section 26 2913.
 - 2. Coordinate fuse requirements according to manufacturer's recommendations and nameplate data for actual equipment to be installed.
 - 3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard data sheets including voltage and current ratings, interrupting ratings, time-current curves, and current limitation curves.
- B. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Fuses: One set(s) of three for each type and size installed.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Bussmann, a division of Eaton Corporation: www.cooperindustries.com/#sle.
- B. Littelfuse, Inc: www.littelfuse.com/#sle.
- C. Mersen: ep-us.mersen.com/#sle.

2.02 APPLICATIONS

- A. Feeders:
 - 1. Fusible Switches up to 600 Amperes: Class RK1, time-delay.

- B. General Purpose Branch Circuits: Class RK1, time-delay.
- C. Individual Motor Branch Circuits: Class RK1, time-delay.

2.03 FUSES

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.
- C. Provide fuses of the same type, rating, and manufacturer within the same switch.
- D. Comply with UL 248-1.
- E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.
- F. Voltage Rating: Suitable for circuit voltage.
- G. Class R Fuses: Comply with UL 248-12.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that fuse ratings are consistent with circuit voltage and manufacturer's recommendations and nameplate data for equipment.
- B. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Do not install fuses until circuits are ready to be energized.
- B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

END OF SECTION

SECTION 26 2913
ENCLOSED CONTROLLERS

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Enclosed NEMA controllers for low-voltage (600 V and less) applications:
 - 1. Manual motor starters.
- B. Overcurrent protective devices for motor controllers, including overload relays.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 2813 - Fuses: Fuses for fusible switches.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- C. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
- D. NEMA ICS 6 - Industrial Control and Systems: Enclosures; 1993 (Reaffirmed 2016).
- E. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum); 2013.
- F. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 98 - Enclosed and Dead-Front Switches; Current Edition, Including All Revisions.
- I. UL 60947-1 - Low-Voltage Switchgear and Controlgear - Part 1: General Rules; Current Edition, Including All Revisions.
- J. UL 60947-4-1 - Low-Voltage Switchgear and Controlgear - Part 4-1: Contactors and Motor-starters - Electromechanical Contactors and Motor-starters; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances required by NFPA 70.
 - 2. Coordinate the work to provide motor controllers and associated overload relays suitable for use with the actual motors to be installed.
 - 3. Coordinate the work to provide controllers and associated wiring suitable for interface with control devices to be installed.
 - 4. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 5. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
 - 6. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.
- B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- C. Project Record Documents: Record actual installed locations of controllers and final equipment settings.
- D. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.06 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within required service conditions during and after installation.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Eaton Corporation: www.eaton.com/#sle.
- B. Schneider Electric: www.se.com/#sle.
- C. Siemens Industry, Inc: www.new.siemens.com/#sle.

2.02 ENCLOSED CONTROLLERS

- A. Provide enclosed controller assemblies consisting of all required components, control power transformers, instrumentation and control wiring, accessories, etc. as necessary for a complete operating system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Description: Enclosed controllers complying with NEMA ICS 2, and listed and labeled as complying with UL 60947-1 and UL 60947-4-1; ratings, configurations and features as indicated on the drawings.
- D. Service Conditions:
 - 1. Provide controllers and associated components suitable for operation under the following service conditions without derating:
 - a. Altitude:
 - 1) Class 1 Km Equipment (devices utilizing power semiconductors, e.g. variable frequency controllers): Less than 3,300 feet (1,000 m).

- 2) Class 2 Km Equipment (electromagnetic and manual devices): Less than 6,600 feet (2,000 m).
 - b. Ambient Temperature: Between 32 degrees F (0 degrees C) and 104 degrees F (40 degrees C).
- 2. Provide controllers and associated components suitable for operation at indicated ratings under the service conditions at the installed location.
- E. Short Circuit Current Rating:
 - 1. Provide controllers with listed short circuit current rating not less than the available fault current at the installed location.
- F. Conductor Terminations: Suitable for use with the conductors to be installed.
- G. Enclosures:
 - 1. Comply with NEMA ICS 6.
 - 2. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - a. Indoor Clean, Dry Locations: Type 1 or Type 12.
 - b. Outdoor Locations: Type 3R or Type 4.
 - 3. Finish: Manufacturer's standard unless otherwise indicated.
- H. Manual Motor Starters:
 - 1. Description: NEMA ICS 2, Class A manually-operated motor controllers with overload relay(s).
 - 2. Configuration: Non-reversing unless otherwise indicated.
 - 3. Fractional-Horsepower Manual Motor Starters:
 - a. Furnish with toggle operator.
 - b. Overload Relays: Bimetallic or melting alloy thermal type.
 - c. Provide means for locking operator in the OFF position.
 - 4. Integral-Horsepower Manual Motor Starters:
 - a. Furnish with toggle or pushbutton operator.
 - b. Overload Relays: Bimetallic or melting alloy thermal type.
 - c. Provide means for locking operator in the OFF position.

2.03 OVERCURRENT PROTECTIVE DEVICES

- A. Overload Relays:
 - 1. Provide overload relays and, where applicable, associated current elements/heaters, selected according to actual installed motor nameplate data, in accordance with manufacturer's recommendations and NFPA 70; include consideration for motor service factor and ambient temperature correction, where applicable.
 - 2. Inverse-Time Trip Class Rating: Class 20 unless otherwise indicated or required.
 - 3. Trip-free operation.
 - 4. Visible trip indication.
 - 5. Resettable.
 - a. Employ manual reset unless otherwise indicated.
 - b. Do not employ automatic reset with two-wire control.
 - 6. Bimetallic Thermal Overload Relays:
 - a. Interchangeable current elements/heaters.
 - b. Adjustable trip; plus/minus 10 percent of nominal, minimum.
 - c. Trip test function.
 - 7. Melting Alloy Thermal Overload Relays:
 - a. Interchangeable current elements/heaters.
- B. Fusible Disconnect Switches:
 - 1. Description: Quick-make, quick-break, dead-front fusible switch units complying with NEMA KS 1, and listed and labeled as complying with UL 98; ratings, configurations, and features as indicated on the drawings.
 - 2. Fuse Clips: As required to accept indicated fuses.

3. Provide externally operable handle with means for locking in the OFF position. Provide means for locking switch cover in the closed position. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that ratings of enclosed controllers are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed controllers.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install controllers in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required support and attachment in accordance with Section 26 0529.
- E. Install enclosed controllers plumb and level.
- F. Provide grounding and bonding in accordance with Section 26 0526.
- G. Install all field-installed devices, components, and accessories.
- H. Provide fuses complying with Section 26 2813 for fusible switches as indicated.
- I. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- J. Set field-adjustable controllers and associated components according to installed motor requirements, in accordance with manufacturer's recommendations and NFPA 70.
- K. Identify enclosed controllers in accordance with Section 26 0553.

3.03 FIELD QUALITY CONTROL

- A. Inspect and test in accordance with NETA ATS, except Section 4.
- B. Motor Starters: Perform inspections and tests listed in NETA ATS, Section 7.16.1.1. Tests listed as optional are not required.
- C. Fusible Switches: Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.
- D. Correct deficiencies and replace damaged or defective enclosed controllers or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

- A. Clean dirt and debris from controller enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

3.06 CLOSEOUT ACTIVITIES

- A. Demonstration: Demonstrate proper operation of controllers to Owner, and correct deficiencies or make adjustments as directed.

3.07 PROTECTION

- A. Protect installed enclosed controllers from subsequent construction operations.

END OF SECTION

SECTION 26 4300
SURGE PROTECTIVE DEVICES

PART 2 PRODUCTS

1.01 SURGE PROTECTIVE DEVICES - GENERAL REQUIREMENTS

- A. Description: Factory-assembled surge protective devices (SPDs) for 60 Hz service; listed, classified, and labeled as suitable for the purpose intended; system voltage as indicated on the drawings.
- B. Unless otherwise indicated, provide field-installed, externally-mounted or factory-installed, internally-mounted SPDs.
- C. List and label as complying with UL 1449, Type 1 when connected on line side of service disconnect overcurrent device and Type 1 or 2 when connected on load side of service disconnect overcurrent device.
- D. Protected Modes:
- E. UL 1449 Voltage Protection Ratings (VPRs):
- F. UL 1449 Maximum Continuous Operating Voltage (MCOV): Not less than 115% of nominal system voltage.
- G. Enclosure Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:

END OF SECTION

SECTION 26 5100
INTERIOR LIGHTING

PART 2 PRODUCTS

1.01 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

END OF SECTION

SECTION 26 5600
EXTERIOR LIGHTING

PART 2 PRODUCTS

1.01 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

END OF SECTION

SECTION 31 0519
GEOSYNTHETICS FOR EARTHWORK

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Geotextile for separation.

1.02 RELATED REQUIREMENTS

- A. Section 31 2316 - Excavation.
- B. Section 31 2323 - Fill.
- C. Section 33 4100 - Subdrainage

1.03 REFERENCE STANDARDS

- A. AASHTO M 288 - Standard Specification for Geosynthetic Specification for Highway Applications; 2022.
- B. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus; 2021.
- C. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 2022.
- D. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2015 (Reapproved 2023).
- E. ASTM D4595 - Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method; 2017.
- F. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a (Reapproved 2023).
- G. ASTM D4716/D4716M - Standard Test Method for Determining the (In-Plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head; 2022.
- H. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile; 2021a.
- I. ASTM D4833/D4833M - Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products; 2007 (Reapproved 2020).
- J. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).
- K. ASTM D4886 - Standard Test Method for Abrasion Resistance of Geotextiles (Sandpaper/Sliding Block Method); 2018.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's data on each product to be used, including physical properties, seaming materials, and installation instructions.
- C. Manufacturer's Certification: Indicating the proposed geosynthetic function meets design requirements supported by applicable testing results.
- D. Manufacturer's Instruction: Installation

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Identify, store, and handle geosynthetic rolls and samples according to ASTM D4873/D4873M.
- B. Protect materials from sunlight and other ultraviolet light sources during storage.
- C. Handle geosynthetics with care and prevent dragging, dropping, or imbalanced lifting.

1.06 FIELD CONDITIONS

- A. Follow recommendations of geosynthetic manufacturer.

PART 2 PRODUCTS**2.01 GEOTEXTILE**

- A. General:
 - 1. Survivability: Class 1, when tested in accordance with AASHTO M 288.
 - 2. Elongation: 35 percent, minimum, when tested in accordance with ASTM D4632/D4632M.
- B. Geotextile for Separation: Capable of restricting adjacent material mixing.
 - 1. Type: Woven.
 - 2. Seams: Loose laid.
 - a. Overlap: According to manufacturer.
 - 1) 12 inches (300 mm), minimum, in all directions.
 - b. Limit seams perpendicular to the direction of construction.
 - 3. Grab Strength: 300 lb (1.3 kN), minimum, when tested in accordance with ASTM D4632/D4632M.
 - 4. Puncture Strength: 450 lb (2.0 kN), minimum, when tested in accordance with ASTM D4833/D4833M.
 - 5. Trapezoid Tear Strength: 100 lb (0.4 kN), minimum, when tested in accordance with ASTM D4533/D4533M.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify the receiving surface is smooth, without ruts or protrusions, and grades are according to design drawings.
- B. Verify the geosynthetic is free of defects or flaws that may degrade physical performance.

3.02 PREPARATION

- A. Remove vegetation, boulders, and rocks larger than 3/4 inch (20 mm) in size and other sharp objects.
- B. Remove unsuitable materials in accordance with Section 31 2316.
- C. Fill in holes, including stake holes, backfill, and fill in accordance with Section 31 2323.

3.03 INSTALLATION

- A. General:
 - 1. Prevent surface drainage from eroding under geosynthetic. Repair undermined areas prior to backfill.
 - 2. Position geosynthetic smooth and wrinkle free on prepared surface; unroll or unfold carefully, avoiding stretching.
- B. Separation:
 - 1. Install geotextile according to manufacturer's recommendations.
 - 2. Lay sheets in the direction of construction.
 - 3. Repairs: Remove damaged portion of geotextile and seam an additional layer to cover the affected area in all directions.

3.04 BACKFILL

- A. Backfill in a manner to prevent damage to geosynthetic. Repair geosynthetic damaged during backfill operations.

3.05 FIELD QUALITY CONTROL

- A. Inspect completed liner for pinholes, punctures, and tears; inspect seams and joints for unbonded areas. Repair any defects or damages found.

3.06 PROTECTION

- A. Do not exceed geosynthetic manufacturer's recommended exposure to UV radiation.
- B. Prevent surface water runoff from contaminating geosynthetic.

- C. Do not use pins or staples where risk of damaging underlying geosynthetic layer is present.
- D. Erect barricades to prevent traffic over geosynthetic before it is filled.

END OF SECTION

**SECTION 31 2316
EXCAVATION****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Excavating for building volume below grade, footings, slabs-on-grade, site structures, utilities within the building, and utilities outside the building..
- B. Trenching for utilities outside the building to utility main connections.
- C. Temporary excavation support and protection systems.

1.02 RELATED REQUIREMENTS

- A. Document R.W. Gillespie & Associates, Inc. Proposed T Hangar: Geotechnical report; bore hole locations and findings of subsurface materials.
- B. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- C. Section 31 2323 - Fill: Fill materials, backfilling, and compacting.
- D. Section 33 4100 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Excavation related to the building and site utilities is not paid for separately but shall be considered incidental to the building and utility requiring the excavation. Refer to FAA Item P-152 for excavation related to site work not related to the building and site utilities.

1.04 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Bedding and Fill to Correct Over-Excavation:
 - 1. See Section 31 2323 for bedding and corrective fill materials at general excavations.
 - 2. See Section 31 2316.13 for bedding and corrective fill materials at utility trenches.
- B. Underground Warning Tapes:
 - 1. See Section 31 2316.13 for underground trace wire at underground water and sewer.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that survey bench mark and intended elevations for the work are as indicated.
- B. Survey existing adjacent structures and improvements and establish exact elevations at fixed points to act as benchmarks.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.
- C. Protect bench marks, survey control points, existing structures, fences, and paving from excavating equipment and vehicular traffic.
- D. Protect other features to remain.

- E. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

3.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

- A. Excavation Safety: Comply with OSHA92s Excavation Standard, 29 CFR 1926, Subpart P.

3.04 EXCAVATING

- A. Excavate to accommodate new structures and construction operations.
 - 1. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
- B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.05 SUBGRADE PREPARATION

- A. See Section 31 2323 for subgrade preparation at general excavations.
- B. See Section 31 2316.13 for subgrade preparation at utility trenches.

3.06 FILLING AND BACKFILLING

- A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.
- B. See Section 31 2323 for fill, backfill, and compaction requirements at general excavations.
- C. See Section 31 2316.13 for fill, backfill, and compaction requirements at utility trenches.

3.07 REPAIR

- A. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.

3.08 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Provide for visual inspection of load-bearing excavated surfaces by Architect before placement of foundations.

3.09 CLEANING

- A. Remove excavated material that is unsuitable for re-use from site.
- B. Remove excess excavated material from site.

3.10 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

SECTION 31 2316.13**TRENCHING****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Document R.W. Gillespie & Associates, Inc. Proposed T Hangar: Geotechnical report; bore hole locations and findings of subsurface materials.
- B. Section 31 0519 - Geosynthetics for Earthwork.
- C. Section 31 2316 - Excavation: Building and foundation excavating.
- D. Section 31 2316.26 - Rock Removal: Removal of rock during excavating.
- E. Section 31 2323 - Fill: Backfilling at building and foundations.
- F. Section 33 4100 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Trenching incidental to other work items.

1.04 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.

1.05 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).
- B. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop; 2022, with Errata .
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012 (Reapproved 2021).
- E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).
- F. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
- G. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Samples: 10 pound (4.5 kg) sample of each type of fill; submit in air-tight containers to testing laboratory.
- C. Materials Sources: Submit name of imported materials source.
- D. Compaction Density Test Reports.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where indicated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS**2.01 FILL MATERIALS**

- A. General Fill - Fill Type Utility Cover Material: Subsoil excavated on-site.
 - 1. Graded.
 - 2. Free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50 mm), and debris.
- B. Bedding - MaineDOT Standard Specifications (March 2020) Material Item 703.22 Type C Underdrain Backfill Material.
- C. French Drain - MaineDOT Standard Specifications (March 2020) Material Item 703.24 Stone for French Drains.

2.02 ACCESSORIES

- A. Trace Wire: Underground tape with detectable wire. Color: blue for water. Green for sewer.

2.03 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, testing of samples for compliance will be provided before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.
- C. Protect bench marks, survey control points, existing structures, fences, and paving from excavating equipment and vehicular traffic.
- D. Protect other features to remain.
- E. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Architect.

3.03 TRENCHING

- A. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Slope banks of excavations deeper than 4 feet (1.2 meters) to angle of repose or less until shored.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Cut trenches wide enough to allow inspection of installed utilities.
- E. Hand trim excavations. Remove loose matter.
- F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
- G. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard (0.25 cu m) measured by volume. See Section 31 2316.26 for removal of larger material.
- H. Remove excavated material that is unsuitable for re-use from site.
- I. Remove excess excavated material from site.

- J. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- K. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot (305 mm) into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Architect.

3.04 PREPARATION FOR UTILITY PLACEMENT

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

3.05 BACKFILLING

- A. Backfill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
- C. Employ a placement method that does not disturb or damage other work.
- D. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches (150 mm) compacted depth.
- G. Slope grade away from building minimum 2 inches in 10 feet (50 mm in 3 m), unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- H. Correct areas that are over-excavated.
 - 1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- I. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.
- J. Reshape and re-compact fills subjected to vehicular traffic.

3.06 BEDDING AND FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Utility Piping, Conduits, Duct Bank, and as shown.:
 - 1. Bedding: Use Fill Type Bedding.
 - 2. Cover with general fill.
 - 3. Fill up to subgrade elevation.
 - 4. Compact in maximum 8 inch (200 mm) lifts to 95 percent of maximum dry density.
- C. Over Subdrainage Piping at Foundation Perimeter and Under Slabs:
 - 1. Drainage fill and geotextile: Section 31 0519.
 - 2. Cover drainage fill with general fill.
 - 3. Compact to 95 percent of maximum dry density.
- D. At French Drains:
 - 1. Use Fill Type French Drain.
 - 2. Compact to 95 percent of maximum dry density.

3.07 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 1 inch (25 mm) from required elevations.
- B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch (25 mm) from required elevations.

3.08 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor").
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- E. Frequency of Tests: 1 per 100 foot length of trench or when material changes..

3.09 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

SECTION 31 2316.26**ROCK REMOVAL****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Removal of discovered rock during excavation.

1.02 RELATED REQUIREMENTS

- A. Section 31 2323 - Fill: Fill materials.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Trench Rock Removal: By the cubic yard (cubic meter) measured before disintegration. Includes preparation of rock for removal, mechanical disintegration of rock, removal from position, loading and removing from site. For over excavation, payment will not be made for over excavated work nor for replacement materials.

1.04 DEFINITIONS

- A. Trench Rock: Solid mineral material with a volume in excess of 1/6 cubic yard (0.13 cubic meter) or solid material that cannot be removed with a 1/2 cubic yard (0.38 cubic meter) capacity power shovel without drilling.

PART 3 EXECUTION**2.01 EXAMINATION**

- A. Verify site conditions and note subsurface irregularities affecting work of this section.

2.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.

2.03 ROCK REMOVAL

- A. Excavate and remove rock by mechanical methods only; use of explosives is prohibited.
- B. Mechanical Methods: Drill holes and utilize expansive tools to fracture rock.
- C. Form level bearing at bottom of excavations.
- D. Remove shaled layers to provide sound and unshattered base for footings.
- E. In utility trenches, excavate to 6 inches (150 mm) below invert elevation of pipe and 24 inches (600 mm) wider than pipe diameter.
- F. Remove excavated materials from site.
- G. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 31 2323.
- H. Correct unauthorized rock removal to directions of Architect.

2.04 FIELD QUALITY CONTROL

- A. Provide for visual inspection of foundation bearing surfaces and cavities formed by removed rock.

END OF SECTION

SECTION 31 2323**FILL****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Filling, backfilling, and compacting for building volume below grade, footings, slabs-on-grade, paving, and utilities within the building.
- B. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Document R.W. Gillespie & Associates, Inc. T-Hangar: Geotechnical report; bore hole locations and findings of subsurface materials.
- B. Section 31 0519 - Geosynthetics for Earthwork.
- C. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.
- D. Section 31 2316.13 - Trenching: Excavating for utility trenches outside the building to utility main connections.
- E. Section 31 2316.26 - Rock Removal: Removal of rock during excavating.
- F. Section 33 4100 - Subdrainage: Filter aggregate and filter fabric for foundation drainage systems.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Fill for the building and building utilities is incidental to the work items requiring the fill related to the building. Refer to Specification P-152 for Embankment in Place pay item related to the taxiway, apron and access drive.

1.04 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.

1.05 REFERENCE STANDARDS

- A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).
- B. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop; 2022, with Errata .
- C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2019.
- D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012 (Reapproved 2021).
- E. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)); 2012 (Reapproved 2021).
- F. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017, with Editorial Revision (2020).
- G. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data for Manufactured Fill.
- C. Soil Samples: 10 pounds (4.5 kg) sample of each type of fill; submit in air-tight containers to testing laboratory.
- D. Materials Sources: Submit name of imported materials source.

- E. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.
- F. Compaction Density Test Reports.

1.07 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- B. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. When fill materials need to be stored on site, locate stockpiles where indicated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill - Fill Type General Fill: Complying with State of Maine Highway Department standard. Material Item 703.19 Granular Borrow.
- B. Structural Fill - Fill Type for below building slab and foundations. Complying with the requirements in R.W. Gillespie & Associates, Inc. T-Hangar Geotechnical Report as follows: 6" Screen or Sieve Size (SSS) - 100% Passing (P); 3" SSS 70-100%(P); #4 SSS 35-70 P; #40 5-35 P; #200 0-5 P.
- C. Granular Fill - MaineDOT Standard Specifications Section 703 - Aggregates, 703.22 Underdrain Backfill Materials Type C.

2.02 ACCESSORIES

- A. Geotextile: Non-biodegradable, woven.
- B. Vapor Retarder: 10 mil (0.25 mm) thick, polyethylene.

2.03 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. Where fill materials are specified by reference to a specific standard, testing of samples for compliance will be provided before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- D. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 6 inches (150 mm) to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Fill Type Structural.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches (150 mm) compacted depth.
- F. Slope grade away from building minimum 2 inches in 10 feet (50 mm in 3 m), unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- G. Correct areas that are over-excavated.
 - 1. Load-bearing foundation surfaces: Use structural fill, flush to required elevation, compacted to 95 percent of maximum dry density.
 - 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.
- H. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.
- I. Reshape and re-compact fills subjected to vehicular traffic.
- J. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Structural Fill at building slab on grade and foundations:
 - 1. Maximum depth per lift: 6 inches (150 mm), compacted.
 - 2. Compact to minimum 95 percent of maximum dry density.
- C. At Foundation Walls and Footings:
 - 1. Use Structural Fill.
 - 2. Compact each lift to 95 percent of maximum dry density.
 - 3. Do not backfill against unsupported foundation walls.
 - 4. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- D. At French Drains:
 - 1. Use General Fill.
 - 2. Compact to 95 percent of maximum dry density.

3.05 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch (25 mm) from required elevations.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.
- B. Soil Fill Materials:
 - 1. Perform compaction density testing on compacted fill in accordance with ASTM D6938.
 - 2. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor").
 - 3. If tests indicate work does not meet specified requirements, remove work, replace and retest.

4. Frequency of Tests: 300 Square Yards.

3.07 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

SECTION 32 3113
AUTOMATIC GATE OPERATOR

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Automatic gate operators.
- B. Reference Section F-162 Chain Link Fence for gate materials.
- C. Reference drawings for fence, gate and electrical required to provide a complete and operational gate.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Refer to Section F-162 Chain-Link Fence.

1.03 REFERENCE STANDARDS

- A. ASTM A121 - Standard Specification for Metallic-Coated Carbon Steel Barbed Wire; 2022.
- B. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a (Reapproved 2022).
- C. ASTM F1043 - Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework; 2018 (Reapproved 2022).
- D. ASTM F1083 - Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures; 2018 (Reapproved 2022).
- E. ASTM F2200 - Standard Specification for Automated Vehicular Gate Construction; 2020.
- F. CLFMI CLF-SFR0111 - Security Fencing Recommendations; 2014.
- G. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2020.
- H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- K. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- B. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components. See CLFMI CLF-SFR0111 for planning and design recommendations.

PART 2 PRODUCTS**2.01 AUTOMATIC GATE OPERATORS**

- A. Sliding Gates: Pre-wired, pedestal mounted gate operator for horizontal sliding gates, per ASTM F2200 and UL 325.
 - 1. Class: Class I.
 - 2. Operating type: drive belt.
 - 3. Control Functions: Open, Pause, Close.
 - 4. Maximum Open/Close Time: 10 seconds.
 - 5. Access: Card.
 - 6. Maximum gate weight: 1,500 pounds (560 kilograms).
 - 7. Horsepower Rating: Suitable for connected load.
 - 8. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.

- a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
- b. Secondary Device: Provide electric sensing edge with wireless edge kit or non-monitored safety edge as an option along with continuous-constant control device.
- 9. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - a. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 1) Outdoor Locations: Type 3R.
 - b. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.

2.02 LIGHT-DUTY ARCHITECTURAL HARDWARE

- A. Roller Assembly: Steel chassis assembly with permanently-lubricated and sealed roller bearings.
 - 1. Weight Rating: 2,000 pound (907 kg).
 - 2. Shaft: 1 inch (25.4 mm) diameter hardened steel shaft.
 - 3. Roller: Polymer casting, secured to shaft with nylon locknut.
 - 4. Protective Cover: Manufacturer's standard UV-inhibited molded polyethylene casting.
 - a. Color: Gray.
 - 5. Mounting to Round Fence Post: U-bolts.
 - 6. Finish: Galvanized.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install operator in accordance with manufacturer's instructions and in accordance with NFPA 70.
- B. Install gate posts, frame, fabric and barbed wire in accordance with Section F-162 Chain-Link Fence.

3.02 CLOSEOUT ACTIVITIES

- A. Demonstrate proper operation of equipment to Owner's designated representative.

END OF SECTION

SECTION 33 0110.58**DISINFECTION OF WATER UTILITY PIPING SYSTEMS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Disinfection of site domestic water lines specified in Section 33 1416.

1.02 RELATED REQUIREMENTS

- A. Section 22 1005 - Plumbing Piping: Disinfection of building domestic water piping system.
- B. Section 33 1416 - Site Water Utility Distribution Piping.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Disinfection: Not paid for separately. Incidental to the Site Water Utility Distribution Piping. Includes preparing, disinfecting, testing, and reporting.

1.04 REFERENCE STANDARDS

- A. AWWA B300 - Hypochlorites; 2018.
- B. AWWA B301 - Liquid Chlorine; 2018.
- C. AWWA B302 - Ammonium Sulfate; 2023.
- D. AWWA B303 - Sodium Chlorite; 2018.
- E. AWWA C651 - Disinfecting Water Mains; 2014.

1.05 SUBMITTALS

- A. Test Reports: Indicate results comparative to specified requirements.
- B. Disinfection report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.
 - 3. Test locations.
 - 4. Initial and 24 hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
 - 5. Date and time of flushing start and completion.
 - 6. Disinfectant residual after flushing in ppm for each outlet tested.

1.06 QUALITY ASSURANCE

- A. Testing Firm: Company specializing in testing potable water systems, certified by governing authorities of the State in which the Project is located.

PART 2 PRODUCTS**2.01 DISINFECTION CHEMICALS**

- A. Chemicals: AWWA B300, Hypochlorite, AWWA B301, Liquid Chlorine, AWWA B302, Ammonium Sulfate, and AWWA B303, Sodium Chlorite.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that piping system and water well has been cleaned, inspected, and pressure tested.
- B. Schedule disinfecting activity to coordinate with start-up, testing, adjusting and balancing, demonstration procedures, including related systems.

3.02 DISINFECTION

- A. Use method prescribed by the applicable state or local codes, or health authority or water purveyor having jurisdiction, or in the absence of any of these follow AWWA C651.
- B. Provide and attach equipment required to perform the work.
- C. Inject treatment disinfectant into piping system.

- D. Maintain disinfectant in system for 24 hours.
- E. Flush, circulate, and clean until required cleanliness is achieved.
- F. Replace permanent system devices removed for disinfection.
- G. Pressure test system to 50-150 psi (345-1,034 kPa). Repair leaks and re-test.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.

END OF SECTION

SECTION 33 0561
CONCRETE MANHOLES

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Precast concrete manholes.
- B. Grade adjustments.
- C. Frames and covers.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.
- B. Section 31 2316 - Excavation.
- C. Section 31 2323 - Fill.
- D. Section 33 3113 - Site Sanitary Sewerage Gravity Piping.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Unit Prices: Concrete Manholes
 - 1. Basis of Measurement: By the unit for a nominal depth of 9 feet (2.74 m).
 - 2. Basis of Payment: Includes excavation, bedding and backfilling, base pad, frame and grate, accessories.

1.04 REFERENCE STANDARDS

- A. AASHTO HB - Standard Specifications for Highway Bridges; 2005, with Errata.
- B. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- C. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- D. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2003 (Reapproved 2016).
- E. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.
- F. ASTM C55 - Standard Specification for Concrete Building Brick; 2023.
- G. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2019a, with Editorial Revision.
- H. ASTM C478/C478M - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections; 2020.
- I. ASTM C923/C923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals; 2020.
- J. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants; 2009 (Reapproved 2019).
- K. ASTM C1634 - Standard Specification for Concrete Facing Brick and Other Concrete Masonry Facing Units; 2023a.
- L. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Installation of concrete manholes with piping and other structures.
 - 1. See Section 33 3113 for site sanitary sewerage gravity piping.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manhole covers, component construction, steps, features, configuration, and dimensions.

- C. Shop Drawings: Indicate manhole locations, elevations, piping sizes and elevations of penetrations.
- D. Project Record Documents:
 - 1. Record invert elevations of concrete manholes.

1.07 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

1.08 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 CONCRETE MANHOLES

- A. Weight Rating: HS-20 according to AASHTO HB.
- B. Precast Concrete Manholes: Comply with ASTM C478/C478M, reinforced.
 - 1. Reinforcing Steel: Deformed bars, ASTM A996/A996M Grade 60 (420), Type R.
 - 2. Galvanized in accordance with ASTM A767/A767M, Class I.
 - 3. Joint Sealant: Comply with ASTM C990.
 - 4. Resilient Connectors: Comply with ASTM C923/C923M.
- C. Grade Adjustments:
 - 1. Concrete Bricks: ASTM C1634 or ASTM C55 Grade N, solid, normal weight; 7.625 by 2.25 by 3.625 inches (194 by 57 by 92 mm)
- D. Mortar Mixing:
 - 1. Ready Mixed Mortar: Type equivalent to that specified according to ASTM C270.
- E. Frame and Cover: Cast iron construction, ASTM A48/A48M, Class 30B, machined flat bearing surface; hinged; sealing gasket.

2.02 ACCESSORIES

- A. Steps: Formed galvanized steel rungs; 3/4 inch (19 mm) diameter. Formed integral with manhole sections.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify items provided by other sections of work are properly sized and located.
- B. Verify that built-in items are in proper location, and ready for roughing into Work.
- C. Verify excavation for manholes is correct.

3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 EXCAVATION AND FILL

- A. Hand trim excavation for accurate placement to indicated elevations.
- B. Backfill with cover fill, tamp in place and compact, then complete backfilling.
- C. See Section 31 2316 for additional excavation requirements.
- D. See Section 31 2323 for additional fill requirements.

3.04 INSTALLATION

- A. Establish elevations and pipe inverts for inlets and outlets as indicated in drawings.
- B. Precast Concrete Manholes:

1. Place base section plumb and level.
 2. Install joint sealant uniformly around section lip.
 3. Overlay additional sections on joint sealant.
 4. Install cone or lid plumb and level on joint sealant.
- C. Grade Adjustments:
1. Lay brick or masonry units uniformly on mortar bed with full head joints, running bond. Top with mortar, plumb and level.
 2. Place adjacent materials tight, and smooth following design grades.
- D. Frames and Covers:
1. Place frame plumb and level.
 2. Mount frame on mortar bed at indicated elevation.
 3. Place grate in frame securely.

3.05 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Perform field inspection for pipe invert elevations.
- C. If inspections indicate work does not meet specified requirements, adjust work and reinspect at no cost to Owner.

END OF SECTION

SECTION 33 1416
SITE WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Water pipe for site conveyance lines.
- B. Pipe valves.

1.02 RELATED REQUIREMENTS

- A. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.
- B. Section 33 0110.58 - Disinfection of Water Utility Piping Systems: Disinfection of site service utility water piping.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Pipe and Fittings:
 - 1. Basis of Measurement: By the linear foot (meter).
 - 2. Basis of Payment: Includes all excavation, trenching, beddings, pipe and fittings, connection to building service piping, disinfection and coordination for connection to water main service.
- B. Valves:
 - 1. Basis of Measurement: By unit.
 - 2. Basis of Payment: Includes all excavation, trenching, bedding, valves, valve box, valve stem riser and accessories.
- C. Municipal Water Connection Fee:
 - 1. Basis of Measurement: Allowance.
 - 2. Basis of Payment: Contractor pays municipality direct and invoices the project. No contractor mark up allowed. Provide invoices in payment request.

1.04 REFERENCE STANDARDS

- A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- C. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2020.
- D. NSF 61 - Drinking Water System Components - Health Effects; 2019.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.07 QUALITY ASSURANCE

- A. Perform Work in accordance with utility company requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store valves in shipping containers with labeling in place.
- B. Protect crosslinked polyethylene tubing from direct and indirect UV exposure.

1.09 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS**2.01 WATER PIPE**

- A. Copper Tubing: ASTM B88, Type K, Annealed:
 - 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 - 2. Joints: Compression connection or AWS A5.8M/A5.8, BCuP silver braze.
- B. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Water Service" in large letters.

2.02 VALVES

- A. Gate Valves Up To 3 Inches (75 mm):
 - 1. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, compression ends, with control rod, post indicator, valve key, and extension box.

2.03 BEDDING AND COVER MATERIALS

- A. Bedding: As specified in Section 31 2316.13.
- B. Cover: As specified in Section 31 2316.13.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

3.02 PREPARATION

- A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare pipe connections to equipment with flanges or unions.

3.03 TRENCHING

- A. See the sections on excavation and fill for additional requirements.
- B. Hand trim excavation for accurate placement of pipe to elevations indicated.
- C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.04 INSTALLATION - PIPE

- A. Maintain separation of water main from sewer piping in accordance with AWSD code.
- B. Establish elevations of buried piping to ensure not less than 4 feet (1.22 m) of cover.
- C. Install pipe to indicated elevation to within tolerance of 5/8 inches (16 mm).
- D. Route pipe in straight line.
- E. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- F. Install access fittings to permit disinfection of water system performed under Section 33 0110.58.
- G. Slope water pipe and position drains at low points.
- H. Install trace wire 6 inches (150 mm) above top of pipe; coordinate with Section 31 2316.13.

3.05 INSTALLATION - VALVES, HYDRANTS, BACKFLOW PREVENTERS

- A. Set valves on solid bearing.
- B. Center and plumb valve box over valve. Set box cover flush with finished grade.

3.06 SERVICE CONNECTIONS

- A. Provide water service connection to building services. Coordinate water service connection to water main with the Auburn Water and Sewerage District (AWS D). Prepare and apply for any AWS D permits.
- B. Provide PVC sleeve through building foundation. Size for 2 inches (50 mm) minimum of glass fiber insulation stuffing.

3.07 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Perform field inspection and testing in accordance with Section 01 4000.
- C. Pressure test water piping to 50-150 pounds per square inch (344-1,034 kPa).
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

END OF SECTION

SECTION 33 3113
SITE SANITARY SEWERAGE GRAVITY PIPING

PART 1 GENERAL**1.01 SECTION INCLUDES**

- A. Sanitary sewerage drainage piping, fittings, and accessories.
- B. Connection of building sanitary drainage system to municipal sewers.
- C. Cleanout access.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete for cleanout base pad construction.
- B. Section 31 2316 - Excavation: Excavating of trenches.
- C. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.
- D. Section 31 2323 - Fill: Bedding and backfilling.
- E. Section 33 0561 - Concrete Manholes.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Pipe and Fittings:
 - 1. Basis of Measurement: By the linear foot (meter).
 - 2. Basis of Payment: Includes all excavation, bedding, pipe and fittings, connection to building service piping and to municipal sewer.
- B. Cleanout:
 - 1. Basis of Measurement: By the unit for a nominal depth of 10 feet (3.05 m).
 - 2. Basis of Payment: Includes all excavating, ductile iron vehicle rated cover cast in concrete, unit installation with accessories, connection to sewer piping.
- C. Sewer Manhole Connection
 - 1. Basis of Measurement: By each connection to the existing sewer manhole.
 - 2. Basis of Payment: Includes all pre-coordination with the Auburn Water and Sewerage District, excavating, creating an opening in the existing sewer manhole structure, installing watertight connection between new pipe and existing structure.
- D. Sewer Connection Fee
 - 1. Basis of Measurement: Allowance
 - 2. Basis of Payment: Contractor pays municipality direct and invoices the project. No contractor markup is allowed. Provide invoices in payment request.

1.04 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.05 REFERENCE STANDARDS

- A. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2015, with Editorial Revision (2018).
- B. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications; 2020.

1.06 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of the sewer mainline connection with size, location and installation of service utilities.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.07 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating pipe, pipe accessories.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- E. Field Quality Control Submittals: Document results of field quality control testing.
- F. Project Record Documents:
 - 1. Record location of pipe runs, connections, manholes, and invert elevations.
 - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

PART 2 PRODUCTS**2.01 SEWER PIPE MATERIALS**

- A. Provide products that comply with applicable code(s).
- B. Plastic Pipe: ASTM D1785, Schedule 40, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of 4 inches (101.6 mm), bell and spigot style solvent sealed joint end.
- C. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

2.02 PIPE ACCESSORIES

- A. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Sewer Service" in large letters.

2.03 BEDDING AND COVER MATERIALS

- A. Pipe Bedding Material: As specified in Section 31 2323.
- B. Pipe Cover Material: As specified in Section 31 2323.

PART 3 EXECUTION**3.01 TRENCHING**

- A. See Section 31 2316.13 for additional requirements.
- B. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.
 - 1. Plastic Pipe: Also comply with ASTM D2321.
- C. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch (3 mm) in 10 feet (3 m).
- D. Connect to building sanitary sewer outlet, through installed sleeves.
- E. Install trace wire 6 inches (150 mm) above top of pipe; coordinate with Section 31 2316.13.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- C. Pressure Test: Test in accordance with Water Head Test of 5 foot above the highest point in the sewer line..

3.04 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

**SECTION 33 4100
SUBDRAINAGE****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Building Perimeter Drainage Systems.
- B. Filter aggregate and fabric and bedding.

1.02 RELATED REQUIREMENTS

- A. Section 31 2316 - Excavation: Excavating for subdrainage system piping and surrounding filter aggregate.
- B. Section 31 2316.13 - Trenching: Excavating and backfilling for site subdrainage systems.
- C. Section 31 2323 - Fill: Backfilling over filter aggregate, up to subgrade elevation.
- D. Section 31 0519 - Geosynthetics for Exterior Improvements

1.03 PRICE AND PAYMENT PROCEDURES

- A. Pipe and Fittings: By linear foot. Includes hand trimming excavating, bedding, pipe and fittings, filter aggregate, filter fabric, and french drain.

1.04 REFERENCE STANDARDS

- A. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2017.

1.05 SUBMITTALS

- A. Product Data: Provide data on pipe drainage products, pipe accessories, and aggregate bedding..

PART 2 PRODUCTS**2.01 PIPE MATERIALS**

- A. Polyvinyl Chloride Pipe: ASTM D2729; plain end, 6 inch (150 mm) inside diameter; with required fittings.
- B. High Density Polyethylene: AASHTO M294; hub and bell end, 6 inch (150 mm) inside diameter; with required fittings.
- C. Use perforated pipe at subdrainage system; unperforated to frenchdrains.

2.02 AGGREGATE AND BEDDING

- A. Filter Aggregate and Bedding Material: Granular fill as specified in Section 31 2323.

2.03 ACCESSORIES

- A. Pipe Couplings: Solid plastic.
- B. Geotextile Fabric: As specified in Section 31 0519.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

3.02 PREPARATION

- A. Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.

3.03 INSTALLATION

- A. Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.
- B. Place drainage pipe on clean cut subsoil.

- C. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch (3 mm) in 10 feet (3 m).
- D. Place pipe with perforations facing down. Mechanically join pipe ends.
- E. Install pipe couplings.
- F. Install filter aggregate at sides, over joint covers and top of pipe. Provide top cover compacted thickness of 12 inches (300 mm).
- G. Place filter fabric under, along sides and over leveled top surface of aggregate cover prior to subsequent backfilling.
- H. Place aggregate in maximum 4 inch (100 mm) lifts, consolidating each lift.
- I. Place fill over filter fabric, drainage pipe aggregate cover and compact.
- J. Connect to frenchdrain with unperforated pipe.

3.04 FIELD QUALITY CONTROL

- A. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.05 PROTECTION

- A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION