

PROJECT MANUAL

Including Specifications

for

PORTLAND INTERNATIONAL AIRPORT TERMINAL AND CONCOURSES WAYFINDING SIGNAGE

Airport Improvement Program (AIP)
Project No. [to be determined]

Solicitation No. 2026-14260

EAN 2026D004

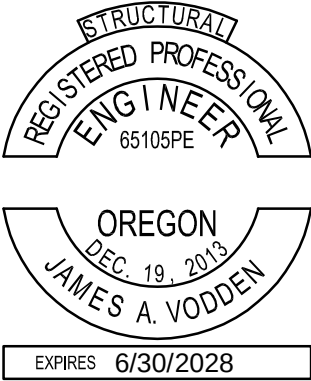
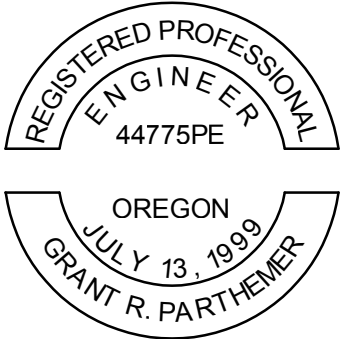
August 2026

DOCUMENT 000107
APPROVALS

PORTLAND INTERNATIONAL AIRPORT
TERMINAL AND CONCOURSES WAYFINDING SIGNAGE

Project Manager: _____

Project Engineer: _____

Architectural Consultant DBC Architecture 2505 S.E. 11th Avenue, Suite 328 Portland, OR 97202 (503) 504-1230	Structural Consultant KPFF 111 S.W. 5th Avenue, Suite 2600 Portland, OR 97204 (503) 227-3251 
Signage Consultant Mayer/Reed 920 S.W. 6th Avenue, Suite 425 Portland, OR 97204 (503) 223-5953 	Electrical/Technology Consultant PAE 151 S.W. 1st Avenue #300 Portland, OR 97204 (503) 226-2921  EXPIRES: 12/31/2026

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PORTLAND INTERNATIONAL AIRPORT
TERMINAL AND CONCOURSES WAYFINDING SIGNAGE

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PDX 2026-512

DOCUMENT 001100
INVITATION TO BID

THE PORT OF PORTLAND

PORTLAND INTERNATIONAL AIRPORT
TERMINAL AND CONCOURSES WAYFINDING SIGNAGE

AIP No. [to be determined]
Solicitation No. 2026-14260

Bids for the Portland International Airport Terminal and Concourses Wayfinding Signage project will be received electronically through the Port's online bidding system until, but not after, 2 p.m. on August 27, 2026. Bid results will be publicly available in the Port's online bidding system immediately after the scheduled time for receipt of bids. See the Instructions to Bidders for more information on electronic submission.

The work includes but is not limited to:

Providing wayfinding signage in the concourses, terminal building, and other areas as shown on the drawings.

Prequalification is not required for this work.

The Contractor or a subcontractor need not be licensed for asbestos work under ORS 468A.720.

A pre-bid meeting will be held via Microsoft Teams at 9 a.m. on August 11, 2026, to discuss all phases of the work. To attend, bidders must RSVP through the Port's online bidding system no later than 24 hours before the pre-bid meeting. A Microsoft Teams meeting invite will be sent to all bidders who RSVP, with instructions on attending the meeting remotely.

Contractors, subcontractors, consultants, and suppliers are strongly encouraged to register through the Port's online bidding system, which can be accessed at <https://www.planetbids.com/portal/portal.cfm?CompanyID=15598>. All firms can view current business opportunities. Registered firms may receive electronic notification of Port solicitations, and have access to view or download solicitations, addenda, and solicitation-holders lists.

Questions must be submitted electronically using the "Q&A" feature in the Port's online bidding system.

Hard copies of drawings and specifications are not available directly from the Port. Registered firms may download the project manual and drawings through the Port's online bidding system.

The Port may reject bids that do not comply with applicable public contracting procedures and requirements. The Port may reject for good cause any or all bids if the Port finds that doing so is in the public interest. Bidder compliance for this project includes the following:

- A. Bids must be on the Port's bid form and must be accompanied by bid security made payable to The Port of Portland in an amount equal to at least 10 percent of the total amount bid.
- B. In accordance with ORS 279C.370, bidders must submit the enclosed First-Tier Subcontractor Disclosure Form within two working hours after bid opening.

- C. The labor and civil rights requirements in the Bid, Bid Supplements, and Supplementary Conditions apply to this work. The proposed contract is subject to 49 CFR Part 26, on Participation By Disadvantaged Business Enterprises in United States Department of Transportation Financial Assistance Programs, including any amendments thereto.
- D. Title VI Solicitation Notice: The Port, 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), 28 CFR § 50.3, and 49 CFR Part 21, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, all contractors will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of the owner's race, color, national origin, sex, creed, age, or disability in consideration for an award.
- E. Bidders are required to comply with the provisions of Executive Order 14398 and FAR 52.222-90, Addressing DEI Discrimination by Federal Contractors, as described in the Supplementary Conditions.
- F. Oregon law requires that the higher of either the state prevailing wage rates or federal Davis-Bacon rates be paid to workers on projects in Oregon subject to both the state prevailing wage rate law and federal Davis-Bacon Act. This project is subject to both the state prevailing wage rate law and the federal Davis-Bacon Act.
- G. The Port will not receive or consider a bid unless the bid contains a statement by the bidder that the bidder will comply with the provisions of ORS 279C.800 to 279C.870 (regarding payment of prevailing wage rates on public works projects over \$50,000).
- H. No bid will be considered unless the bidder is registered with the State of Oregon Construction Contractors Board to the extent required by ORS Chapter 701, prior to submitting a bid.
- I. Bidders are hereby alerted that public works contractors generally must file a public works bond with the Construction Contractors Board, as provided in ORS 279C.836.

Apprentice Opportunities on Port Projects over \$500,000: The Port is committed to advancing access to quality jobs through investments in workforce development. This includes encouraging efforts that improve workplaces, create job opportunities, support skill-building, and build career pathways. The Port's overall target for registered apprentice participation is 20 percent of total labor hours.

Bid Information Submitted as a Matter of Responsiveness: As a condition of responsiveness the bidder will be required to submit the information included on the Bidders List Information form.

DBE Program: The Port sets overall goals for Disadvantaged Business Enterprise (DBE) participation in DOT-assisted contracts pursuant to the requirements of 49 CFR § 26.45 and associated agency guidance. There is no specific DBE participation goal for this project. See the Supplementary Conditions for Federally Assisted Contracts for more information related to DBE program requirements.

THE PORT OF PORTLAND

Contracts and Procurement
August 3, 2026

CPD/FAA

DOCUMENT 002100
INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DESCRIPTION

- 1.1 Provide labor, materials, and other means required by the contract documents to complete the work.

ARTICLE 2 – PRE-BID INTERPRETATION OF CONTRACT DOCUMENTS

- 2.1 If the bidder finds discrepancies, omissions, or is in doubt as to the true meaning of any part of the contract documents, submit a request for a clarification or interpretation using the “Q&A” feature in the Port’s online bidding system no less than five business days prior to the bid submission deadline. The Port may not consider requests submitted outside of the Port’s online bidding system.
- 2.2 The Port will respond to bidder requests for clarification or interpretation using the “Q&A” feature in the Port’s online bidding system. Actual changes to the contract documents will be issued by addendum. Consider addenda in the bid.

ARTICLE 3 – RESIDENT BIDDER PREFERENCE

- 3.1 Each bid shall contain a statement as to whether the bidder is a resident bidder, as defined in ORS 279A.120.
- 3.2 Under ORS 279A.120(1), a “resident bidder” is a bidder that has paid unemployment taxes or income taxes in this state during the 12 calendar months immediately preceding submission of the bid, has a business address in Oregon, and has stated in the bid whether the bidder is a “resident bidder” pursuant to ORS 279A.120(1).
- 3.3 Under ORS 279A.120(1), a “non-resident bidder” is a bidder who is not a “resident bidder” as defined in Item 3.2 above.
- 3.4 Failure to complete the “resident bidder” certification statement of residency or nonresidency contained in the bid form may result in rejection of the bid.
- 3.5 In determining the lowest responsive bidder, the Port will, for the purpose of awarding the contract, add a percent increase on the bid of a nonresident bidder equal to the percent, if any, of the preference given to that bidder in the state in which the bidder resides.

ARTICLE 4 – EQUIVALENT MATERIALS, PRODUCTS, OR SERVICES

- 4.1 Specified materials, products, or services are named for the purpose of establishing a standard of quality and characteristics desired. Unless the specification or description indicates that no substitution is permitted, other materials, products, or services of equal quality and characteristics for the purposes intended may be submitted at the appropriate time for approval. The Substitution Request Form is enclosed at the end of these Instructions to Bidders. Substitution requests must be submitted by a prospective bidder; substitution requests received from manufacturers, distributors, or companies that are not bidding the project will not be considered. The Port will be the judge of the equality and suitability of the proposed substitution.
- 4.2 The following definitions of the phrases stated after materials, products, or services in the Specifications determine the extent to which substitutions may be proposed.
- A. “PRE-BID APPROVED EQUAL” materials, products, or services require approval by addendum prior to the bid submission deadline. Materials, products, or services which the bidder proposes to substitute, and which he/she considers equal to those specified, must be submitted by attaching the completed Substitution Request Form to the Q&A submission feature in the Port’s online bidding system no less than five business days prior to the bid submission deadline. Requests shall be accompanied by complete technical data and such pertinent

information and/or samples as necessary, or as specified, to fully identify and appraise the material, product, or service. Approval of materials, products, or services deemed equivalent will be issued by addendum prior to the bid submission deadline.

- B. "EQUAL" materials, products, or services require approval after contract award. See the General Conditions for requirements.
- C. "NO SUBSTITUTION" materials, products, or services are not eligible for substitution requests. See the General Conditions for requirements.

ARTICLE 5 – ESTIMATED QUANTITIES

- 5.1 Estimated quantities shown in the bid form provide a basis for comparison of bids only. The bidder shall verify the quantity of each bid item prior to submission of its bid. Reference is made to Change of Contract Price in the General Conditions.

ARTICLE 6 – EXAMINATION OF SITE

- 6.1 Examine the site and conditions thereon. Bids shall take into consideration conditions which may affect the work. No additional compensation or extension of time will be allowed because of any condition of which the bidder could have informed itself either by examination, testing, sampling, review of records, or otherwise. The Port's site study information, if any, will be made available to prospective bidders for review; however, the Port disclaims liability and responsibility for the completeness or accuracy thereof.

ARTICLE 7 – OFFICIAL BID DOCUMENTS

- 7.1 Bidders may view and download construction design and related documents electronically through the Port's online bidding system. Bidders may only rely on the final construction design documents that the Port makes available through its online bidding system. Bidders are responsible for adjusting hardware and software settings as needed to view and print all bid document content. Guidance for optimal viewing and printing may be provided on the drawings. For the bidders' convenience, the Port may occasionally post copies of studies, reports, permits, assessments, miscellaneous CAD files, reference drawings, manufacturer data, etc., as additional information that may pertain to this solicitation. However, the Port makes no warranties or representations regarding the integrity or completeness of such documents and bidders should use them only at their own risk.
- 7.2 Those using electronic documents provided by the Port do so at their own risk. The Port makes no warranties or representations regarding the ability to permanently access, or the presence or absence of computer viruses within, the electronic documents the Port provides. All or parts of electronic documents provided by the Port may be copyrighted, and those using them are responsible for determining the existence of copyrights and for obtaining permission to copy copyrighted material.

ARTICLE 8 – BID SECURITY

- 8.1 The bid shall be accompanied by bid security. The security shall be a certified or cashier's check, an irrevocable letter of credit, or a bid bond made payable to the Port of Portland. Checks shall be drawn on a United States bank. Irrevocable letters of credit shall be issued by a bank as defined in ORS 706.008. Bid bonds shall be executed by a surety company licensed to do business in the State of Oregon. The amount of the check, letter of credit, or bond shall be equal to at least 10 percent of the total amount bid. The check, letter of credit, or bond will be held by the Port as security and a guaranty that the bidder will execute the Agreement, give satisfactory evidence of insurance, and furnish a 100 percent performance bond and a 100 percent labor and material payment bond. A scanned copy of the bid security shall be submitted electronically through the Port's online bidding system along with the bid. The

bidder shall also provide hard copies of the original bid security documentation to the Port immediately if requested.

8.2 The Port may retain the bid security of the three lowest responsive bidders until:

- A. all bids are rejected,
- B. the fully executed Agreement is delivered to the successful bidder, or
- C. expiration of the bids,

at which time the bid security of all bidders will be returned in accordance with Item 8.3 below.

8.3 Bid security in the form of a surety bond or letter of credit will be returned via an email to the bidder confirming release. All forms of bid security will only be physically returned upon request.

ARTICLE 9 – EXECUTION OF BID

9.1 Bids shall be on the bid form provided to prospective bidders.

9.2 When the bid form provides for writing the bid price in words and numerals, the price as written in words governs over the price written in numerals.

9.3 In the case of conflict between the amount bid and the product of the estimated quantity and the unit bid price, the unit bid price prevails and the corrected product will be used in computing the total amount bid. All arithmetic errors apparent on the face of a bid will be corrected in determining the total bid price.

9.4 Complete the bid form requirements, including acknowledgement of receipt of addenda, if applicable; statement of resident status; and any other requirements specifically called for in the bid.

9.5 Execute the bid in the name of the firm followed by the signature of the officer authorized to sign for the firm and the printed or typewritten designation of the officer's name and office held.

9.6 Type or print the address and telephone number of the bidder on the bid form.

ARTICLE 10 – DISCLOSURE OF FIRST-TIER SUBCONTRACTORS

10.1 Within two working hours after the date and time of the bid submission deadline, the bidder shall disclose first-tier subcontractors on Document 004335, First-Tier Subcontractor Disclosure Form.

10.2 Disclosures of first-tier subcontractors shall be submitted by email (popcontracting@portofportland.com), and shall include one file with all the necessary attachments and be named "Bid XXXX-XXXX_Bidder Name_FT." Hard copies will not be accepted.

ARTICLE 11 – SUBMISSION OF BID

11.1 Bids shall be submitted electronically through the Port's online bidding system. Hard copies will not be accepted.

11.2 Bids will be received until the submission deadline stated in the Invitation to Bid.

ARTICLE 12 – WITHDRAWAL OF BID

- 12.1 Prior to the bid submission deadline, a bidder may withdraw its bid. This will not preclude submission of another bid by such bidder prior to the bid submission deadline. Withdrawal of the bid is the sole responsibility of the bidder through the Port's online bidding system. Contact the service provider (PlanetBids) directly for any technical issues.

ARTICLE 13 – OPENING OF BIDS

- 13.1 The Port reserves the right to postpone the bid submission deadline.
- 13.2 At the time and place set for the opening and reading of bids, bids received prior to the bid submission deadline will be publicly opened and read aloud. When opening bids electronically, bids are deemed to be opened publicly when bidder and bid information is made available to the public in the Port's online bidding system.

ARTICLE 14 – ACCEPTANCE OR REJECTION OF BIDS

- 14.1 The Port may reject any bid not in compliance with all prescribed public bidding procedures and requirements, and may, for good cause, reject any or all bids upon a finding it is in the public interest to do so. In any case where competitive bids are required and all bids are rejected, and the proposed contract is not abandoned, new bids may be called for as in the first instance. The Port may cancel a solicitation at any time before a contract is signed, if the Port determines cancellation is in the Port's best interests. If a solicitation is canceled, the Port will not be liable for any costs incurred by prospective bidders or bidders. If a solicitation is canceled before the bid submission deadline, bids will not be returned electronically. If a solicitation is canceled after the bid submission deadline, the Port will retain the bids.
- 14.2 The Port may disqualify any bidder if, at any time, it finds:
- A. The bidder has been convicted for the commission of a criminal offense as an incident in obtaining or attempting to obtain a public or private contract or subcontract, or in the performance of such contract or subcontract;
 - B. The bidder has been convicted under state or federal statutes of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense indicating a lack of business integrity or business honesty that currently, seriously, and directly affects the bidder's responsibility as a contractor;
 - C. The bidder has been convicted under state or federal antitrust statutes; or
 - D. The bidder has violated a contract provision that is regarded by the Port to be so serious as to justify disqualification. A violation may include, but is not limited to, a failure to perform the terms of a contract or an unsatisfactory performance in accordance with the terms of the contract. However, a failure to perform or an unsatisfactory performance caused by acts beyond the control of the contractor may not be considered to be a basis for disqualification.
- 14.3 The Port may disqualify an apparent low bidder if, at any time, it finds that the bidder:
- A. Does not have available the appropriate financial, material, equipment, facility and personnel resources and expertise, or the ability to obtain the resources and expertise, necessary to meet all contractual responsibilities;
 - B. Does not hold current licenses that businesses or service professionals operating in Oregon must hold in order to undertake or perform the work specified in the contract;
 - C. Is not covered by liability insurance and other insurance in amounts the Port requires in the solicitation documents;

- D. Does not qualify as a carrier-insured employer or a self-insured employer under ORS 656.407 or, if applicable, has not elected coverage under ORS 656.128;
 - E. Has not made the first-tier subcontractor disclosure required under ORS 279C.370;
 - F. Has not completed previous contracts of a similar nature with a satisfactory record of performance;
 - G. Does not have a satisfactory record of integrity;
 - H. Is not legally qualified to contract with the Port; or
 - I. Is otherwise not responsible pursuant to ORS 279C.375 and, if applicable, ORS 200.045, or fails to supply all necessary information in connection with demonstrating such responsibility.
- 14.4 In determining the low responsive bid, the Port will not consider alternates called for in the bid form.
- 14.5 The Port reserves the right to reject any irregular bid if rejection is in the best interest of the Port. Irregular bids include, but are not limited to:
- A. Bids that are incomplete or conditioned in any way;
 - B. Bids that contain erasures or alterations;
 - C. Bids that contain unit prices that are obviously unbalanced;
 - D. Bids that do not acknowledge receipt of previously issued addenda.
- 14.6 The Port may waive minor irregularities or technicalities in a bid if such waiver is in the best interest of the Port.
- 14.7 Acceptance of a bid by the Port and award of the Contract will be made by delivery of the fully executed Agreement to the successful bidder within 50 days after the bid submission deadline (or as modified by Document 004100, Bid Form). The bid may not be revoked by the bidder within this period. Failure by the Port to deliver the fully executed Agreement to the successful bidder within the 50-day period will permit the bidder to withdraw its bid. If withdrawn, the Port will return the bid security in accordance with Item 8.3 above. A bid remains effective until it is withdrawn by an affirmative act of the bidder or until the Port rejects the bid, either expressly or impliedly, by awarding the contract to another bidder.

ARTICLE 15 – EXECUTION OF AGREEMENT AND BONDS

- 15.1 Within 10 days after issuance of the Port’s written notice (or as otherwise requested), the apparent low bidder (Contractor) shall execute and deliver the Agreement, the Performance Bond, and the Labor and Material Payment Bond to the Port. The bonds shall each be for the total amount of the Contract. The company providing the bonds shall be authorized to do business in the State of Oregon. The Agreement and the bonds shall be on the forms provided by the Port.
- 15.2 The apparent low bidder, if a joint venture/partnership, shall provide a copy of the joint venture agreement or partnership agreement evidencing authority to offer and to enter into the resulting contract that may be awarded, together with corporate resolutions (if applicable) evidencing corporate authority to participate as a joint venture or partner. A contact person must also be designated for purposes of receiving all notices and communications under the contract. All partners and joint venturers will be required to sign the Agreement.

- 15.3 If the bidder fails to execute the Agreement, give satisfactory evidence of insurance, and furnish the bonds within 10 days after the Port's written notice, the bid security shall be forfeited in accordance with the applicable statute. The Port may extend the time for delivery of the executed contract documents. If the Port extends the time for delivery of the executed contract documents at the successful bidder's request, the Port may:
- A. Extend the time (see NOTICE TO PROCEED below) within which to issue a Notice to Proceed by an equivalent number of days, or
 - B. Reduce the contract duration period (see the Bid and the Agreement) by an equivalent number of days.

ARTICLE 16 – NOTICE TO PROCEED

- 16.1 Within 45 days after delivery of the fully executed Agreement to the successful bidder, the Port will issue Notice to Proceed. The Notice to Proceed will state the dates: (1) on which the Contractor may begin the work, (2) by which the Contractor is required to attain substantial completion of the work, and (3) by which the Contractor is required to attain final acceptance of the work.

ARTICLE 17 – PROTESTS

- 17.1 A bidder or prospective bidder who wishes to object to any aspect of this solicitation must deliver a written protest to the Port's Manager of Contracts and Procurement, 7200 N.E. Airport Way, 8th Floor, Portland, Oregon 97218; or P.O. Box 3529, Portland, Oregon 97208; or fax to (503) 548-5812.
- 17.2 If the protest relates to matters that are apparent on the face of the solicitation documents or that otherwise are known or reasonably ought to be known to the protestor, the protest must be delivered no less than five business days before the deadline for the Port's receipt of offers.
- 17.3 If the protest relates to other matters, including but not limited to the award of the Contract, it must be delivered as soon as possible, and in no event more than five business days after the protestor knows or reasonably ought to know of the award of the contract, the Port's intent to award the Contract, or the other matters to which the protest is addressed.
- 17.4 A protest is delivered for the purposes of this article when it actually is received by the Port's Contracts and Procurement staff.
- 17.5 The Port may decline to review a late protest.
- 17.6 The protest shall be deemed to include only the documents timely delivered pursuant to this article. It must clearly state all of the grounds for the protest and must include all arguments and evidence in support of the protest. Testimonial evidence may be submitted by affidavit. The Port may investigate as it deems appropriate in reviewing the protest, and will issue a written response to the protest. The Port may proceed with contract award, execution, and performance while a protest is pending.

END OF DOCUMENT



SUBSTITUTION REQUEST

Project: _____ From: _____

To: Port of Portland Date: _____

Specification Title: _____ Specification Section No.: _____
Section Page: _____ Article/ Paragraph: _____

Proposed Substitution: _____

Trade Name: _____ Model No.: _____

Manufacturer: _____ Address: _____ Phone: _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product. Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule. Proposed substitution does not affect dimensions and functional clearances.
- Undersigned will pay for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted By: _____

Signature: _____

Address: _____

Telephone: _____

PORT REVIEW AND ACTION

- ☐ Substitution approved – Make submittals in accordance with the General Conditions and Specification Section 013300.
- ☐ Substitution approved as noted – Make submittals in accordance with the General Conditions and Specification Section 013300.
- ☐ Substitution rejected – Use specified materials.
- ☐ Substitution request received too late – Use specified materials.

Signed by: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

DOCUMENT 002200
SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

1.1 GENERAL

- A. These supplements modify, delete from, or add to the Instructions to Bidders.
- B. Where an article, paragraph, or clause of the Instructions to Bidders is modified or deleted by these supplements, the unaltered provisions of that article, paragraph, or clause remain in effect.

1.2 RESIDENT BIDDER STATEMENT FOR FEDERALLY ASSISTED CONTRACTS

- A. See the Instructions to Bidders, Article 3. Delete in its entirety.

1.3 DOCUMENT REFERENCES

- A. See Instructions to Bidders Items 4.2 and 5.1. Change all references of “General Conditions” to “Port General Conditions.”

1.4 ESTIMATED QUANTITIES

- A. See Instructions to Bidders Item 5.1. Delete and replace with, “An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the bid. 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 Port 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.”

Bidder: _____

DOCUMENT 004100
BID FORM

To The Port of Portland
P.O. Box 3529
Portland, Oregon 97208
AIP No. [to be determined]
Solicitation No. 2026-14260

The bidder warrants that it has carefully examined the contract documents for the contract described as follows:

PORTLAND INTERNATIONAL AIRPORT
TERMINAL AND CONCOURSES WAYFINDING SIGNAGE

The bidder further warrants that it has examined, or did not avail itself of the opportunity to examine, the proposed work area independently of the indications in the contract documents and has made, or did not avail itself of the opportunity to make, such investigations as are necessary to determine: (1) the character of the materials to be handled, (2) the probable interferences due to Port operations, and (3) other conditions to be encountered.

The bidder further warrants that if this bid is accepted, it will contract with The Port of Portland in the form of Agreement hereto annexed and will to the extent of its bid provide all things necessary for the performance of the contract, including, but not limited to, bonds, labor, material, transportation, and equipment.

The Port anticipates the work under this Contract to be partially funded with the proceeds of a grant from the FAA. The bidder agrees to comply with the Contract provisions required by the grant and acknowledges that the grant conditions are subject to change at any time, before or after Contract award. The bidder will be notified of and shall comply with any additional or changed grant conditions which may be imposed by the FAA or other applicable law at any time, beyond those provisions already stipulated in this Contract.

In the event that some or all of the grant funding is terminated, suspended, or modified by the FAA or other applicable law, the Port reserves the right to proceed with any elements of work paid for by the Port, and to delete or modify elements that were to be paid for using grant funds. The deleted or modified elements of work will be handled as a change in the work in accordance with the General Conditions. The Port further reserves the right to terminate the Contract for convenience at any time in accordance with the General Conditions, in the event some or all of the grant funding is canceled or modified by the FAA or other applicable law.

The bidder acknowledges that the FAA does not permit escalation clauses for increases in fuel, asphalt, or other construction costs. Bids shall be adjusted accordingly to account for possible material and labor cost increases over the life of the project.

The bidder further acknowledges that the price for mobilization shall not exceed 10 percent of the total amount bid in accordance with FAA requirements.

The bidder further acknowledges that it shall perform, with its organization, an amount of work equal to at least 25 percent of the total Contract cost in accordance with Section 80 of Document 007200, FAA General Contract Provisions.

Bidder: _____

The bidder promises that all work under this contract shall be substantially complete within 347 days from the date specified in the written Notice to Proceed. The bidder agrees to pay, as liquidated damages to the Port for any delay, the sum of \$500 per day for each day of delay beyond the substantial completion date so promised.

The bidder further promises that all work under this Contract shall be complete, having gained a successful final inspection and received final acceptance from the Port, within 90 days after substantial completion. Final payment will not be made until the work is judged complete by the Port.

The bidder also agrees to pay Other Damages described in the Port General Conditions.

The bidder is requested to provide prices for the Base Bid and the Additive Alternate. The Contract will be awarded to the responsible bidder with the lowest responsive Base Bid. The alternate may be awarded solely at the option of the Port. It will not be used as a basis for determining the apparent low bidder.

The bidder submits and proposes the following unit bid prices, to wit:

BASE BID

Bidder: _____

PORTLAND INTERNATIONAL AIRPORT TERMINAL AND CONCOURSES WAYFINDING SIGNAGE					
Item No.	Item Description	Estimated Quantity	Units	Unit Price	Total Price
0001	Mobilization, Cleanup, and Demobilization	1.00	LS		
0002	Sign Group 1	1.00	LS		
0003	Sign Group 2	1.00	LS		
0004	Sign Group 3	1.00	LS		
0005	Sign Group 4	1.00	LS		
Total Amount Bid (Basis of Award)					\$ _____

ADDITIVE ALTERNATE

Bidder: _____

PORTLAND INTERNATIONAL AIRPORT TERMINAL AND CONCOURSES WAYFINDING SIGNAGE					
Item No.	Item Description	Estimated Quantity	Units	Unit Price	Total Price
A-001	Sign Group 5	1.00	LS		
	Total Amount Additive Alternate				\$ _____

Bidder: _____

In the performance of this work, the bidder agrees to abide by the contract clauses and requirements, including those contained in the supplementary conditions.

The bidder hereby acknowledges receipt of Addendum Nos. ____, ____, ____, ____, ____, ____, to these contract documents.

This bid may not be revoked by the bidder for a period of 50 days after the date bids are opened.

Accompanying this bid is an electronic copy of the bid security. The amount is 10 percent of the total amount bid. By submitting a bid under this solicitation the bidder certifies that the electronic copy of the bid security is genuine, and that the bidder will provide hard copies of the original bid security documentation to the Port immediately upon request. It is agreed that if this bid is accepted by the Port's written notice within 50 days after bid opening, and the Contractor executes and delivers the Agreement, including a satisfactory performance bond, and labor and material payment bond, each for the full amount of the Contract, within 10 days after the Port's written notice, said bid security will be returned to the undersigned in accordance with Document 002100, Instructions to Bidders. Otherwise, said bid security may be collected as liquidated damages at the option of the Port.

After the Contractor has delivered the executed Agreement (including a satisfactory performance bond, and labor and material payment bond, each for the full amount of the contract) and evidence of insurance, the Port will issue Notice to Proceed which will establish the dates by which the Contractor is required to attain substantial completion and final acceptance of the work. If all of the documents are not provided within 10 days, the Port may extend the Notice to Proceed date or reduce the contract duration period, as described in the Instructions to Bidders.

The surety company requested to issue the performance bond, and labor and material payment bond will be _____. The bidder hereby authorizes said surety to disclose to the Port any information concerning the bidder's ability to supply the required bonds.

Certificate Regarding Debarment and Suspension: By submitting a bid under this solicitation the bidder certifies that at the time the bidder submits its bid that neither it nor its principals are presently debarred or suspended by any federal department or agency from participation in this transaction, and further certifies as set forth in the supplementary conditions under "Certification Regarding Debarment and Suspension."

Certificate Regarding Lobbying and Influencing Federal Employees: By submitting a bid under this solicitation the bidder gives the certification set forth in the supplementary conditions under "Lobbying and Influencing Federal Employees."

Certificate Regarding Trade Restriction Clause: By submitting a bid under this solicitation the bidder gives the certification set forth in the supplementary conditions under "Trade Restriction Clause."

Certification Regarding Tax Delinquency and Felony Convictions: The bidder shall complete, sign, and include with this bid a "Certification of Offeror/Bidder Regarding Tax Delinquency and Felony Convictions" on the form enclosed.

Certification of Compliance with FAA Buy American Preference Statement:

- A. 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 (FAA) 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.
- B. The bidder 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 Port 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.
- C. The bidder certifies that all construction 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.
- D. The bidder or offeror certifies procurement of certain rolling stock using FAA grant funds will prohibit airports from using Federal financial assistance to procure buses or rail car vehicle rolling stock from covered entities.

Certification Regarding Domestic Preferences for Procurements: The bidder certifies by signing and submitting this bid that, to the greatest extent practicable, the bidder 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.

The bidder certifies that all labor shall be paid no less than the higher of the minimum wage rates established by the U.S. Secretary of Labor or the Commissioner of the Oregon Bureau of Labor and Industries, as included in the contract documents.

The bidder agrees to comply with the requirements of ORS 279C.800 to 279C.870 governing the prevailing wage rates.

The bidder acknowledges that this bid takes into account the public works bond that the successful bidder generally must file with the Construction Contractors Board and that the bidder will be entitled to no compensation in addition to the bid price on account of that bond.

The requirements of 49 CFR Part 26 including any amendments thereto apply to this contract. It is the policy of the Port to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Port encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

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.

Bidder: _____

This Contract will be awarded to the responsible bidder with the lowest responsive bid who properly submits the Bidders List Information form.

The bidder certifies that the bidder has not discriminated and will not discriminate in the award of a contract, in violation of ORS 279A.110(1), or on any other basis prohibited by law.

The bidder acknowledges that the Port has the right to reject any or all bids.

Each bidder must supply all the information required by the bid documents.

Legal Name of Company (Bidder): _____

Business Address of Bidder: _____

Business Phone Number: _____ Fax Number: _____

E-Mail Address: _____

Signature of Authorized Person: _____

Printed Name of Authorized Person: _____

Title: _____

Date: _____

Name of Primary Contact: _____

Phone Number: _____

E-Mail Address: _____

State of Oregon Construction Contractors Board Registration No. _____
(Required for Bidding).

Bidder's Federal Tax I.D. No. _____ (Required for Bidding).

☐ By checking this box and submitting a bid under this solicitation, the bidder certifies that it can and will comply with the vehicle and equipment requirements specified in Section 015720, Construction Equipment Idling, Fuel, and Engine Standards.

Include with this bid:

- Bid security
- Bidders List Information (form follows)
- Certification of Offeror/Bidder Regarding Tax Delinquency and Felony Convictions
- Bidder's Certification Regarding "Certification of Compliance with FAA Buy American Preference – Construction Projects" (form follows)
- Bidder's Certification Regarding "Certification of Compliance with FAA Buy American Preference – Equipment/Building Projects" (form follows)

Submit within two working hours of bid opening:

- First Tier Subcontractor Disclosure (form follows)

DOCUMENT 004334
BIDDERS LIST INFORMATION

In accordance with 49 CFR 26.11(c) and the instructions provided in Document 001100 (Invitation to Bid), the bidder must provide the following bidders list information for itself and for each firm that submitted a bid for a subcontract (including suppliers), whether or not the firm's bid was successful. Submit a completed form for the bidder and one completed form for each such firm.

Firm Name: _____

Firm Address (Including Zip Code): _____

DBE or Non-DBE Status: _____ Age of Firm: _____

Annual Gross Receipts of Firm:

☐ Less than \$1M ☐ \$1M-\$5M ☐ \$5M-\$10M ☐ \$10M-\$20M ☐ \$20M-\$35M ☐ Over \$35M

NAICS Codes of Scope(s) Bid: _____

DOCUMENT 004335
FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM

PROJECT NAME: _____

SOLICITATION NO. _____ BIDS DUE: Date: _____ Time: _____

This form must be submitted at the location specified in the Invitation to Bid on the bid due date and within two working hours after the time of the deadline when bids are due.

List below: 1) the name of each subcontractor who will be furnishing labor or will be furnishing labor and materials, and who will have a contract value that is equal to or greater than five percent of the total project bid or \$15,000, whichever is greater, or \$350,000 regardless of the percentage of the total project bid; 2) the dollar value of the subcontract; and 3) the category of work that the subcontractor will be performing. Enter "NONE" if there are no subcontractors. (ATTACH ADDITIONAL SHEETS IF NEEDED.)

Name, Address, Telephone	Dollar Value	Category of Work

Failure to submit this form by the disclosure deadline will result in a nonresponsive bid. A nonresponsive bid will not be considered for award.

FORM SUBMITTED BY (BIDDER NAME): _____ CONTACT NAME: _____ PHONE: _____
Print or Type

Signature certifies as to the accuracy of the foregoing information: _____
Authorized Signature Date

DOCUMENT 004537
CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY
AND FELONY CONVICTIONS

The bidder must complete the following two certification statements. The bidder 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 bidder agrees that, if awarded a contract resulting from this solicitation, the bidder will incorporate this provision for certification in all lower-tier subcontracts.

Certifications

- 1) The bidder 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 bidder represents that it is (☐) is not (☐) a corporation that was convicted of a felony criminal violation under any Federal law within the preceding 24 months.

Note

If a bidder responds in the affirmative to either of the above representations, the bidder is ineligible to receive an award unless the Port has received notification from the Federal Aviation Administration (FAA) suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the FAA's interests. The bidder therefore must provide information to the Port about its tax liability or conviction, and the Port will then notify the FAA Airports District Office, which will then notify the FAA'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 USC § 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.

Date

Signature

DOCUMENT 004547
CERTIFICATION OF COMPLIANCE WITH FAA BUY AMERICAN PREFERENCE –
CONSTRUCTION PROJECTS

PROJECT NAME:	
AIRPORT NAME:	
AIP NUMBER:	

As a matter of bid responsiveness, the bidder shall complete, sign, date, and submit this certification statement with their bid. The bidder shall indicate how they intend 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. The bidder shall select one or the other (i.e. not both) by inserting a checkmark (✓) or the letter “X”.

☐ The bidder 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; or
- 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 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 agrees:

1. To provide to the Port or the FAA evidence that documents the source and origin of the iron, steel, and/or manufactured product,
2. To faithfully comply with providing US domestic products, and
3. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
4. Certify that all construction materials used in the project are manufactured in the U.S.

☐ The bidder hereby certifies it cannot comply with the 100% 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 bidder with the apparent low bid agrees:

1. To submit to the Port 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,
2. 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 bid,

3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA,
4. To furnish US domestic product for any waiver request that the FAA rejects, and
5. 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% of the cost of all components and subcomponents of the “facility.” 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% US 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).
- a) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
- b) 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 form.
- 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.

[signature page follows]

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the FAA 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

DOCUMENT 004548
CERTIFICATION OF COMPLIANCE WITH FAA BUY AMERICAN PREFERENCE –
EQUIPMENT/BUILDING PROJECTS

PROJECT NAME:	
AIRPORT NAME:	
AIP NUMBER:	

As a matter of bid responsiveness, the bidder shall complete, sign, date, and submit this certification statement with their bid. The bidder shall 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. The bidder shall select one or the other (not both) by inserting a checkmark (✓) or the letter “X”.

- ☐ The bidder 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; or
 - 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 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 agrees:

- 1. To provide to the Port or FAA evidence that documents the source and origin of the steel and manufactured product,
 - 2. To faithfully comply with providing US domestic product,
 - 3. To furnish US domestic product for any waiver request that the FAA rejects, and
 - 4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- ☐ The bidder hereby certifies it cannot comply with the 100% 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 with the apparent low bid agrees:
- 1. To submit to the Port or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that support the type of waiver being requested,
 - 2. 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 bid,

3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA, and
4. 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 that 60% 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% US 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 form.
- b) At minimum two comparable equal bidders and/or offerors.
- c) Receipt or record that demonstrates that the 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.

[Signature page follows]

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the FAA 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

DOCUMENT 005200
AGREEMENT

THE PORT OF PORTLAND
P.O. BOX 3529
PORTLAND, OREGON 97208

PORTLAND INTERNATIONAL AIRPORT
TERMINAL AND CONCOURSES WAYFINDING SIGNAGE

AIP No. [to be determined]

THIS AGREEMENT made and entered into on the date of full execution of this contract by and between
The Port of Portland, a port district organized under ORS Chapter 778, hereinafter called "the Port," and
_____ of
_____,
hereinafter called "the Contractor."

W I T N E S S E T H:

That the Contractor in consideration of the covenants, agreements and payments to be performed and made by the Port, hereby covenants and agrees to provide all things necessary for the performance of the contract, including, but not limited to, bonds, labor, material, transportation, and equipment required to execute, construct and furnish in full compliance with the contract documents, in an expeditious, substantial and workmanlike manner, the work and material hereinafter particularly described:

PORTLAND INTERNATIONAL AIRPORT
MOVING WALKWAYS AND WAYFINDING SIGNAGE

The Contractor agrees that the following are hereby made a part of this contract and are mutually cooperative therewith: (1) a copy of the Contractor's bid signed on _____, 20____, including any documentation accompanying the bid; (2) this Agreement, including any post-bid documentation attached as an exhibit to this contract; (3) Performance Bond; (4) Labor and Material Payment Bond; (5) FAA General Contract Provisions; (6) Port General Conditions; (7) Supplementary Contract Provisions; (8) Supplementary Conditions for Federally Assisted Projects under the AIP; (9) Wage Rates; (10) Drawings; (11) Specifications; (12) Exhibits; and (13) Addenda.

For satisfactorily completed work under this contract, the Port will pay the Contractor as provided by the contract, but in no event more than \$ _____ without an amendment or change order.

The Port anticipates the work under this Contract to be partially funded with the proceeds of a grant from the FAA. The Contractor agrees to comply with the Contract provisions required by the grant and acknowledges that the grant conditions are subject to change at any time, before or after Contract award. The Contractor will be notified of and shall comply with any additional or changed grant conditions which may be imposed by the FAA or other applicable law at any time, beyond those provisions already stipulated in this Contract.

In the event that some or all of the grant funding is terminated, suspended, or modified by the FAA or other applicable law, the Port reserves the right to proceed with any elements of work paid for by the Port, and to delete or modify elements that were to be paid for using grant funds. The deleted or modified

elements of work will be handled as a change in the work in accordance with the General Conditions. The Port further reserves the right to terminate the Contract for convenience at any time in accordance with the General Conditions, in the event some or all of the grant funding is canceled or modified by the FAA or other applicable law.

The Contractor promises that all work under this contract shall be substantially complete within 347 days from the date specified in the written Notice to Proceed. The Contractor agrees to pay, as liquidated damages to the Port for any delay, the sum of \$500 per day for each day of delay beyond the substantial completion date so promised.

The Contractor further promises that all work under this contract shall be complete, having gained a successful final inspection and received final acceptance from the Port, within 90 days after substantial completion. Final payment will not be made until the work is judged complete by the Port.

The Contractor also agrees to pay Other Damages described in the Port General Conditions.

The Contractor shall obtain the prior written consent of the Port to any proposed assignment of any interest in or part of this contract. Such consent shall be at the sole discretion of the Port.

Under the same date as this Agreement, the Contractor is furnishing the Port with a performance bond, and a labor and material payment bond with _____ as surety, each in the amount of the full contract value. These bonds shall ensure complete performance by the Contractor of this contract in accordance with all of its terms and provisions and payment of all amounts owed by the Contractor to others for work performed or materials provided under this contract.

The Contractor agrees to diligently prosecute the work to final acceptance and to accept as full payment hereunder the amounts specified in this contract; and the Port agrees to make payments at the time, in the amount, and upon the terms and conditions specified herein.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed:

(FULL NAME OF COMPANY)

THE PORT OF PORTLAND

BY: _____
(Signature)

BY: _____
(Signature)

NAME: _____
(Print)

NAME: _____
(Print)

TITLE: _____

TITLE: _____

DATE: _____

DATE: _____

Approved as to Legal Sufficiency for the Port of
Portland:

Counsel for The Port of Portland

Approved by Commission on

DOCUMENT 007200

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.

Paragraph Number	Term	Definition
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.
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.

Paragraph Number	Term	Definition
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.
10-23	Construction Safety and Phasing Plan (CSPP)	Not used.
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	a. Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis. b. Owner Force Account - Work performed for the project by the Owner's employees.
10-31	Intention of Terms	Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated,"

Paragraph Number	Term	Definition
		“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. Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard 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 the Port of Portland.
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.

Paragraph Number	Term	Definition
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.'
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.

Paragraph Number	Term	Definition
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.
10-53	Safety Plan Compliance Document (SPCD)	Not used.
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.
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.

Paragraph Number	Term	Definition
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.
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	Owner Defined terms	None

END OF SECTION 10

Section 20 Proposal Requirements and Conditions

Section not used – see Document 001100, Invitation to Bid, and Document 002100, Instructions to Bidders, for proposal requirements and conditions.

END OF SECTION 20

Section 30 Award and Execution of Contract

Section not used – see Document 002100, Instructions to Bidders, for award and execution of contract requirements.

END OF SECTION 30

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.

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 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.

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.

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.

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.

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 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

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 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. Not used.

50-05 Cooperation of Contractor. The Contractor shall be supplied with two hard copies and 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 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 a format acceptable to the Port.

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*.

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 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 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

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.

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.

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. An Engineer/RPR field office is not required.

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, 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.

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

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), if applicable, must be shown on the plans and is indicated as shown in Document 007201, Supplementary Contract Provisions.

Except as listed in Document 007201, 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 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). Not used.

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 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 project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

See Document 005200, Agreement, Document 007201, Supplementary Contract Provisions, and Division 1 for specific phasing and safety requirements.

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.

Contractor shall refer to the plans and specifications 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.

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.

See Division 1 and Division 26 of the specifications for specific utility coordination requirements

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 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.

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.

See Document 007202, Port General Conditions, for additional requirements.

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. See Document 007201, Supplementary Contract Provisions.

END OF SECTION 70

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 25 percent 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 the following information to the RPR 14 days prior to a subcontractor being utilized on the project.

- 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 shall notify the RPR at least 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 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 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 in accordance with Section 013200, Construction Progress Documentation.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a once 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 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.

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 plans 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.

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

80-04.1 Operational safety on airport during construction. All Contractors' operations shall be conducted in accordance with the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction.

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 and that they implement and maintain all necessary measures.

No deviation or modifications may be made to these safety requirements unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications can require a significant amount of time.

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.

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.

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 or a specific completion date 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:

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.

Contract time based on specific completion date. When the contract time is a specified completion date, it shall be the date on which all contract work shall be substantially complete.

If the Contractor finds it impossible for reasons beyond their own control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this paragraph, the Contractor may, at any time prior to the expiration of the contract time as extended, make a written request to the Owner for an extension of time setting forth the reasons which the Contractor believes will justify the granting of their own request. Requests for extension of time, caused by inclement weather, shall be supported with National Weather Bureau data showing the actual amount of inclement weather exceeded what could normally be expected during the contract period. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the supporting documentation justify the work was delayed because of conditions beyond the control and without the fault of the Contractor, the Owner may extend the time for completion by a change order that adjusts the contract time or completion date. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

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. See Document 005200, Agreement, for the allowed construction time and associated liquidated damages cost for late completion. See Document 007202, Port General Conditions, for additional provisions related to liquidated damages.

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
- 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 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 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 contract documents.

END OF SECTION 80

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.

Term	Description
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 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	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. 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%. 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. Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.

Term	Description
	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. All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other 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.

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, 5 percent 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 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 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 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 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 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 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 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 year from the date the Owner takes possession.

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, after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within 3 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 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

DOCUMENT 007201
SUPPLEMENTARY CONTRACT PROVISIONS

1.1 GENERAL

- A. These supplements modify, delete from, or add to the General Contract Provisions.
- B. Where an article, paragraph, or clause of the General Contract Provisions is modified or deleted by these supplements, the unaltered provisions of that article, paragraph, or clause remain in effect.

1.2 SECTION 10 - DEFINITION OF TERMS

- A. Paragraph number 10-59, add to end of definition, "A Supplemental Agreement may be executed by Change Order."

1.3 SECTION 40 - SCOPE OF WORK

- A. See General Contract Provisions Section 40. Change all instances of "supplemental agreement" to "Change Order" throughout and clarify that "Change Order" as used in this context shall mean that it meets the criteria for significant changes as described in subsection 40-02.
- B. See General Contract Provisions subsection 40-02. Last paragraph, change second sentence to read, in part, "...and separate performance and payment bonds, unless such consent and separate bonds are not required under the terms and conditions of the existing performance and payment bonds, as determined in the Owner's discretion."

1.4 SECTION 50 - CONTROL OF WORK

- A. See General Contract Provisions subsection 50-03. Delete last sentence and replace with, "If any paragraphs contained in the Supplementary Contract Provisions conflict with the General Contract Provisions or Technical Specifications, the Supplementary Contract Provisions shall govern. If any paragraphs contained in the Port's General Conditions conflict with the General Contract Provisions, the General Contract Provisions shall govern."
- B. See General Contract Provisions subsection 50-07, first paragraph. Make the following changes:
 - 1. Delete first and second sentences and replace with, "The establishment of necessary horizontal and vertical survey control and/or reestablishment of survey control will be provided by a state-licensed land surveyor furnished by the Port."
 - 2. Change third sentence to read, in part, "...and vertical controls established by the Port's land surveyor."
- C. See General Contract Provisions subsection 50-10. Change last paragraph to read, in part, "...and recover the resulting costs from the Contractor."
- D. See General Contract Provisions subsection 50-13. Delete last sentence of second paragraph and replace with, "Any maintenance cost incurred by the Owner will be recovered from the Contractor."

- E. See General Contract Provisions subsection 50-15. Add new paragraph that reads, “See the Port General Conditions for further information and requirements regarding substantial completion and final acceptance of the Work.”

1.5 SECTION 70 - LEGAL REGULATIONS AND RESPONSIBILITY TO THE PUBLIC

- A. See General Contract Provisions subsection 70-02. Delete and replace with, “Comply with the requirements of Document 007202, Port General Conditions.
- B. See General Contract Provisions subsection 70-07. Change last paragraph to read, in part, “...and recover the resulting costs from the Contractor.”
- C. See General Contract Provisions subsection 70-21. Add the following:

“The Contractor shall maintain workers’ compensation and employer’s liability insurance for all employees subject to the workers’ compensation laws of the State of Oregon, unless exempt, and any other appropriate jurisdiction. The amount of employer’s liability insurance shall not be less than \$1,000,000 per accident, and \$1,000,000 per employee for disease. In lieu of such insurance, the Contractor may maintain a self-insurance program approved by the State of Oregon and a policy of excess workers’ compensation insurance in the amount required by the State, which policy includes coverage for employer’s liability. The Contractor shall provide evidence of such insurance and self-insurance to the Port before commencing Work and throughout the term of this Contract.

“The Contractor shall maintain the following liability coverages in an amount not less than \$5,000,000 per occurrence. The Port shall be given not less than 30 days’ written notice prior to cancellation, non-renewal, or material change of the policy. This insurance shall provide primary coverage and shall not seek any contribution from any insurance or self-insurance carried by the Port. One copy of each policy and a certificate(s) of such insurance, including an additional insured endorsement, shall be delivered to the Port before commencing Work and shall be subject to review and approval by the Port. The Port may defer delivery of the copy of the policy, but such deferral shall not be a waiver of the Port’s right to a copy of the policy. In the event the Contractor fails to maintain such insurance, the Port may, without incurring liability to the Contractor for any related costs: (1) immediately suspend the Work until the required insurance is obtained, without any increase in the Contract Price or any extension of the Contract Time, directly or indirectly attributable to the suspension; and/or (2) terminate this Contract as provided for in these General Contract Provisions.

- “a. The Contractor shall maintain commercial general liability insurance to protect against liability for bodily injury and property damage which may arise out of the Contractor’s operations under this Contract. Such insurance shall include coverage for products-completed operations liability, independent contractors, contractual liability (including the tort liability of another assumed under a business contract), and all other standard coverages usually afforded by a commercial general liability policy. The Contractor’s commercial general liability policy shall not exclude coverage for explosion, collapse, and underground (“xcu”) hazards. Such insurance shall name the Port and its commissioners, employees, and agents as additional insureds, and shall insure the Contractor’s obligations under this Contract to indemnify and hold harmless the Port, its commissioners, employees, and agents, provided that the Contractor’s insurer shall not be required to indemnify the Port for damages arising out of the death or bodily injury to persons or damage to property caused in whole or in part by the negligence of the Port.

- “b. The Contractor shall maintain business automobile liability insurance to protect against liability arising from the use, loading, and unloading of all of the Contractor’s owned, hired, and non-owned automobiles in connection with this Contract. Such insurance shall cover the Port as an additional insured, provided that the Contractor’s insurer shall not be required to indemnify the Port for damages arising out of the death or bodily injury to persons or damage to property caused in whole or in part by the negligence of the Port.

“The Contractor shall obtain and maintain for the benefit of the parties to this Contract, as their interest may appear, all risk builder’s risk insurance to the extent of 100 percent of the value of the Work. Coverage shall also include: (1) formwork in place, (2) form lumber and form components on site, (3) temporary structures, (4) equipment, and (5) supplies related to the Work. Such insurance shall be endorsed to allow partial occupancy and/or utilization of the Work by the Port prior to Substantial Completion of all the Work. Coverage shall continue until the Port’s Final Acceptance of the Work. The Port shall be named as additional insured and loss payee as its interests may appear. The Port shall be given not less than 30 days’ written notice prior to cancellation, non-renewal, or material change of the policy. One copy of the policy and one certificate of such insurance shall be delivered to the Port before commencing Work and shall be subject to review and approval by the Port. The Port may defer delivery of the copy of the policy, but such deferral shall not be a waiver of the Port’s right to a copy of the policy. In the event the Contractor fails to maintain such insurance, the Port may, at the Port’s sole option, arrange therefor; and any administrative costs and premium incurred shall be reimbursed by the Contractor.”

1.6 SECTION 80 - EXECUTION AND PROGRESS

- A. See General Contract Provisions subsection 80-01. Change second paragraph to read, in part, “...equal to at least 8 percent of the total contract cost.”
- B. See General Contract Provisions subsection 80-03. Change first sentence to read, in part, “...for the RPR’s review and acceptance at the preconstruction meeting.”
- C. See General Contract Provisions subsection 80-09. After the last paragraph, add the following:
- “Where the Contractor’s services have been so terminated by the Port, the termination will not affect any rights of the Port against the Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due the Contractor by the Port will not release the Contractor from liability.”

1.7 SECTION 90 - MEASUREMENT AND PAYMENT

- A. See General Contract Provisions subsection 90-06. Make the following changes:
1. Paragraph (a), change to read, in part, “...retained by the Owner for protection of the Owner’s interests, unless the Contractor exercises an option under ORS 279C.560(1). Should the Contractor exercise such an option, no percentage retainage shall be deducted. Unless otherwise instructed by the Owner, any amount retained by the Owner...”
 2. Paragraph b, change both instances of “30 days” to “10 days.”
- B. See General Contract Provisions subsection 90-06, paragraph b. Change both instances of “30 days” to “10 days.”
- C. See General Contract Provisions subsection 90-09. First paragraph, delete first and second sentences and replace with, “When the contract work has been accepted in accordance with the

requirements Section 50, paragraph 50-15, *Final Acceptance*, the Contractor may request final payment. The Contractor shall request final payment following the procedure for progress payments described in Document 007202, Port General Conditions. Within 15 days upon receipt of the Contractor's request for final payment, the RPR will review the request and recommend payment or respond in writing to the Contractor with a final estimate of work actually performed and the reasons the RPR is requiring resubmittal of the request before it can be approved. The Contractor shall make the necessary corrections and resubmit the request."

D. See General Contract Provisions subsection 90-10. Make the following changes:

1. Paragraph b, delete and replace with, "This warranty shall continue for a period of one year from the date of Substantial Completion of the work, or for any longer period expressly provided by this Contract, provided by any special warranty or extended warranty required by this Contract or by a Subcontractor or supplier, or otherwise provided by Law. In special circumstances where a particular item or area of Work is placed in continuous service before Substantial Completion of all the Work, the warranty period for that item will start to run from the later of the following dates: the date given in the Port's letter confirming Substantial Completion of the part of the Work; the date the Port receives training on the systems and equipment in that part of the Work; the date interim operation and maintenance manuals are approved; or the date the Port takes over operation or use in lieu of issuing a letter confirming Substantial Completion for that part of the Work."
2. Paragraph g, add to end of paragraph, "In addition, the Contractor shall pass through to the Owner any warranty or maintenance obligation provided by a Subcontractor or supplier in excess of that required by this Contract."

E. See General Contract Provisions subsection 90-11.

1. Paragraph i, delete and replace with, "Redline drawings for creating record drawings."
2. After paragraph l, add the following:
 - "m. Bonds, if any.
 - "n. Software or code use rights documentation.
 - "o. Certificates of inspection from jurisdictional authorities.
 - "p. The Contractor's Waiver of Claims To Date form certifying that all payrolls and material bills and other indebtedness connected with the Work for which the Port might in any way be responsible have been paid or otherwise satisfied.
 - "q. Consent of surety, if any, to final payment."

DOCUMENT 007202
PORT GENERAL CONDITIONS (FAA PROJECTS)

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DEFINITIONS

For the purposes of this Contract, terms are defined in the Agreement and in this article, and may be defined in the Specifications or Drawings. Terms used in a defined sense normally are capitalized; terms used in a general or undefined sense normally are not capitalized. Unless the context clearly requires otherwise, or the term is expressly defined otherwise for a particular purpose, the following definitions apply throughout this Contract.

Act of God - Any misadventure or casualty caused by the direct, immediate, and exclusive operation of the forces of nature, uncontrolled and uninfluenced by the power of man and without human intervention, which could not have been prevented or escaped by any amount of foresight or prudence, by any reasonable degree of care, or by the aid of any appliances reasonably required under the circumstances. A meteorological event, including but not limited to, cold, heat, rain, snow, wind, flood, or lightning, shall be rebuttably presumed not to be an Act of God if it falls within two standard deviations of the mean of records for that event maintained by the U.S. Weather Bureau for the Portland International Airport at Portland, Oregon.

Addenda - Written or graphic instruments issued prior to bid opening which clarify, correct, or change the bidding documents or this Contract.

Agreement - The written document signed by the parties and incorporating other documents.

Ambiguities - Ambiguities, conflicts, errors, discrepancies, or inconsistencies.

Bid - The offer or proposal of the bidder submitted on the prescribed form setting forth the price(s) for the Work to be performed.

Change Directive - A written order prepared by the Port directing a change in the Work prior to agreement on adjustment, if any, in the Contract Price or Contract Time.

Change Order - A written amendment to this Contract which authorizes an addition, deletion, or revision to the Work described in this Contract, and which may authorize an adjustment in the Contract Price, the Contract Time, or both.

Construction Contract Manager - An individual authorized in writing by the Port to represent the Port with respect to this Contract within the scope of the authority conferred by the written authorization. May be used interchangeably with "Resident Project Representative (RPR)" as defined in Document 007200, FAA General Contract Provisions.

Contract - The entire written agreement between the Port and the Contractor establishing their respective rights and obligations concerning the Work.

Contract Documents - The Contract Documents include all documents that make up this Contract, including but not limited to the Contractor's signed Bid; the Agreement; bonds; these General Conditions; the Supplementary Conditions; wage rates; the Specifications; the Drawings; the Notice to Proceed; Addenda; and Change Orders.

Contract Price - The total compensation payable to the Contractor for performing the Work as stated in this Contract and as modified by Change Order.

Contract Time - The number of days between the Work Start Date established by the Notice to Proceed and the date by which Substantial Completion of all work must be achieved under this Contract.

Contractor's Representative - An individual authorized in writing by the Contractor to represent the Contractor with respect to this Contract.

Day or Calendar Day - Any 24-hour period beginning at midnight.

Day, Business - Any Calendar Day other than Saturday, Sunday, or a holiday on which the Port's administrative offices are closed.

Defective - (1) Unsatisfactory, faulty, or deficient, (2) not conforming to this Contract, or (3) not meeting the requirements of any inspection, test, or approval required by this Contract or federal, state, or local law.

Drawings or Plans - The graphic representations which show the character and scope of the Work to be performed, which have been prepared or approved by the Port, and which are expressly incorporated into this Contract.

Final Acceptance - The Port's written acknowledgment that the Work has been fully completed and all Contract-required documentation has been received and accepted.

Law - Any statute, rule, regulation, ordinance, or order of any federal, state, or local government including, but not limited to, ordinances and resolutions adopted by the Board of Commissioners of the Port of Portland, and rules and regulations adopted in accordance with those ordinances and resolutions.

Maintenance Data - Manufacturer's catalog information, Shop Drawings, installation, operation, and maintenance manuals, and other information needed for operating, troubleshooting, preventive maintenance, repair, restoration, or overhaul of materials, products, systems, and equipment furnished or provided by the Contractor.

Notice to Proceed - A written notice given by the Port to the Contractor fixing the Contract Time and designating a date on which the Contractor is authorized to begin the Work.

Owner - The Port of Portland.

Product Data - Pictures, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

Samples - Physical examples of material, equipment, or workmanship which demonstrate and establish standards by which the Work will be judged.

Shop Drawings - Diagrams, drawings, illustrations, instructions, and other data submitted by the Contractor to illustrate some portion of the Work.

Specifications - Those portions of this Contract consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual or firm having a direct contract with the Contractor or with any other Subcontractor at any tier for the performance of a part of the Work.

Substantial Completion - Completion of the Work, or a part of the Work designated by the Port, in accordance with this Contract, to the point where it may be utilized for the purpose for which it was intended.

Work - The labor, material, equipment, and services required by this Contract.

Work Start Date - The day stated in the Notice to Proceed when the Contract Time will begin to run in accordance with this Contract.

ARTICLE 1 - TERMINOLOGY

- 1.1 Unless stated otherwise in this Contract, words or phrases which have a well-known technical, construction industry, or trade meaning are used in accordance with such recognized meaning.
- 1.2 Unless stated otherwise in this Contract, all Specifications are directed to the Contractor. This includes statements which have no grammatical subject, as in "Install equipment plumb and level."
- 1.3 In the interest of brevity, this Contract frequently omits modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.
- 1.4 The following terms are used in this Contract: as allowed, as directed, as ordered, as required, acceptable, proper, reasonable, satisfactory, suitable. These items and any others of like effect or import describe direction, judgment, requirement, or review of the Port. Such use is solely to evaluate the Work for compliance with this Contract unless there is a specific statement otherwise. The use of such terms never indicates the Port has authority to supervise or direct performance of the Work.
- 1.5 The words, "Furnish," "Install," "Perform," and "Provide" shall have the following meanings for the purposes of this Contract. When such verbs are not used in connection with services, materials, or equipment in a context clearly requiring an obligation on the part of the Contractor, "provide" is implied.
 - A. Furnish shall mean to supply and deliver services, materials, or equipment to the Work site (or other specified location) ready for use or installation and in usable or operable condition.
 - B. Install shall mean to put into use or place in final position services, materials, or equipment complete and ready for intended use.
 - C. Perform or provide shall mean to furnish and install services, materials, or equipment complete and ready for intended use.

ARTICLE 2 - PRELIMINARY MATTERS

Port Representative

- 2.1 The Port's Engineering Director is authorized to represent the Port with respect to this Contract, provided that their authority to amend this Contract is limited to the amount set by Port policy. The Engineering Director will appoint a Construction Contract Manager in writing to exercise all or part of their authority.

Contractor's Representative

- 2.2 The Contractor shall authorize the Contractor's Representative to receive communications from the Port and to sign the Contractor's communications to the Port. The Contractor's Representative shall not be replaced without written notice to the Port except under extraordinary circumstances.

Online Construction Management System

- 2.3 All written forms of communication, including but not limited to submittals, invoices, notices, reports, requests, clarifications, approvals, transmittals, and letters, shall be conducted exclusively through the Port's online construction management system unless otherwise specified or approved by the Port. Email shall not be considered an official repository for these items unless explicitly permitted by the Port.

- 2.4 The Contractor will receive an invitation to the Port's online construction management system to set up an account with a user name (e-mail address) and password. One login account will initially be granted to the Contractor, but the Port will allow up to two additional login accounts (for a total of three) upon request. The Contractor shall protect credentials, data, and system access consistent with industry best practices.
- 2.5 The Contractor shall ensure all assigned users complete Port-required training prior to accessing the system.
- 2.6 Email notifications generated from the system will be considered in effect as of the time the email is sent. The Contractor shall ensure timely entry, response, and status updates in the system in accordance with the Port's schedules and procedures.
- 2.7 Documents maintained within the system constitute the official project record. Electronic approvals and e-signatures executed therein carry the same force and effect as wet signatures to the extent allowed by law.

Informal Communications

- 2.8 In addition to the communication between the Port's Representative and the Contractor's Representative noted above, frequent informal communication will take place between Port and Contractor employees to facilitate the Work. These communications may include Contract enforcement and interpretation. If any communication from the Port appears that it will result in a change in Contract Time or Contract Price, the Contractor shall request that the issue be presented in writing.

Commencement of Contract Time

- 2.9 The Contract Time will commence to run on the Work Start Date stated in the Notice to Proceed. Unless provided otherwise by the Agreement, the Work Start Date may be any date within 45 days after the Port delivers the executed Contract to the Contractor.

Starting the Work

- 2.10 The Contractor may start to perform the Work on the Work Start Date stated in the Notice to Proceed.

Before Starting Construction

- 2.11 Generally, a preconstruction meeting to establish a working understanding among the parties will be held before the Contractor begins the Work. Procedures will be established for operations coordination and administrative communication for matters such as submittals, clarifications and interpretations, and Change Orders; and for processing applications for payment. At least one week prior to this meeting or as otherwise specified below, the Contractor shall submit to the Port for review a complete list of material suppliers and subcontractors, a preliminary work progress schedule, a preliminary submittal schedule, a preliminary cash flow schedule, and the contractor safety information form.
 - A. The preliminary work progress schedule shall be finalized and submitted to the Port one week after the preconstruction meeting. Unless specified otherwise, the work progress schedule shall indicate the Contractor's planned progress in increments of not more than 7-day periods. The schedule will be subject to review and comment by the Port. The Contractor shall prepare and submit revisions to match actual and projected progress as requested by the Port,

before and during the course of the work, at no added cost to the Port. The Contractor shall adhere to the most recent version of the schedule.

- B. The Port will prepopulate the Submittal Register in the Port's online construction management system. The Contractor shall verify that the Submittal Register includes all submittals required by the Contract Documents and then develop a preliminary submittal schedule with target submittal dates that align with the Contractor's approved work progress schedule. The target submittal dates shall factor in time for the Port's review and the Contractor's submission of revised submittals. The submittal schedule shall be in PDF or other format approved by the Port and be submitted at least 10 days prior to the first scheduled submittal date. Once the preliminary submittal schedule is approved by the Port, the Contractor shall enter the target dates in the Submittal Register and be responsible for updating it during the course of the Work.
 - C. The preliminary cash flow schedule shall be finalized and submitted to the Port one week after the preconstruction meeting. The schedule shall show the estimated dollar amount of each of the Contractor's monthly requests for progress payment and will be used by the Port for financial planning purposes. Payments to the Contractor are not restricted by the amounts given in the cash flow schedule. However, revised work progress and cash flow schedules will be required if amounts paid as monthly progress payments differ greatly from the amounts estimated.
 - D. Prior to commencement of work, the Contractor shall submit a site-specific safety and health plan in compliance with 29 CFR 1926, and the contractor safety information form for safety planning purposes (form follows these General Conditions). The Port expects that the Contractor will abide by all current federal and state OSHA requirements and the Contract Documents to provide for the safety of the Contractor's employees, Port employees, tenants, and the general public. Work performed by Subcontractors shall be on the form. The Contractor shall also include applicable company policies, procedures, or plans. Safety data sheets (SDS) for chemical products introduced to Port premises shall not be submitted with this information, but shall accompany the Contractor on site and be available to the Port upon request.
- 2.12 In the case of a lump-sum agreement or lump-sum bid items, the Contractor shall, no later than one week after the date indicated in the Notice to Proceed for commencement of preliminary Work prior to construction, submit to the Port a detailed breakdown of the amount of each item used in the compilation of the Bid. The breakdown format shall be sufficiently detailed to meet the approval of the Port, and to serve as the basis for progress payment requests. The detailed breakdown may be used in the compilation of Change Order prices when such breakdown is determined by the Port to be applicable and consistent with accepted construction practice.
- 2.13 The Contractor shall, no later than one week after receipt of the Notice to Proceed, submit to the Port a breakdown of the payroll rates for each trade. The Port may use this breakdown when evaluating Contract Price adjustments. The breakdown shall include the base rate, benefits, payroll taxes, and insurance.
- 2.14 Before undertaking each part of the Work, the Contractor shall carefully study and compare this Contract and check and verify pertinent figures shown therein and all applicable field measurements. The Contractor shall promptly report in writing to the Port any Ambiguities that the Contractor may discover.

ARTICLE 3 - CONTRACT DOCUMENTS

Intent

- 3.1 It is the intent of this Contract to describe the complete Work. Any labor, material, equipment, or service that may be reasonably inferred from this Contract as being required to produce the intended result shall be supplied whether or not it is expressly specified.
- 3.2 The Contractor is expected to read the entirety of the Contract Documents and to seek clarification from the Port of any Ambiguities found between, among or within the Contract Documents. Absent written clarification from the Port to the contrary, the Contractor shall, in resolving Ambiguities discovered either before or after original procurement and/or installation, provide the better quality of, and the greater quantity of, the Work. The Contractor shall specifically notify all Subcontractors and suppliers of this requirement.
- 3.3 This Contract is unique. Labor, material, equipment, or services approved for other Port work may not necessarily be approved for this Contract.
- 3.4 Pursuant to ORS 15.320, Oregon law applies to this Contract. In the event ORS 15.320 is deemed invalid or inapplicable, the parties agree that Oregon law applies to this Contract.
- 3.5 If the Contractor's Bid or Proposal is incorporated into this Contract, any Ambiguities between the bid or proposal and this Contract will be resolved in favor of this Contract. Any limitations of liability, waivers of damages, or disclaimers of warranty or liability contained in the Contractor's Bid or Proposal will not apply to the Work or this Contract.
- 3.6 If any provision of this Contract is held to be illegal, invalid, or unenforceable under present or future laws effective during the terms of this Contract or in subsequent dispute resolution proceedings, the legality, validity, and enforceability of the remaining provisions of this Contract will not be affected thereby. As to the illegal, invalid or unenforceable clauses, they shall be rendered void only to the extent of such illegal, invalid and unenforceable portions, with the remainder of such clauses given full force and effect.

Reference Standards

- 3.7 Unless expressly provided otherwise, references to standard specifications, manuals, or codes of any technical society, organization, or association, or to the codes of any governmental authorities, shall mean the latest version or edition in effect on the effective date of this Contract. Such reference may be specific or implied. No provision of any referenced standard specification, manual, or code shall change the duties and responsibilities of the Port, the Contractor, or any of their employees, contractors, Subcontractors, or agents from those set forth in this Contract.

Reporting Ambiguities

- 3.8 If, during the performance of the Work, the Contractor discovers any Ambiguities within this Contract, the Contractor shall report it to the Port, in writing, at once. The Contractor shall proceed with the affected Work after receiving clarification or interpretation from the Port. The Contractor shall not be liable to the Port for failure to report any Ambiguities in this Contract unless the Contractor factually knew or reasonably should have known of the Ambiguities.

Reuse

- 3.9 Neither the Contractor nor any Subcontractor, manufacturer, fabricator, supplier, or distributor shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents, or copies thereof, prepared by or for the Port. They shall not reuse any of them

for any purpose unrelated to this Contract without the prior written consent of the Port and of any other person with an intellectual property interest in the documents.

Use of Electronic Documents

- 3.10 Those using electronic documents provided by the Port do so at their own risk. Electronic documents are subject to data erosion, erasure, and alteration. Because computer software may become obsolete with time, the Port makes no warranties or representations regarding the ability to permanently access electronic documents it provides. The Port makes no warranties or representations regarding the presence or absence of computer viruses in electronic documents it provides; any person using an electronic document provided by the Port should check the document for computer viruses before using it in a manner that might allow the spread of a computer virus. All or parts of electronic documents provided by the Port may be copyrighted, and those using them are responsible for determining the existence of copyrights and for obtaining permission to copy copyrighted material.

ARTICLE 4 - AVAILABILITY OF LANDS; PHYSICAL CONDITIONS; SURVEY CONTROL

Availability of Lands

- 4.1 The Port will provide access to: (1) lands upon which the Work shall be performed, (2) rights-of-way for access thereto, and (3) such other lands designated in this Contract for the use of the Contractor. Any easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the Port, unless otherwise provided in this Contract. The Contractor shall provide, at no additional cost to the Port, additional lands and access that the Contractor may require for temporary construction facilities or storage of material and equipment.

Physical Conditions – Investigations, Reports, and Tests

- 4.2 The Port may make investigations, reports, or tests available to the Contractor. However, the Port makes no warranty or representation regarding the accuracy or completeness of any such investigations, reports, or tests unless they have expressly been made a part of this Contract.

Differing Site Conditions

- 4.3 The Contractor shall promptly notify the Port in writing of any conditions at the site differing materially from those shown in this Contract. The Port will promptly review those differing conditions and advise the Contractor in writing if further investigation or tests are necessary. The Port will obtain any necessary additional investigations and tests. If the conditions differ materially from those shown in this Contract or from what reasonably could have been anticipated by the Contractor, this Contract may be amended to allow additional compensation, time, or both as reasonably necessary to accommodate the differing conditions.

Survey Control

- 4.4 The Port will provide engineering surveys and establish those survey control points necessary for the Contractor to lay out the Work. The Contractor shall: (1) lay out the Work, unless otherwise specified in this Contract, (2) protect and preserve the established survey control points, and (3) make no change or relocation of the survey control points without the prior written approval of the Port. The Contractor shall report to the Port whenever any survey control point is lost, destroyed, or requires relocation. At no additional cost to the Port, the Contractor shall be responsible for the accurate replacement or relocation of survey control points lost or destroyed without Port approval. Such replacement shall be by a professional land surveyor licensed by the State of Oregon.

ARTICLE 5 - BONDS

Bonds

- 5.1 The Contractor shall furnish a performance bond, and a labor and material payment bond, each in an amount equal to the Contract Price, as security for the faithful performance of, and payment of, all the Contractor's obligations under this Contract. The bonds shall remain in effect until at least one year after the date of Final Acceptance, except as otherwise provided by Law. The performance bond, and labor and material payment bond shall be on the forms prescribed by the bidding and contract requirements and executed by sureties: (1) licensed to conduct business in the State of Oregon, and (2) named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All bonds signed by an agent shall be accompanied by a power of attorney or other evidence of the agent's authority to act on behalf of the surety.
- 5.2 The Contractor shall substitute another bond and surety meeting the requirements of Item 5.1 within 5 days after the surety on any bond furnished by the Contractor: (1) is declared bankrupt, (2) becomes insolvent, (3) has its right to do business terminated in any state where any part of the Work is located, or (4) ceases to meet the requirements of Item 5.1.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

Administration and Supervision

- 6.1 The Contractor shall supervise and direct the Work competently and efficiently, applying the skills and expertise as may be necessary to perform the Work in accordance with this Contract. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor shall be responsible for seeing that the finished Work complies accurately with this Contract.
- 6.2 The Contractor's project superintendent shall not be replaced without written notice to the Port.

Labor and Material

- 6.3 The Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work, and to perform construction as required by this Contract. The Contractor shall at all times maintain good discipline and order at the site.
- 6.4 The Contractor shall give not less than 24 hours' notice to the Port if work is to be performed outside normal day-shift hours or on Saturday, Sunday or any legal holiday. Emergency conditions relating to safety or protection of persons or property are valid exceptions to such notice. Specific work hour restrictions may be described in the Supplementary Conditions or Division 1.
- 6.5 Unless otherwise specified, the Contractor shall furnish for the execution, required testing, initial operation, and completion of the Work all necessary material, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, and all other facilities and incidentals.
- 6.6 Products containing asbestos or other hazardous material, as defined by ORS 466.605, shall be used only with the Port's prior written approval.

- 6.7 The Contractor shall obtain documentation from distributors, fabricators, manufacturers, and suppliers that provide instructions for the application, cleaning, connection, erection, installation, and use of their products. The Contractor shall follow these instructions unless more stringent requirements are provided in this Contract.
- 6.8 All material provided and normally tested and labeled by an approved testing laboratory, such as Underwriters Laboratories (UL), Canadian Standards Association (CSA), or by a similarly recognized third-party approval authority, shall be so labeled.

“Pre-Bid Approved Equals,” “Equals,” and Substitutes

- 6.9 Whenever an item of material or equipment is specified or described in this Contract by using the name of a proprietary item or the name of a particular supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description indicates that no substitution is permitted, other items of material or equipment, or material or equipment of other suppliers, may be submitted to the Port for evaluation under the circumstances described below:
- A. “Pre-Bid Approved Equal” Items: Requests for evaluation of “pre-bid approved equal” material, products, or services shall be made prior to submittal of the Bid, in accordance with the Instructions to Bidders.
 - B. “Equal” Items: If in the Port’s sole discretion an item of material or equipment proposed by the Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by the Port as an “equal” item, in which case evaluation and approval of the proposed item may, in the Port’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. Proprietary materials, products, or services that are specified but not followed by the words “or pre-bid approved equal,” “or equal,” or “no substitution” will be evaluated as if they were followed by the words “or equal.” For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - 1. It is at least equal in quality, durability, maintainability, appearance, strength, and design characteristics;
 - 2. It will reliably perform at least equally well the function imposed by the design concept of the completed Work as a functioning whole, and;
 - 3. The Contractor certifies that there is no increase in cost to the Port; and that it will conform substantially, even with deviations, to the detailed requirements of the item named in this Contract.
 - C. Substitute Items:
 - 1. If an item of material or equipment proposed by the Contractor does not qualify as an “equal” item as defined above, it will be considered a proposed substitute item. This determination will be at the Port’s sole discretion.
 - 2. The Contractor shall submit sufficient information, as provided below, to allow the Port to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The Port will not accept requests for evaluation of proposed substitute items of material or equipment from anyone other than the Contractor. The Contractor shall make the request as a submittal.

3. The application shall certify that the proposed substitute item will adequately perform the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified.
4. The application shall state the extent, if any, to which the use of the proposed substitute item will prejudice the Contractor's achievement of Substantial Completion on time, whether or not use of the proposed substitute item in the Work will require a change in this Contract (or in the provisions of any other affected contract with the Port for work) to adapt the design to the proposed substitute item, and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
5. The application shall identify any variations of the proposed substitute item from that specified, and shall identify available engineering, sales, maintenance, repair, and replacement services.
6. The application shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change, all of which will be considered by the Port in evaluating the proposed substitute item.
7. The Port may require the Contractor to furnish additional data beyond that listed above about the proposed substitute item.
8. The Port may require the Contractor to furnish, at the Contractor's expense, a special performance guarantee or other surety with respect to any substitute.
9. No increase in the Contract Price or extension of the Contract Time will be considered when a substitution is not accepted.

D. No Substitution:

1. Materials, products, or services marked "no substitution" have been determined to be 1) manufactured from a single source only or 2) required for the efficient utilization of existing equipment or systems. Requests for substitution will not be considered for these items. Justifications for classifying these products as "no substitution" are on file as brand name exemption items in the Port's Contracts and Procurement Office.
- 6.10 Contractor Application for Evaluation: The application for evaluation of "equal" or substitute items shall be made using the forms provided by the Port. These forms may be copied.
- 6.11 Port's Evaluation: Within 10 days, the Port will evaluate each application for "equal" and substitute items. The Port will be the sole judge of acceptability. No "equal" or substitute item shall be ordered, installed, or utilized until the Port's evaluation is complete, which will be evidenced by either a Change Order for a substitute or an approved submittal for an "equal." The Port will advise the Contractor in writing of any negative determination.
- 6.12 Substitute Construction Methods or Procedures (Value Engineering): If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in, and expressly required by, this Contract, the Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by the Port. The Contractor shall submit sufficient information to allow the Port, in the Port's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by this Contract. The procedure for evaluation by the Port will be similar to that provided for substitute items. The Port will record

time required by the Port and the Port's consultants in evaluating the substitute proposed by the Contractor and in making changes to this Contract (or in the provisions of any other affected contract with the Port for work). If the cost of the Work is reduced by the acceptance of any substitute item, after subtracting the reimbursement cost for Port evaluation, the Port agrees to pay 50 percent of the savings to the Contractor via a Change Order. The Port is not obligated to review proposals for substitute construction methods or procedures if the evaluation of such substitution appears more costly than the savings, or if such substitution otherwise appears not to be in the Port's best interests.

Concerning Subcontractors

- 6.13 All subcontracts shall be subject to the provisions of this Contract insofar as applicable.
- 6.14 Subcontractors and suppliers shall be subject to disapproval of the Port. If the Port has reasonable objection to any of these, the Contractor shall submit an acceptable substitute. The Contractor will not be required to employ anyone against whom the Contractor has reasonable objection. No subcontract may be awarded at any tier to a Subcontractor determined by the Commissioner of the Bureau of Labor and Industries to be ineligible to receive a contract or subcontract for public works pursuant to ORS 279C.860.
- 6.15 The Contractor is responsible for: (1) all acts and omissions of its Subcontractors, (2) persons and organizations directly or indirectly employed by its Subcontractors, (3) persons and organizations for whose acts any of its Subcontractors may be liable, and (4) scheduling and coordinating the work of Subcontractors, suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with the Contractor. Nothing in this Contract shall create any contractual relationship between the Port and any Subcontractor or other person or organization having a direct contract with the Contractor. Nothing in this Contract shall create any obligation on the part of the Port to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by Law. The Port may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to the Contractor on account of specific Work completed.
- 6.16 The divisions and sections of the Specifications and the identifications of any Drawings shall not control the Contractor in dividing the Work among Subcontractors or delineating the work to be performed by any specific trade.

Computer Software and Code Use Rights

- 6.17 If the Contract Documents require the Contractor to provide the Port with computer software programs or code as part of the Work, the Contractor shall provide the Port with all documentation and instruments necessary to evidence the Port's right to use such software or code, including but not limited to ownership transfer documentation, software license agreements, subscription agreements, or assignments of intellectual property interests, as applicable.

Permits

- 6.18 Port-Designed Work
 - A. The Port will submit to federal, state, and local units of government all calculations and other documentation required for review and checking for purposes of obtaining permits.
 - B. The Port will obtain, and pay the costs and charges of, general project permits such as building, fill, environmental, and land use.

- C. The Contractor shall obtain and pay all costs and charges imposed for permits customarily issued only to a contractor, such as electrical, mechanical, and plumbing.
- D. The Contractor shall give all notices necessary for permit-related inspections by third parties.
- E. The Contractor shall submit to the Port a legible copy of permits, certificates of approval, and certificates of occupancy issued by the responsible unit of government.

6.19 Contractor-Designed Work

- A. The Contractor shall submit to the Port, for review, all calculations and other documentation required for purposes of obtaining permits for Contractor-designed work.
- B. After Port review, the Contractor shall submit to federal, state, and local units of government all calculations and other documentation required for obtaining permits. During review by units of government, the Contractor shall notify the Port of proposed deviations from the original permit documentation.
- C. The Contractor shall submit to the Port all calculations and other documentation approved by units of government.
- D. The Contractor shall pay costs and charges imposed by local units of government for permits issued to the Contractor.
- E. The Contractor shall give all notices necessary for permit-related inspections by third parties.
- F. The Contractor shall submit to the Port a legible copy of permits, certificates of approval, and certificates of occupancy issued by the responsible unit of government.

Laws and Regulations

- 6.20 The Contractor shall comply, and shall ensure that its employees and those of its Subcontractors and suppliers at every tier comply, with the most current versions of applicable Laws, rules, regulations, and practices.
- 6.21 If the Contractor performs any Work knowing or having reason to know that it is contrary to any Law, the Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to the Contractor's performance or the resulting Work. The Contractor shall immediately report to the Port if performance under this Contract would violate any Law in any respect.
- 6.22 The Contractor shall adhere to the following specific provisions of the Public Contracting Code.
 - A. The Contractor shall:
 - 1. Make payment promptly, as due, to all persons supplying the Contractor labor or material for the performance of the work provided for in this Contract.
 - 2. Pay all contributions or amounts due the Industrial Accident Fund from the Contractor or any Subcontractor incurred in the performance of this Contract.
 - 3. Not permit any lien or claim to be filed or prosecuted against the Port on account of any labor or material furnished.
 - 4. Pay to the Department of Revenue all sums withheld from employees pursuant to ORS 316.167.

5. Demonstrate that an employee drug testing program is in place.
- B. If this is a public contract for demolition, the Contractor shall salvage or recycle construction and demolition debris, if feasible and cost-effective.
- C. If this is a public contract for lawn and landscape maintenance, the Contractor shall compost or mulch yard waste material at an approved site, if feasible and cost-effective.
- D. If the Contractor fails, neglects, or refuses to pay promptly a person's claim for labor or services that the person provides to the Contractor or a Subcontractor in connection with this Contract as such claim becomes due, the proper officer that represents the Port may pay the amount of the claim to the person that provides the labor or services and charge the amount of the payment against funds due or to become due the Contractor by reason of this Contract.
- E. If the Contractor or a first-tier Subcontractor fails, neglects, or refuses to pay a person that provides labor or material in connection with this Contract within 30 days after receiving payment from the Port or the Contractor, the Contractor or first-tier Subcontractor owes the person the amount due plus interest charges that begin at the end of the 10-day period within which payment is due under ORS 279C.580(3) or (4) and that end upon final payment, unless payment is subject to a good faith dispute as defined in ORS 279C.580(5). The rate of interest on the amount due is 9 percent per annum. The amount of interest may not be waived.
- F. If the Contractor or a Subcontractor fails, neglects, or refuses to pay a person that provides labor or material in connection with this Contract, the person may file a complaint with the Construction Contractors Board, unless payment is subject to a good faith dispute as defined in ORS 279C.580(5).
- G. Hours of Labor, Pay Equity, and Employee Discussions of Rate of Pay or Benefits:
 1. The Contractor and all Subcontractors shall not employ an employee for more than ten hours in any one day, or 40 hours in any one week, except in cases of necessity, emergency, or where the public policy absolutely requires otherwise, and in such cases the Contractor or Subcontractor shall pay the employee at least time and a half pay for:
 - a. All overtime in excess of eight hours in any one day or 40 hours in any one week if the work week is five consecutive days, Monday through Friday; or
 - b. All overtime in excess of ten hours in any one day or 40 hours in any one week if the work week is four consecutive days, Monday through Friday; and
 - c. All work the employee performs on Saturday, Sunday, New Year's Day on January 1, Memorial Day on the last Monday in May, Independence Day on July 4, Labor Day on the first Monday in September, Thanksgiving Day on the fourth Thursday in November, or Christmas Day on December 25, or, if one of those named holidays falls on a Sunday, on the following Monday or, if it falls on a Saturday, on the preceding Friday.
 2. The Contractor shall comply with the prohibition set forth in ORS 652.220. Such compliance is a material element of the Contract and a failure to comply is a breach that entitles the Port to terminate the Contract for cause.
 3. The Contractor shall not prohibit any of the Contractor's employees from discussing the employee's rate of wage, salary, benefits, or other compensation with another employee or another person and shall not retaliate against an employee who discusses the

employee's rate of wage, salary, benefits, or other compensation with another employee or another person.

4. The Contractor and all Subcontractors shall give notice in writing to employees working on this Contract as required by ORS 279C.520(2) and 279C.520(5)(b), either at the time of hire or before work begins on this Contract, or by posting a notice in a location frequented by employees, of the number of hours per day and days per week that the Contractor or Subcontractor may require the employees to work.
 5. The Contractor shall pay employees at least time and a half pay for work the employees perform under this Contract on the legal holidays specified in a collective bargaining agreement or in ORS 279C.540 (1)(b)(B) to (G) and for all time the employees work in excess of 10 hours in any one day or in excess of 40 hours in any one week, whichever is greater.
- H. The Contractor shall promptly, as due, make payment to any person, copartnership, association, or corporation furnishing medical, surgical and hospital care or other needed care and attention, incident to sickness or injury, to the employees of the Contractor, of all sums which the Contractor agrees to pay for such services and all moneys and sums which the Contractor collected or deducted from the wages of employees pursuant to any law, contract, or agreement for the purpose of providing or paying for such service.
- I. The Contractor shall comply with the terms of the workers' compensation laws of the State of Oregon, unless exempt, and any other applicable jurisdiction. All subject employers performing work under this Contract are either employers that will comply with ORS 656.017 or employers that are exempt under ORS 656.126.
- J. The Contractor shall comply with the following requirements (and, if applicable, prompt payment provisions stated in Document 007301, Supplementary Conditions for Federally Assisted Contracts):
1. The Contractor shall include in each subcontract for property or services the Contractor enters into with a first-tier Subcontractor, including a material supplier, for the purpose of performing this Contract:
 - a. A payment clause that obligates the Contractor to pay the first-tier Subcontractor for satisfactory performance under the subcontract within 10 days out of amounts the Port pays to the Contractor under this Contract;
 - b. A clause that requires the Contractor to provide a first-tier Subcontractor with a standard form that the first-tier Subcontractor may use as an application for payment or as another method by which the Subcontractor may claim a payment due from the Contractor;
 - c. A clause that requires the Contractor, except as otherwise provided in this paragraph, to use the same form and regular administrative procedures for processing payments during the entire term of the subcontract. A Contractor may change the form or the regular administrative procedures the Contractor uses for processing payments if the Contractor:
 - 1) Notifies the Subcontractor in writing at least 45 days before the date on which the Contractor makes the change; and

- 2) Includes with the written notice a copy of the new or changed form or a description of the new or changed procedure.
- d. An interest penalty clause that obligates the Contractor, if the Contractor does not pay the first-tier Subcontractor within 30 days after receiving payment from the Port, to pay the first-tier Subcontractor an interest penalty on amounts due in each payment the Contractor does not make in accordance with the payment clause included in the subcontract pursuant to this subsection. The Contractor or first-tier Subcontractor is not obligated to pay an interest penalty if the only reason that the Contractor or first-tier Subcontractor did not make payment when payment was due is that the Contractor or first-tier Subcontractor had not received payment from the Port or the Contractor when payment was due. The interest penalty:
 - 1) Applies to the period that begins on the day after the required payment date and that ends on the date on which the amount due is paid; and
 - 2) Is computed at the rate specified in ORS 279C.515(2).
2. The Contractor shall include in each of its subcontracts a provision requiring the first-tier Subcontractor to include a payment clause and an interest penalty clause that conforms to the standards of this section in each of its subcontracts and to require each of its Subcontractors to include such clauses in their subcontracts with each lower-tier Subcontractor or supplier.
3. The clauses required by this section do not impair the right of the Contractor or a Subcontractor at any tier to negotiate, and to include in the subcontract, provisions that:
 - a. Permit the Contractor or a Subcontractor to retain, in the event of a good faith dispute, an amount not to exceed 150 percent of the amount in dispute from the amount due a Subcontractor under the subcontract without incurring any obligation to pay a late payment interest penalty, in accordance with terms and conditions the parties to the subcontract agree upon, giving such recognition as the parties consider appropriate to the ability of a Subcontractor to furnish a performance bond and a payment bond;
 - b. Permit the Contractor or a Subcontractor to make a determination that part or all of the Subcontractor's request for payment may be withheld in accordance with the subcontract; and
 - c. Permit such withholdings without incurring any obligation to pay a late payment interest penalty if:
 - 1) A notice that conforms to the standards of ORS 279C.580(8) has been previously furnished to the Subcontractor; and
 - 2) A copy of any notice the Contractor issues pursuant to the foregoing subsection has been furnished to the Port.
 - d. As used in this subsection, "good faith dispute" means a documented dispute concerning:
 - 1) Unsatisfactory job progress.
 - 2) Defective work not remedied.

- 3) Third party claims filed or reasonable evidence that claims will be filed.
- 4) Failure to make timely payments for labor, equipment, and materials.
- 5) Damage to the Contractor or a Subcontractor.
- 6) Reasonable evidence that the subcontract cannot be completed for the unpaid balance of the subcontract sum.

6.23 Civil Rights:

A. General Civil Rights Provisions:

1. The Contractor shall comply with pertinent statutes, Executive Orders, and such rules as identified in the Title VI List of Pertinent Nondiscrimination Acts and Authorities (see FAA Order 1400.11A; the “Nondiscrimination Acts and Authorities”), to ensure that no person shall, on the grounds of race, color, national origin, creed, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance. This provision binds the Contractor and its Subcontractors from the solicitation period through the completion of the Contract.

B. Compliance with Title VI Nondiscrimination Requirements:

1. During the performance of this Contract, the Contractor agrees as follows: (a) the Contractor 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; (b) the Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin, creed, sex, 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 including amendments thereto; (c) 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; (d) 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 Port or the FAA 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 Port or the FAA, as appropriate, and will set forth what efforts it has made to obtain the information; (e) in the event of a Contractor’s noncompliance with the non-discrimination provisions of this contract, the Port will impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to: (i) withholding payments to the Contractor under the contract until the Contractor complies; and/or (ii) cancelling, terminating, or suspending a contract, in whole or in part; and (f) the Contractor will include the provisions of paragraphs (a) through (e) 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 Port or the FAA 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 Port to enter into any litigation to protect the interests of the Port. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

Environmental Responsibilities

- 6.24 The following federal, state, and local agencies have enacted ordinances or regulations dealing with the prevention of environmental pollution and the preservation of natural resources that affect the performance of this Contract:
- A. City and county where the work is to be performed
 - B. Metro
 - C. Oregon Environmental Quality Commission
 - D. Oregon Fish and Wildlife Commission
 - E. U.S. Environmental Protection Agency
 - F. U.S. Fish and Wildlife Service
 - G. National Marine Fisheries Service
- 6.25 Known conditions at the construction site that may require the Contractor to comply with statutes or with ordinances or regulations enacted by the agencies listed above are specifically referred to at various places in this Contract, including but not necessarily limited to Division 1 of the Specifications.
- 6.26 The Contractor is solely responsible for (1) considering applicable statutes and the ordinances and regulations enacted by the agencies listed above, (2) considering the known conditions specifically referred to in this Contract, and (3) ensuring that the activities of the Contractor and the Contractor's employees, Subcontractors (including suppliers), agents, and invitees with respect to those conditions do not violate any of those statutes, ordinances, or regulations. Without limiting the foregoing, the Contractor is solely responsible for the following environmental and natural resource risks associated with the performance of this Contract:
- A. Air pollution;
 - B. Water pollution;
 - C. Contamination of soil, groundwater, or sediment;
 - D. Filling or destruction of wetlands;
 - E. Taking of a federally listed threatened or endangered species through habitat destruction, habitat degradation, or otherwise; and
 - F. Introduction of an invasive species.

- 6.27 In addition to the foregoing requirements, the Contractor shall manage and conduct all activities related to the performance of this Contract in accordance with all environmental Laws and regulations, and with the requirements of all permits issued under those Laws and regulations of which the Contractor has been given notice or has actual knowledge. "Environmental laws and regulations" means all federal and state statutes, all local ordinances, and all regulations adopted pursuant to those statutes and ordinances, as any of them may be amended from time to time, dealing with the prevention of environmental pollution or the preservation of natural resources, including but not limited to: the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation and Liability Act, the Toxic Substances Control Act, the Clean Air Act, the Clean Water Act, and Oregon Revised Statutes Chapters 465, 466, 467, 468, 468A, 468B, and 496. If the Contractor believes compliance with a requirement under this Contract or a direction given by the Port will result in violation of any environmental laws or regulations, the Contractor shall so notify the Port in writing immediately and shall not proceed pursuant to that requirement or direction until the Port directs the Contractor to proceed.
- 6.28 In the event of a sudden spill or discharge of hazardous material as a result of actions related to this Contract by the Contractor or the Contractor's Subcontractor or agent, the Port may take action, including contracting for control or cleanup of the spill or discharge, unless the Contractor takes immediate appropriate action. If the Port takes action pursuant to this paragraph, the Port may recover from the Contractor all reasonable cost necessarily incurred in effecting the control and cleanup of the spill or discharge. Regardless of who undertakes the cleanup or control of the spill or discharge, the methods used shall be subject to the approval of the Port.

Taxes

- 6.29 The Contractor shall pay or ensure payment of sales, consumer, use, and other similar taxes required of the Contractor or any Subcontractor under any Law with respect to performance under this Contract.

Use of Premises

- 6.30 The Contractor shall confine equipment, the storage of material, and the operations of workers to areas permitted by this Contract. The Contractor shall not unreasonably encumber the premises with equipment or material.
- 6.31 During the progress of the Work, the Contractor shall keep the premises free from accumulations of waste material, rubbish and other debris resulting from the Work. At the completion of the Work, the Contractor shall leave the site clean and ready for occupancy. The Contractor shall restore to their original condition those portions of the site not designated for alteration by this Contract.
- 6.32 The Contractor shall not permit any part of any structure to be subjected to loads that may endanger its structural stability. The Contractor shall not subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Safety and Protection

- 6.33 The Contractor shall comply with all Laws applicable to the safety of persons or property. Damage, injury, or loss to property caused by the Contractor, Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor.
- 6.34 The Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work.

- 6.35 The Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities shall be the prevention of accidents and the maintenance and supervision of safety precautions and programs. This person shall be the Contractor's project superintendent unless otherwise designated in writing by the Contractor to the Port.
- 6.36 The Contractor shall report promptly in writing to the Port all recordable accidents and injuries occurring at the site. When the Contractor is required to file an accident report with a public authority, the Contractor shall submit a copy of the report to the Port.
- 6.37 The Contractor shall inform the Port of the specific requirements of the Contractor's safety program with which the Port's employees and representatives must comply while at the site.
- 6.38 If the Port deems any part of the Work unsafe, the Port, without assuming responsibility for the Contractor's safety program, may require the Contractor to stop performance of the Work or take corrective measures satisfactory to the Port, or both. If the Contractor does not adopt corrective measures, the Port may perform them and deduct their cost from the Contract Price. The Contractor agrees to make no claim for damages, for an increase in the Contract Price, or for a change in the Contract Time based on the Contractor's compliance with the Port's reasonable request.
- 6.39 The Contractor shall erect and maintain necessary safeguards for the safety and protection of:
- A. Employees on the Work and other persons whose safety may be adversely affected by performance of the Work.
 - B. The Work and material to be incorporated into the Work, whether in storage on or off the site. If the Contractor fails to protect the Work, the Port may, after giving notice to the Contractor, protect the Work and deduct the resulting cost from payment due the Contractor. The Port's determination of when and to what degree such protection is necessary shall be final.
 - C. Other property at the site including trees, shrubs, lawn, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement.
 - D. Adjacent property and utilities when prosecution of the Work may affect them.
- 6.40 The Contractor's duties and responsibilities for the safety and protection of the Work shall continue until the Contractor has completed all obligations under this Contract.

Emergencies

- 6.41 In the event of an emergency affecting the safety or protection of persons or the Work or property at, adjacent to, or near the site, the Contractor shall act to prevent threatened damage, injury, or loss. The Contractor may act without special instruction or authorization from the Port. The Contractor shall give the Port written notice within 24 hours of any significant change in the Work or deviation from this Contract caused by the Contractor's acts.

Submittals (Shop Drawings, Product Data, Maintenance Data, Samples, Warranty Data, and Other Information)

- 6.42 The Contractor shall check and verify all field measurements associated with the fit and function of supplied equipment, products, and material. The Contractor shall then submit Shop Drawings, Product Data, Maintenance Data, Samples, a warranty outline, and other information required by the Contract or necessary for performance of the Work to the Port for review in accordance with the accepted submittal schedule and with such promptness as to cause no delay in the Work. All

submittals shall be identified in the manner required by the Port. All submittals shall be reviewed and stamped with the approval of the Contractor prior to submittal to the Port.

- 6.43 Shop Drawings, Maintenance Data, Product Data, a warranty outline, and other information required by the Contract or necessary for performance of the Work, including but not limited to substitution requests, certificates, reports, test data, and mix designs, shall be submitted electronically unless otherwise specified by the Port. Data shown in submittal information shall be sufficiently complete with respect to quantities, dimensions, material, and specified performance and design criteria so as to allow the Port to verify conformance with this Contract.
- 6.44 The Contractor shall submit to the Port for review the specified number of Samples required by this Contract. Samples shall be clearly identified as to material, manufacturer, pertinent catalog numbers, and intended use, and shall include any other information necessary for the Port to complete its review.
- 6.45 The Contractor shall identify in writing as part of its submittal to the Port any deviations from the requirements of the Contract contained in the Shop Drawings, Product Data, Maintenance Data, Samples, warranty outline, or other information.
- 6.46 Within 10 business days of actual receipt, the Port will stamp, date, and return each submittal to the Contractor indicating the action to be taken or will notify the Contractor that the Port's review will require more than 10 business days. The Port's review will be only for conformance with the design concept of the Work and for general compliance with this Contract. It will not extend to any other purpose, including but not limited to the means, methods, sequences, techniques, or procedures of construction, safety precautions or programs related thereto, or to the assembly in which an item functions. Under no circumstances will the Port's review of the Contractor's submittals relieve the Contractor of its sole responsibility for performing the Work in accordance with the Contract.
- 6.47 The Contractor shall make any corrections to its submittals required by the Port and shall proceed according to the Port's stamp and directions. When the Port requires corrections of the Contractor's submittals, the Contractor shall include with its resubmission the number of corrected copies required by the Port and shall resubmit new Samples for review. The Contractor shall direct specific attention in writing to revisions other than the corrections called for by the Port on previous submittals.
- 6.48 The Contractor's stamp of approval on any submittal shall constitute a representation to the Port that the Contractor has: (1) determined and verified all quantities, dimensions, field construction criteria, material, catalog numbers, and similar data or assumes full responsibility for doing so, and (2) reviewed and coordinated each submittal with the requirements of this Contract.
- 6.49 When a submittal is required by this Contract, no Work related to the submittal (other than preparation of the submittal) shall be commenced or costs incurred in the performance of the Work until the submittal is approved by the Port. If the Contractor proceeds with performance of the Work related to a submittal before receiving the Port's approval, such Work shall be at the Contractor's sole risk and expense and the Port will have no liability for such unauthorized Work.
- 6.50 The Port's review of a submittal shall not relieve the Contractor from responsibility for any deviations from this Contract except those called to the Port's attention in writing at the time of submission and accepted in writing by the Port. Changes in the Work shall follow procedures outlined for a Change Order and approval of a submittal shall not constitute approval for a Change Order. Review by the Port shall not relieve the Contractor from responsibility for errors or omissions in the submittal.

- 6.51 Submittals approved by the Port are binding upon the Contractor upon such approval. The Contractor shall be obligated to perform in accordance with the approved submittal.

Access to the Work

- 6.52 The Contractor shall provide reasonable and safe access to the Port and inspection authorities for observation, testing, and inspection of the Work including, but not limited to, ladders, lifts, equipment, and tie-off apparatus.

Prosecution of the Work

- 6.53 The Contractor shall continue performance of the Work in accordance with the work progress schedule during all claims or disputes with the Port. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the Contractor and the Port may otherwise agree in writing.

Port's Right to Do the Work

- 6.54 If the Contractor fails to prosecute the Work properly or fails to perform any provision of this Contract, the Port, after a 3-day written notice to the Contractor, may without prejudice to any other remedy it may have, make good such failures. The Port may deduct the cost thereof from any payment due the Contractor. In cases of emergency, the Port may prosecute such Work without notice or delay and may deduct the cost thereof from any payment due the Contractor.

Indemnification

- 6.55 To the fullest extent allowed by law, the Contractor shall defend (using legal counsel acceptable to the Port), indemnify, reimburse, and hold harmless the Port and the Port's commissioners, employees, contractors, and agents for, from and against any and all actual or alleged claims, damages, losses, expenses, costs, fees (including, but not limited to, attorney, accountant, paralegal, expert, and escrow fees), fines, and/or penalties (collectively "Damages") which may be imposed upon, claimed against or incurred by the Port, to the extent such Damages are caused by any of the following: (a) any act, omission or negligence of the Contractor or the Contractor's partners, officers, directors, agents, employees, invitees or Subcontractors; (b) any use, occupation, management or control of Port property by the Contractor or the Contractor's employees, agents, Subcontractors, or suppliers, whether or not due to the Contractor's own act or omission and whether or not occurring on Port property; (c) any condition created on Port property by the Contractor or the Contractor's employees, agents, Subcontractors, or suppliers, and any accident, injury or damage arising from the condition; (d) any breach, violation or nonperformance of any of the Contractor's obligations under this Contract; (e) any damage caused by the Contractor or the Contractor's employees, agents, Subcontractors, or suppliers on or to Port property. Nothing in the foregoing shall be deemed to require any indemnity made void by ORS 30.140.

Prevailing Wage Rates

- 6.56 The Contractor shall comply with the prevailing wage rate requirements of ORS 279C.800 to 279C.870.
- A. This Contract includes both prevailing rates of wage set by the Commissioner of the Oregon Bureau of Labor and Industries ("Commissioner") under ORS 279C.800 to 279C.870 ("state prevailing rate of wage") and the prevailing rates of wage set by the U.S. Department of Labor under the federal Davis-Bacon Act (40 USC 276a) ("federal prevailing rate of wage"). If the state prevailing rate of wage is higher than the federal prevailing rate of wage, the Contractor and every Subcontractor shall pay at least the state prevailing rate of wage as

required by ORS 279C.800 to 279C.870. If the federal prevailing rate of wage is higher than the state prevailing rate of wage, the Contractor and every subcontractor shall pay at least the federal prevailing rate of wage as required by the Davis-Bacon Act.

- B. Workers in each trade or occupation required for this Work and employed in the performance of this Work by the Contractor, a Subcontractor, or any other person doing or contracting to do all or any part of the Work, shall be paid not less than the minimum hourly rate of wage specified in the foregoing paragraph. The Contractor shall ensure that each subcontract includes a provision that workers shall be paid not less than the minimum hourly rate of wage specified in the foregoing paragraph. The Contractor shall further ensure that each subcontract includes a provision that workers shall be paid not less than the higher of the applicable state or federal prevailing wage rates.
- C. The Contractor shall have a public works bond filed with the Construction Contractors Board, as provided by ORS 279C.836. In every subcontract, the Contractor shall include a provision requiring the Subcontractor to have a public works bond filed with the Construction Contractors Board, unless exempt, as provided by ORS 279C.836.
- D. The fee that is required to be paid to the commissioner of the Bureau of Labor and Industries under ORS 279C.825(1) shall be paid under the administrative rule of the commissioner.

Labor Relations

- 6.57 The Contractor shall be responsible for labor relations and shall seek to resolve disputes between the Contractor and its employees. Any labor dispute arising from this Contract that causes a disruption of the Port's operations shall be to the account of and the responsibility of the Contractor.

Records and Audits

- 6.58 The Contractor shall retain all financial records that pertain to this Contract for at least three years after the Port has made final payment and all other matters related to this Contract are concluded.
- 6.59 The Port or its designee may inspect, audit, and copy any of the Contractor's financial records retained pursuant to Item 6.58 and any other records to the extent necessary to: (1) evaluate and verify the costs incurred by the Contractor in performing the work under this Contract or the accuracy of any invoice, Change Order, payment, or claim submitted under this Contract by the Contractor or the Contractor's payees; or (2) evaluate any claim asserted by the Contractor against the Port.
- 6.60 The Contractor shall provide the Port such assistance as may be required to allow complete access to such records within 10 Business Days from the original request. The Contractor shall make the records available at any time during regular business hours after reasonable advance notice. If records are located outside the city of Portland, Oregon, and cannot be provided to a location within Portland, Oregon, the Contractor agrees to reimburse the Port for expenses incurred in sending representatives to wherever such records are maintained. Such expense reimbursement shall include transportation, lodging, food, and other out-of-pocket expenses resulting from the necessity of leaving Portland, Oregon. The Contractor shall supply a table, a chair, a standard electrical outlet, lighting, and a weatherized space of adequate size at the site of the Contractor's records to allow the inspection, auditing, and copying of records. The Contractor agrees to provide free access to copiers, fax machines, and other needed office equipment. The Port will bear the cost of copying records.

- 6.61 The Contractor shall allow the Port to interview the Contractor's employees, and shall cooperate with the Port in arranging interviews with the Contractor's employees and former employees, for the purposes of identifying, evaluating, verifying, or auditing the records described in these requirements.
- 6.62 For the purpose of these requirements, a record may be in any format whatsoever including, but not limited to, paper, photographic, or electronic format. In those situations where the Contractor's records have been generated from computerized data, the Contractor agrees to provide the Port with extracts of data files in a computer readable format on data disks, e-mail with attached files, or suitable alternative computer data exchange formats or devices.
- 6.63 The Contractor shall require all insurers, material suppliers, and Subcontractors at any tier to comply with these requirements.
- 6.64 The Contractor shall be entitled to no extra compensation for complying with these requirements.

ARTICLE 7 - WORK BY OTHERS

- 7.1 The Contractor shall afford utility service companies, other contractors and Port employees reasonable access to the Work. The Contractor shall allow storage of material and execution of work by others. The Contractor shall properly connect and coordinate its Work with work by others.
- 7.2 Notice will be given to the Contractor prior to the start of any additional work by others not noted in this Contract. If the Contractor believes that the performance of such additional work by the Port or others involves additional expense to the Contractor or requires an extension of the Contract Time, the Contractor shall notify the Port.
- 7.3 If any part of the Contractor's Work depends upon the work of any other contractor, utility service company, or the Port, the Contractor shall inspect and promptly report to the Port in writing any reasons that render work by others unsuitable. The Contractor's failure to report unsuitability of work by others shall constitute the Contractor's acceptance of the work by others as fit and proper for integration with the Contractor's Work. Latent or non-apparent defects and deficiencies in the work by others shall be reported to the Port in writing promptly upon discovery.
- 7.4 The Contractor shall do all cutting, fitting, and patching of the Work that may be required to make its parts come together properly and integrate with such other work. The Contractor shall not endanger any work by others. The Contractor shall cut or alter work by others only with the written consent of the Port and those whose work will be affected.
- 7.5 Unless otherwise specified, the Port shall be the final authority regarding coordination issues between the Contractor and work by others.

ARTICLE 8 - PORT'S STATUS DURING CONSTRUCTION

Construction Contract Manager

- 8.1 The Port's Construction Contract Manager will be the Port's representative during the construction phase of the Work.
- 8.2 The Construction Contract Manager will resolve any and all questions which may arise as to Contract compliance. The Contractor shall at all times carry out and fulfill the instructions and

directions of the Construction Contract Manager insofar as they concern the Work to be performed under this Contract.

- A. The Construction Contract Manager's authority includes, but is not limited to:
 - 1. Determining the quantity, quality, and acceptability of material furnished and Work performed.
 - 2. Reviewing and approving/disapproving the manner of performance and rate of progress of the Work.
 - 3. Stopping the Work whenever such stoppage is deemed necessary.
 - 4. Administering this Contract.
 - 5. Determining acceptable fulfillment of this Contract by the Contractor.
- B. Written approval by the Construction Contract Manager signifies favorable opinion and qualified consent. It does not carry with it: (1) certification, (2) assurance of completeness, (3) assurance of quality, (4) assurance of accuracy concerning details, dimensions, and quantities.
- C. Written approval by the Construction Contract Manager will not relieve the Contractor from responsibility for: (1) errors, (2) improper fabrication, (3) nonconformance with requirements, (4) deficiencies within the Contractor's control.

Clarifications and Interpretations

- 8.3 The Construction Contract Manager will issue with reasonable promptness such written clarifications or interpretations of this Contract as may be necessary. If the Contractor believes that a written clarification or interpretation justifies an increase in the Contract Price or the Contract Time, the Contractor may notify the Port as provided in Article 9.

Rejection of Defective Work

- 8.4 The Construction Contract Manager is authorized to disapprove or reject Work which is Defective and to require additional inspection or testing of the Work whether or not the Work is fabricated, installed, or completed.

Port Inspectors

- 8.5 In addition to the provisions specified in Section 50-08 of Document 007200, FAA General Contract Provisions, the following shall apply:
 - A. Port inspectors are authorized to:
 - 1. Suspend that part of the Work affected by Contract nonconformance until the issue can be referred to and a decision issued by the Construction Contract Manager.
 - B. Port inspectors are not authorized to:
 - 1. Supervise or perform any other duties for the Contractor, or interfere with the Contractor's management of the Work.
 - 2. Give final approval or acceptance of any portion of the Work.

- 8.6 No act or failure to act on the part of a Port inspector will render the Port liable in any way, nor shall it relieve the Contractor from fulfilling all of the terms and conditions of this Contract.

Limitations on the Port's Responsibilities

- 8.7 The Port is not responsible for the acts or omissions of the Contractor or the Contractor's employees, Subcontractors, manufacturers, fabricators, suppliers, distributors, or any other persons at the site or otherwise performing any of the Work, or their agents or employees.
- 8.8 The Port is not responsible for the Contractor's means, methods, procedures, sequences, or techniques of construction, or related safety precautions and programs except as specified in the Contract Documents.
- 8.9 The Port is not responsible for the Contractor's failure to perform the Work in accordance with this Contract.

ARTICLE 9 - CHANGE IN THE WORK

- 9.1 Without invalidating this Contract, changes (which may include additions and/or deletions) to the Work may be accomplished after execution of the Contract only by Change Directive or Change Order. All such changed Work shall be executed under the applicable conditions of this Contract.
- 9.2 No addition to Contract Price or extension of Contract Time will be allowed because of: (a) the acts or omissions of the Contractor or those for whom the Contractor is responsible, and (b) any condition of which the Contractor could have informed itself by examination, testing, sampling, review of records, or otherwise.
- 9.3 If the Contractor believes that a Change Directive will require a change in the Contract Price or the Contract Time, the Contractor shall so notify the Port in writing. Such notification shall be delivered to the Port within 7 days after the Contractor receives the Change Directive.
- 9.4 The Contractor shall submit, in the format required by the Port, an itemized cost estimate of any proposed adjustment to the Contract Price, either additive or deductive, resulting from the Change Directive. If applicable, the Contractor shall also submit a work progress schedule analysis or summary which demonstrates the effect of the Change Directive on the Contract Time. The itemized estimate and/or analysis shall be submitted within 15 days of receipt of the Change Directive. The Contractor shall submit such cost estimate or work progress schedule analysis in less than 15 days if so requested by the Port or if so required by work progress schedule limitations.
- 9.5 The Port may order the Contractor, in writing, to commence the Change Directive Work immediately and account for cost using the force account method if: the Contractor fails to submit the cost estimate within the 15-day period (or earlier if requested); the parties fail to agree as to the cost or schedule impact; or the Port for any reason deems it necessary. If direction to proceed has already been given and the Contractor fails to submit the cost estimate within the 15-day period (or earlier if requested), if the parties fail to agree as to the cost or work progress schedule impact, or if the Port for any reason deems it necessary, the Port may issue a lump sum unilateral change to the Contract Price in accordance with the Port's estimate of cost.
- 9.6 The Contractor shall proceed with changed Work either upon execution by both the Port and the Contractor of a Change Order or upon receipt of a Change Directive. When changed Work is authorized by Change Directive, the Contractor shall continue performance of the Work, including

the change, during the negotiation of the Change Order, even if a dispute arises which delays or prevents agreement on the terms and conditions of the Change Order.

- 9.7 Any Change Order shall constitute an accord and satisfaction with respect to issues related to changes in the Contract Price or the Contract Time. The Change Order shall be deemed to contain all the costs and credits relating to changes in the Work and effects on the unperformed or unchanged Work. If the Contractor contends that inefficiency and cumulative impacts cannot be accurately assessed at the time the Change Order is to be signed, the Contractor shall give the Port notice of a potential inefficiency or cumulative impact claim as soon as the Contractor suspects grounds for the claim exists, and shall submit evidence thereof at the first reasonable opportunity.
- 9.8 No payment will be made for changes to the Work until a Change Order has been executed.
- 9.9 The Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Time for changes in the Work performed prior to receiving written direction from the Port in a Change Directive or execution of a Change Order. Emergencies, as provided in Item 6.41, are an exception.

ARTICLE 10 - CHANGE OF CONTRACT PRICE

Contract Price Adjustment Methods

- 10.1 A Contract Price adjustment for the changes in the Work may be made in accordance with one or a combination of the following methods as the Port may elect:
 - A. Fixed price method as supported by the breakdown of estimated costs. If agreement cannot be reached by the fixed price method, the Port may require the Work to be performed on the basis of force account.
 - B. Unit price method.
 - C. Force account method.

Fixed Price Method

- 10.2 The Contractor shall prepare a fixed price proposal in the following format:
 - A. Direct Costs
 - 1. Material (itemize)
 - a. The cost to the Contractor for the material directly required for the performance of the changed Work. Such cost of material may include the cost of transportation. No delivery charges will be allowed unless the delivery is specifically for the changed Work and no other Work.
 - b. Trade discounts offered by the supplier to the Contractor shall be credited to the Port. If the material is obtained from a source owned wholly or in part by the Contractor, payment thereof will not exceed the current wholesale price for the material. The term "trade discount" includes the concept of cash discounting.
 - c. If, in the opinion of the Port, the cost of the material is excessive or if the Contractor fails to furnish satisfactory evidence of a cost from the supplier then, in either case, the cost of the material shall be deemed to be the lowest current wholesale price at which similar material is available in the quantities required.

- d. The Port reserves the right to furnish such material as it deems advisable and the Contractor shall have no claims for cost or profit on material furnished by the Port.
- 2. Labor (man-hours, rates by crafts)
 - a. Payroll costs shall include, but not be limited to, salaries and wages, and fringe benefits including social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, sick leave, vacation and holiday pay applicable thereto. The costs for all supervision, including general superintendents and foremen, shall be included in the markups established by this Contract. The only exception to this shall be working foremen who perform manual labor. No labor charges will be accepted for engineering or proposal preparation. These costs shall be included in the markups established by this Contract.
 - b. Overtime and premium time pricing will be allowed only for labor which is authorized by the Port to be performed after normal working hours, or on Saturday, Sunday, or legal holidays.
- 3. Equipment (type, size, attachments, hours, rate)
 - a. The cost to the Contractor for the use of equipment directly required in the performance of the changed Work. No mobilization or demobilization cost will be allowed for equipment already on site.
 - b. For equipment owned, furnished, or rented by the Contractor, costs allowed shall be the actual usage costs incurred as supported by the Contractor's published standard equipment rates or rental invoices; provided, however, that such rates shall not exceed the rates established by the Rental Rate Blue Book.
 - c. The amount to be paid to the Contractor for the use of equipment as set forth above will constitute full compensation for the cost of fuel, power, oil, lubricants, supplies, small tools, small equipment, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, labor (except for equipment operators) and any and all costs incidental to the use of the equipment.
- 4. Direct costs shall not include:
 - a. Payroll costs and other compensation of the Contractor's officers, executives, principals of partnerships and sole proprietorships, general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, superintendents and foremen, and similar administrative personnel. These costs shall be considered administrative costs covered by the Contractor's markup.
 - b. Expense of the Contractor's principal and branch offices other than the Contractor's office at the site.
 - c. Any part of the Contractor's capital expenses, interest on the Contractor's capital employed for the Work, or charges against the Contractor for delinquent payments.
 - d. Costs due to the negligence of the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be responsible or liable. Negligence costs include but are not limited to those

incurred for correction of defective Work, disposal of material wrongly supplied, and making good any damage to property.

- e. Other overhead or general expense costs of any kind.
- f. Cost of small tools and supplies.
- g. Cost of safety programs.
- h. Cost of warranty work.

B. Subcontract Costs

- 1. Direct costs shall be as outlined in Item 10.2, A.
- 2. Subcontractors' (at any tier) markups for overhead and profit shall not exceed 15 percent of the direct costs.

C. Contractor's Markup

- 1. The Contractor's markup for overhead and profit shall not exceed the following:
 - a. Costs incurred under Item 10.2, A: 15 percent
 - b. Costs incurred under Item 10.2, B, 1:
(No markup allowed on Subcontractor markup)
 - 1) First \$5,000 10 percent
 - 2) Amount above \$5,000 8 percent
 - c. In no case shall the total markups be greater than 30 percent of the total direct cost, regardless of the number of subcontract tiers existing. No markup is allowed for costs listed in Item 10.2, A, 4.
- 2. The amount of credit to the Port for a change which results in a net decrease in cost shall be the amount of the actual net decrease of direct costs plus a deduction in the Contractor's overhead and profit markup by an amount equal to that allowed in the table above.
- 3. When both additions and credits are involved in any one change, the adjustment in the Contractor's overhead and profit markup shall be computed on the basis of the net change in direct cost.

Unit Price Method

10.3 In the case of unit price bid items:

- A. The Port may increase the units of Work without limit or adjustment of unit prices.
- B. The Port may decrease the estimated quantity in a major item of Work. A major item of Work is any item in a unit price bid schedule which is equal to or greater than 10 percent of the Contract Price as bid. If the Port decreases the quantity in a major item of Work by more than 25 percent, the Port and the Contractor shall negotiate a reasonable adjustment in the unit price.

- C. The Port may decrease the estimated quantity or delete a minor item of Work. A minor item of Work is any item in a unit price bid schedule which is less than 10 percent of the Contract Price as bid. If accumulation of such changes decreases the Contract Price more than 25 percent based on the estimated quantities and prices bid by the Contractor, the Port and the Contractor shall negotiate a reasonable adjustment in the unit prices for the remaining items of Work.

Force Account Method

- 10.4 The force account method changes the Contract Price in accordance with the sum of all costs reasonably and necessarily incurred and paid by the Contractor in the proper performance of the Work plus overhead and profit. Except as otherwise may be agreed to in writing by the Port, such costs shall be in amounts no higher than those prevailing in the locality of the Work, shall include only the following items, and shall not include any of the costs itemized under Item 2.12. The Contractor and the Port shall compare records of force account costs at the end of each workday. Copies of these records shall be made in duplicate by the Contractor and shall be signed daily by both the Port and the Contractor. Fully itemized force account invoices shall be submitted monthly to the Port. The Contractor's submittal shall be in the format described in Item 10.2. Payment will be included with regular periodic progress payments upon issuance of a Change Order for the Work. The Contractor shall submit final force account billing within 30 days after completion of that aspect of Work. Force account costs are limited to the following:
- A. Cost of all material furnished and incorporated in the Work, in accordance with Item 10.2, A, 1.
 - B. Labor costs for employees in the direct employment of the Contractor in the performance of the Work in accordance with Item 10.2, A, 2.
 - C. Cost of equipment furnished and used in performance of the Work in accordance with Item 10.2, A, 3 and the following limitations:
 - 1. Equipment will be eligible for payment when operated and used on a full-time basis. Equipment is considered to be used full time when the equipment must be manned and ready for use at all times.
 - 2. When the Port determines that equipment need not remain at the site continuously, payment will be limited to actual hours of use.
 - 3. Rental rates for equipment retained on the Work for an extended duration will be adjusted to the then-current rate on the anniversary of the Work Start Date.
 - 4. The hourly operating cost will be allowed for each hour that the equipment is in use. The rate will be the monthly rate divided by 176 hours for single-shift operations. Hourly rates will be adjusted for two- and three-shift operations as recommended by the Rental Rate Blue Book.
 - 5. Equipment attachments will be included in the rate only when deemed by the Port to be essential to the Work. When multiple attachments are approved for use (tractor with ripper, dozer or tractor with loader and backhoe, etc.) and the attachments are being used interchangeably, only the one attachment having the higher rate will be eligible for payment.
 - 6. Equipment standby time, when ordered by the Port, will be paid as follows: One-third of the total rate established in Items 10.4, C, 4 and 10.4, C, 5, rounded to the nearest 10

cents. Standby rates which are calculated at less than one dollar per hour will not be paid. No more than 8 hours of standby will be paid during a 24-hour period. No more than 40 hours of standby will be paid during a one-week period. In the event of breakdown, or shutdown by order of the Port, of part or all of the equipment being used, payment for such equipment that is idled shall cease. Labor that is idled and cannot be diverted to other Work will be paid through the one-half shift during which the breakdown or shutdown occurred. No other payment will be made for non-operating hours. Rental will not be allowed for equipment listed in the Shop Tools section of the Rental Rate Blue Book having a daily rate of less than \$5 each. Individual pieces of equipment not specifically covered by the Rental Rate Blue Book and having a value of \$350 or less shall be considered "small tools and equipment for which no rental is allowed."

- D. Payments made by the Contractor to Subcontractors for Work performed by Subcontractors in accordance with Item 10.2, B. If required by the Port, the Contractor shall obtain competitive bids from Subcontractors acceptable to the Contractor and award to the lowest responsive and responsible bidder. If a subcontract provides that the Subcontractor is to be paid by force account method plus markup, the Subcontractor's force account costs shall be determined in the same manner as the Contractor's force account costs.
- E. Supplemental costs:
 - 1. Sales, use, or similar taxes (but not Oregon's corporate activity tax) related to the Work, and for which the Contractor is liable, imposed by any governmental authority.
 - 2. Costs for royalty payments, fees, permits, and licenses other than those caused by the negligence of the Contractor or the Contractor's employees, agents, or Subcontractors.
 - 3. Losses, damages, and related expenses sustained by the Contractor in connection with the execution of the Work that are not caused by the negligence of the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and are not compensated for by insurance recovery. Losses, damages, and related expenses shall include settlements made with the written consent and approval of the Port. No such losses, damages, or related expenses shall be included in the force account cost for the purpose of determining the Contractor's markup for overhead and profit. If, however, any such loss, damage, or related expense requires reconstruction and the Contractor is placed in charge thereof, the Contractor shall be paid for services in accordance with Item 10.4, G.
 - 4. The cost of utilities, fuel, and sanitary facilities at the site.
 - 5. Minor expenses in connection with the Work such as long distance telephone calls, telephone service at the site, expressage, and petty cash items.
 - 6. Rental of all the Contractor-owned and operated power tools and equipment which the Port approves for use in advance in writing.
- F. Force account method costs shall not include:
 - 1. Payroll costs and other compensation of the Contractor's officers, executives, principals of partnerships and sole proprietorships, general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, superintendents and foremen, and similar administrative

personnel. These costs shall be considered administrative costs covered by the Contractor's markup.

2. Expense of the Contractor's principal and branch offices other than the Contractor's office at the site.
 3. Any part of the Contractor's capital expenses. Interest on the Contractor's capital employed for the Work. Charges against the Contractor for delinquent payments.
 4. Costs due to the negligence of the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Negligence costs include correction of defective Work, disposal of material wrongly supplied, and making good any damage to property.
 5. The costs of any item not specifically and expressly included in Items 10.4, A through E.
- G. The Contractor's markup for overhead and profit shall not exceed the following:
1. Costs incurred under Items 10.4, A; 10.4, B; and 10.4, C 15 percent
(No markup allowed for Item 10.4, E)
 2. Costs incurred under Item 10.4, D less Subcontractor's markup:
 - a. First \$5,000 10 percent
 - b. Amount above \$5,000 8 percent
 3. If a subcontract is based on the force account method plus markup, the maximum allowable to the Subcontractor as markup for overhead and profit will be in accordance with Item 10.4, G, 1.
 4. In no case shall the total markups be greater than 30 percent of the direct cost, regardless of the number of subcontract tiers.

Cost Changes to Bonds and Insurance

10.5 When changes in the Work require new or increased premiums on bonds and insurance, the Port will reimburse the Contractor for such costs in the following manner:

- A. Costs for new bonds or insurance shall be submitted as part of the Contractor's request for progress payment and supported by invoiced costs from the bond or insurance supplier.
- B. Costs for increases to existing bonds or insurance shall be submitted as part of the Contractor's request for final payment and supported by invoiced costs from the bond or insurance supplier.

Rental Rate Blue Book

10.6 Equipment rental rates will be the lowest of: the Contractor's established company rates; actual rental rates; or the rates in effect in each section of the Rental Rate Blue Book on the Work Start Date.

- A. When the Rental Rate Blue Book, published by EquipmentWatch, is used to establish equipment rental rates, the following shall apply:

1. For projects of more than one year duration, the rates shall be adjusted annually after the anniversary date of the Work Start Date to reflect published revisions of the Rental Rate Blue Book.
2. The Rental Rate Blue Book denotes discontinued models. Many manufacturers continue the same model number through successive years. In the event the Port and the Contractor are unable to distinguish discontinued models from current models having different rates in the Rental Rate Blue Book, the lower rate shall apply. In the event a rate is not given for either a new model or an older model, a rate for the most similar model in the Rental Rate Blue Book will be used. Such characteristics as manufacturer, capacity, horsepower, and fuel will be used as the basis for selecting a similar model.
3. In the event a rate has not been established for a particular equipment category in the Rental Rate Blue Book, the Contractor shall call the EquipmentWatch company for written documentation of a rental rate on the equipment and present it to the Port for written approval before use of the equipment.

Lump-Sum Breakdown

- 10.7 The price of changes in a lump-sum agreement or lump-sum bid items will be based on the lump-sum breakdown furnished in accordance with Item 2.12.

Deleted Work

- 10.8 Deletion of all or any portion of the Work shall not be a waiver of any requirement of this Contract nor invalidate any of its provisions. The Contractor will be paid for all Work performed toward the completion of the portion of the Work prior to its deletion as provided by the force account method. The Port will not be responsible for payment of overhead or profit (including but not limited to anticipated profits) on the deleted portion of the Work. If the deletion of the Work results in surplus material that is not returnable by the Contractor for a credit acceptable to the Port, or if the Port so desires, the material will be purchased from the Contractor by the Port at cost, without allowance for overhead or profit.

ARTICLE 11 - CHANGE OF CONTRACT TIME

- 11.1 All time limits stated in this Contract are of the essence. Contract Time will be changed only by a Change Order. Any extension in Contract Time will be based on written notice delivered to the Port within 7 days of the occurrence of the event precipitating the request. The Contractor shall deliver a work progress schedule analysis or summary justifying the time extension within 15 days of such occurrence. Failure to deliver any documentation to the Port within the time limits specified above shall completely foreclose consideration of an extension of Contract Time and all rights and remedies arising therefrom.
- 11.2 Time extensions will be granted only when conditions described in Items 11.3, 11.4, and 11.6 exist and when the Port agrees that the work progress schedule substantiates the need.
- A. An adjustment of Contract Time shall be the Contractor's sole remedy for any delay in meeting the specified Substantial Completion, Final Acceptance, or any milestone dates of the Work. Exception shall be to the extent the delay is caused by the acts or omissions of the Port or other contractors performing other work directly for the Port as contemplated in Article 7. To the extent the delay is caused by the acts or omissions of the Port or persons acting for the Port, the Contractor is not precluded from recovery of damages or from an equitable Contract Price adjustment.

- 11.3 Extension of Contract Time will be determined by the Port and will be an equitable adjustment if all or a part of the Work is hindered, delayed, or suspended by an Act of God, act of war, act of terrorism, or the acts or omissions of the Port or the Port's commissioners, employees, contractors, or agents.
- 11.4 Requests for extension of Contract Time will not be considered for: (1) contention that insufficient time was specified in this Contract; (2) delays which affect the Contractor's planned early completion but not the specified Contract Time; (3) suspensions made at the request of the Contractor; (4) delays caused by labor disputes involving the Contractor or its Subcontractors; or (5) delays caused by issues known and addressed in this Contract.
- 11.5 For those contracts which specify a completion date rather than contract duration, the specified Substantial Completion date will be adjusted by the number of days between the anticipated authorization to commence work date shown in the Agreement and the actual date authorizing work commencement shown in the Notice to Proceed, if the actual date is later than that shown in the Agreement. Any such adjustment of the completion date shall meet the requirements specified under Item 11.3 and shall be supported by the Contractor's work progress schedule. The Port may also request acceleration of the Work instead of adjustment of the completion date. If the Port requests acceleration of the Work, the Port will pay an agreed-upon reasonable cost resulting from the directed acceleration of the Work.
- 11.6 Work covered by a Change Order may require a Contract Time extension or reduction. The amount of time extension or reduction will be agreed upon by the Contractor and the Port as part of the negotiation of the Change Order.

ARTICLE 12 - WARRANTY; TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

Tests and Inspections

- 12.1 The Port will pay the cost of acceptance inspections, tests, and approvals unless otherwise specified.
- 12.2 The Contractor shall:
- A. Be responsible for compliance with laws, ordinances, rules, regulations, codes, and orders of any public body having jurisdiction over inspection, testing, or approval of the Work. The Contractor shall arrange for, obtain, and pay for such inspections, tests, approvals, and related fees.
 - B. Give the Port and appropriate inspection and approval authorities timely notice of readiness of the Work for required inspections, tests, or approvals.
 - C. Furnish the Port the required certificates of inspection, testing, and approval from inspection or approval authorities.
 - D. Be responsible for inspection or testing required for the Port's acceptance of a manufacturer, fabricator, supplier, or distributor of material and pay related fees.
 - E. Pay the cost of inspections, tests, and approvals required as a result of failure to pass acceptance testing by the Port, unless otherwise specified.

- 12.3 The following shall not relieve the Contractor from its obligation to perform the Work in accordance with this Contract: (1) observation by the Port, (2) inspections, (3) tests, (4) approvals by others.

Port May Correct Defective Work

- 12.4 If the Contractor fails, within 3 days after written notice from the Port, to proceed to correct, or to remove and replace Defective Work as required by the Port, or if the Contractor fails to perform the Work in accordance with this Contract (including any requirements of the work progress schedule), the Port may correct and remedy any such deficiency. In exercising the rights under this paragraph, the Port will proceed expeditiously. To the extent necessary to complete corrective and remedial action, the Port may: (1) exclude the Contractor from all or part of the site; (2) take possession of all or part of the site; (3) suspend the Contractor's services related thereto; (4) take possession of the Contractor's tools, appliances, construction equipment and machinery at the site; and (5) incorporate in the Work material stored at the site or for which the Port has paid the Contractor but which has been stored elsewhere. The Contractor shall allow the Port's representatives, contractors, agents, and employees such access to the site as may be necessary to exercise the rights under this paragraph. All direct and indirect costs in exercising such rights will be charged against the Contractor. A Change Order will be executed incorporating the necessary revisions to this Contract and a reduction in the Contract Price. Such direct and indirect costs will include, in particular but without limitation: (1) additional professional services required; and (2) repair and replacement of the Work of others destroyed or damaged by correction, removal, or replacement of the Contractor's Defective Work. The Contractor will not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise of the Port's rights under this paragraph.

ARTICLE 13 - PAYMENTS TO THE CONTRACTOR AND COMPLETION

Before Request for Progress Payment

- 13.1 Prior to submitting the first request for progress payment, the Contractor shall submit the following to the Port:
- A. Work progress schedule.
 - B. Final submittal schedule.
 - C. Cash flow schedule.
 - D. Lump-sum breakdown of the Work.
 - E. Warranty outline.
 - F. Wage certification.
1. If the Contractor is required to file a certified statement under ORS 279C.845, and the certified statement has not been filed as required, the Port will retain 25 percent of any amount earned under this Contract until the certified statement has been filed. The Port will pay the Contractor the amount retained within 14 days after the missing certified statement has been filed. Failure of a Subcontractor to file a certified statement required under ORS 279C.845 will not trigger retainage under this paragraph.

Request for Progress Payment

- 13.2 Thirty days or more following the Work Start Date, the Contractor may request the first monthly progress payment on Work completed by the date of the request. The request shall be made on the Contractor's Request for Payment form (form is located in the Port's online construction management system) and shall be accompanied by supporting documentation required by this Contract. Requests shall be signed by the Contractor and submitted to the Port for review.
- 13.3 All progress payment requests, except the first request, shall include the Contractor's Waiver of Claims to Date stating that all of the Contractor's obligations to date relating to the Work have been paid (form follows these General Conditions). Progress payment requests, except the first request, shall also include the Contractor's verification that Subcontractor payment data and workforce data (if applicable) for all tiers have been entered into the Port's online reporting system at www.portofportland.dbesystem.com.
- 13.4 Material delivered and stored on site but not yet incorporated in the Work may be included in the request for progress payment subject to approval by the Port, the conditions specified in Document 007200, FAA General Contract Provisions, and the following additional conditions:
- A. No payment will be made for material costing less than \$50,000 total.
 - B. Value shall be established by invoice, freight bill, or other document.
 - C. Payment for stored material will be limited to 90 percent of the net cost invoiced to the Contractor.
 - D. When there is a bid price on material in place, the Port will estimate the cost of placing. The progress payment will be limited to 90 percent of the bid price less the estimated cost of placing.
 - E. Risk of loss remains with the Contractor.
- 13.5 Progress payments shall not be construed as acceptance or approval of the Work or waiver of any defects in the Work.

Review of Request for Progress Payment

- 13.6 Within 15 days, the Port will review each request for progress payment and recommend payment or respond in writing to the Contractor with the reasons the Port is requiring resubmittal of the pay request before it can be approved.
- 13.7 The Port may refuse to make payment, in whole or any part, to the extent:
- A. The Work is Defective, or completed Work has been damaged requiring correction or replacement;
 - B. Written claims have been made against the Port or liens have been filed in connection with the Work;
 - C. The Port has been required to correct Defective Work or to complete the Work;
 - D. The Contractor's prosecution of the Work in accordance with this Contract is unsatisfactory;
 - E. The Contractor has failed to make payments covered by past progress payments to Subcontractors, or for labor or material; or

F. The Contractor is in breach of this Contract.

Substantial Completion

13.8 When the Contractor considers the entire Work ready for its intended use, the Contractor shall certify in writing that the entire Work is Substantially Complete and request a letter confirming Substantial Completion. Within 15 days thereafter, the Contractor and the Port shall make an inspection of the Work to determine the status of completion. If the Port considers the Work Substantially Complete, the Port will, within 15 days of date of inspection, execute and deliver to the Contractor a letter confirming Substantial Completion with a list of items to be completed or corrected. The letter will state the date of Substantial Completion. If the Port does not consider the Work Substantially Complete, the Port will notify the Contractor in writing giving reasons therefor.

A. Warranties and operation and maintenance manuals shall be submitted and approved by the Port and training shall be completed for the Work to be considered Substantially Complete.

13.9 The Port may exclude the Contractor from that part of the Work after the date of Substantial Completion. The Port will allow the Contractor reasonable access to complete or correct items on the list.

13.10 The Contractor may request, in writing, that the Port confirm Substantial Completion for a part of the Work. The Port will only consider confirming Substantial Completion for a part of the Work if the Port desires that part to become operational.

13.11 The Port may allow the Contractor use of equipment installed as part of the Work prior to Substantial Completion, subject to the Contractor:

A. Obtaining the Port's written approval.

B. Maintaining the equipment, and preparing and maintaining a log recording all maintenance activities.

C. Returning equipment to "as-new" condition upon Substantial Completion.

Partial Utilization

13.12 The Port may request, in writing, the use of any part of the Work which may be used without significant interference with construction of other parts of the Work. If the Port requests use of any part of the Work prior to Substantial Completion of all the Work, the Port will issue to the Contractor a letter granting Substantial Completion for that portion of the Work with a list of items to be completed or corrected. The Port will assume responsibility for security, safety, operation, maintenance, and utilities for that part of the Work while it is being used by or under the control of the Port.

Final Inspection and Final Acceptance

13.13 When the Contractor considers the entire Work, or an agreed-upon portion thereof, to be complete, the Contractor shall certify, in writing, that the Work is complete and request a letter granting Final Acceptance. Within 30 days after receipt of the Contractor's certification, the Port will inspect the Work and will notify the Contractor, in writing, of Final Acceptance or of all particulars in which this inspection reveals that the Work is incomplete or Defective. The Contractor shall immediately take such measures as are necessary to remedy such deficiencies and allow an additional 30 days for the Port to complete another inspection of the Work. The

Contractor's certification shall be preceded or accompanied by all documentation called for in Section 90 of Document 007200, FAA General Contract Provisions

Contractor's Continuing Obligation

- 13.14 The Contractor's obligation to perform and complete the Work in accordance with this Contract shall be absolute and cannot be waived in whole or in part by the Port except by express written instrument signed by an authorized Port representative. Any such waiver will specifically identify the Work that the Port is willing to accept and the manner in which that Work fails to meet the original requirements of the Contract. Accordingly, and by way of example only, none of the following will constitute acceptance of Work not in accordance with this Contract or release the Contractor from obligation to perform the Work in accordance with this Contract, regardless of whether any defect, deficiency, or damage is patent or latent:
- A. Any act of acceptance by the Port except in an express written instrument as described above.
 - B. Any correction by the Port of Defective Work.
 - C. Use, operation, or occupancy of the Work or any part of the Work by the Port.
 - D. Recommendation by Port staff for any progress or final payment.
 - E. Payment by the Port to the Contractor.
 - F. Issuance of a letter of Substantial Completion.
 - G. Issuance of a letter of Final Acceptance.

Contractor's Warranty of Title

- 13.15 The Contractor warrants that title to all Work and material covered by any request for payment, whether incorporated in the Work or not, will pass to the Port at the time of payment. Title shall be free and clear of all liens, claims, security interests, and encumbrances.

Waiver of Claims

- 13.16 The acceptance of final payment will constitute a waiver of all claims by the Contractor against the Port other than those previously made in writing and still unsettled.

Liquidated Damages

- 13.17 The Contractor acknowledges that the Port will incur significant damages if the Work is not completed within the Contract Time, including without limitation, damages in the form of: inability to use the Work and all related facilities (i.e., "Loss of Use") as well as other delay damages, including but not limited to, delay costs for delayed or resequenced portions of the Work, related work or related projects to be performed or constructed by the Port or the Port's separate contractors; or delay costs comprised of extended or additional services of the Port's project management staff, engineering or design staff, any outside construction management firms, any separate contractors, designers, and consultants, and others performing Work or services related to the project. In consideration of the factors set out in this paragraph, the Contractor acknowledges and agrees that time is particularly of the essence in the Contractor's performance of the Work in accordance with the agreed date of commencement of the Work, the agreed dates of Substantial Completion and Final Acceptance of the Work, and the approved Contractor construction schedule.

- 13.18 The Port and the Contractor acknowledge and agree that if Substantial Completion of the Work is not achieved by the Contract Time for Substantial Completion, the amount of the Port's actual Loss of Use damages (as described above) will be difficult, impractical, or impossible to determine. Accordingly, the parties agree that if Substantial Completion is not achieved by the agreed date of Substantial Completion as may be adjusted pursuant to the Contract Documents, the Contractor shall pay to the Port as liquidated damages for the Loss of Use of the Work the amount indicated in the Agreement for each partial day or full day of delay beyond the deadline for Substantial Completion.
- 13.19 The parties further acknowledge and agree that the Contractor's obligation to pay liquidated damages under this paragraph shall be in lieu of the obligation to pay actual delay damages for the Loss of Use damages. The parties agree that the daily rate agreed to is reasonable in comparison to the approximate scope of actual delay damages for Loss of Use that the parties anticipate as of the time of execution of the Agreement, and that the payment of such liquidated damages is not intended to be a penalty or forfeiture. The parties further acknowledge that these liquidated damages are meant to reimburse the Port only for Loss of Use delay damages and that the Port reserves the right to claim other types of damages against the Contractor resulting from delays, including but not limited to the other delay damages described in Item 13.17 above.
- 13.20 The parties further agree that the Port does not waive its right to liquidated damages or actual delay damages by allowing the Contractor to continue and finish all or any part of the Work after the scheduled Substantial Completion date, or after Substantial Completion is actually achieved. The parties also agree that payment of liquidated damages or actual delay damages does not release the Contractor from any duty under this Contract (other than the duty to pay liquidated damages and actual delay damages).
- 13.21 The Port may withhold liquidated damages and anticipated or incurred actual delay damages from progress payments, or may withhold the full amount of accrued liquidated damages and anticipated or incurred actual damages from final payment.
- 13.22 In the event, and to the extent, the liquidated damages provided for herein are deemed unenforceable, the Port may proceed to claim and collect from the Contractor the Port's actual damages for Loss of Use and the other delay damages described herein.

Other Damages

- 13.23 The Port will have the right to recover from the Contractor and, to the extent permitted by Law, to deduct from any payment due the Contractor, the amount of any loss suffered by the Port on account of the failure of the Contractor, Subcontractor, anyone directly or indirectly employed by any of them, and anyone for whose acts any of them may be liable to comply with the rules and regulations referenced or contained in this Contract.

ARTICLE 14 - SUSPENSION OR TERMINATION OF THE WORK

Port May Suspend the Work

- 14.1 The Port may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice, in writing, to the Contractor. This notice will fix the date on which Work shall stop and the date on which it shall resume. The Contractor shall resume the Work on the date so fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to the suspension.

- 14.2 If the work is Defective, or if the Contractor fails to supply sufficient skilled workers or suitable material or equipment, or if the Contractor fails to perform the Work in such a manner that the completed Work conforms to this Contract, the Port may order the Contractor to suspend the Work, or any portion thereof, until the cause for such order has been eliminated. However, this right of the Port to suspend the Work shall not give rise to any duty on the part of the Port to exercise this right for the benefit of the Contractor or any other party.
- 14.3 In the event the Contractor, Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable fails to comply with the rules and regulations referenced in this Contract, the Port may suspend the Work or any portion thereof. The suspension shall continue until completion of any investigation or evaluation by the Port and full compliance with any corrective measures which the Port may reasonably require. The Port will not be liable to the Contractor for any delay caused by such suspension, nor will there be any adjustment in the Contract Price or Contract Time.

Port May Terminate the Work

- 14.4 In addition to the events specified in Section 80 of Document 007200, FAA General Contract Provisions, the occurrence of any one or more of the following events will justify termination for cause:
- A. A trustee or receiver is appointed for the Contractor or for any of the Contractor's property.
 - B. The Contractor files petition to take advantage of any debtor's act, or to reorganize under bankruptcy or similar laws.
 - C. The Contractor fails to make prompt payments to Subcontractors or for labor and material.
 - D. The Contractor disregards Laws, ordinances, rules, regulations, or orders of any public body having jurisdiction including, without limitation, ordinances adopted by the Port and referenced in this Contract, and the rules and regulations adopted by the Port's Executive Director or their designee.
 - E. The Contractor disregards the authority of the Port.
 - F. The Contractor otherwise violates in any substantial way any provision of this Contract.

Port May Terminate the Work for Convenience

- 14.5 Upon giving the Contractor a 7-day written notice, the Port may, without cause and without prejudice to any other right or remedy, elect to terminate this Contract for the convenience of the Port. In such case, the Contractor will be paid for the costs of all Work acceptably performed and installed, together with reasonable profit and overhead on those costs, and any justifiable costs actually sustained in the process of termination. The Contractor will not be entitled to overhead or profit on the unperformed Work, and will not be entitled to payments in excess of the amount determined by multiplying the percentage of the Work actually and acceptably completed by the Contract Price, as adjusted. If this Contract is terminated for default and it is subsequently determined through mediation, arbitration, or litigation that the termination was improper, this Contract shall be treated as if it had been terminated for the convenience of the Port, and the Contractor shall be entitled to payment under the provisions of this paragraph.
- 14.6 In the event of a termination for convenience, the Contractor remains liable for all elements of the Work actually performed by the Contractor or Subcontractors, or those for whom any of them are responsible, regardless of whether: (a) such performance occurred before or after the effective date

of termination; or (b) the Port provided an opportunity to cure. The Contractor's liability includes, but is not limited to, liability for having performed all Work according to the Contract Documents, industry standards, and the other standards incorporated in this Contract. The Contractor also remains liable for all representations, warranties, and guarantees to the extent applicable to the Work performed.

ARTICLE 15 - DISPUTE RESOLUTION

- 15.1 If the Contractor wishes to assert a claim, the Contractor shall submit to the Port a written statement of the claim within 30 Calendar Days after the Contractor first has knowledge of or reason to know of the facts upon which the claim is based. The statement of claim shall recite the facts upon which the claim is based and shall include copies of all documentary evidence in support of the claim. Within 15 Calendar Days after receiving a claim, the Port will respond in writing stating whether the claim is allowed, partially allowed, or denied. If the Contractor disputes the action taken by the Port, the Contractor shall deliver a written notice of dispute to the Port within 15 Calendar Days after the Contractor receives the Port's written response to the claim. The written notice of dispute shall be entitled "Notice of Dispute." A claim shall be barred if the Contractor fails to comply with the foregoing notice of dispute requirement or fails to timely deliver the notice of dispute to the Port.
- 15.2 The parties shall attempt to resolve all disputes by negotiation. Negotiation shall be initiated at the earliest opportunity. Each party shall freely share unprivileged information requested by the other and shall make a good faith effort to ensure that all relevant issues are fully developed and fairly presented to the other side.
- 15.3 If a dispute is not resolved through negotiation between the Contractor and the Port, the parties shall submit the dispute to mediation. Either party may request mediation. The requesting party shall suggest an independent mediator with the request for mediation. If the parties cannot agree upon a mediator, either party may apply to the Presiding Judge, Multnomah County Circuit Court, for appointment of a mediator. The parties shall share equally in the fees and costs of the mediator. Mediation shall be at Portland, Oregon, unless the parties agree otherwise.
- 15.4 If a dispute is not resolved by mediation, the parties may, but are not required to, agree to submit the dispute to binding arbitration. If the parties agree to arbitrate their dispute, it shall be submitted to the Arbitration Service of Portland for hearing in Portland, Oregon. The parties agree to arbitrate pursuant to the Arbitration Service of Portland's Rules, except for the following:
- A. For disputes with under \$1 million at issue not including attorney fees and legal costs, a single arbitrator shall be selected.
 - B. For disputes with \$1 million to \$3 million at issue not including attorney fees and legal costs, at the Port's discretion the Port may require that a panel of three arbitrators be selected.
 - C. For disputes with over \$3 million at issue not including attorney fees and legal costs, a panel of three arbitrators shall be selected.
- 15.5 If a dispute cannot be resolved by mediation, and the parties do not agree to submit the dispute to arbitration, either party may file a lawsuit to resolve the dispute in a court with proper jurisdiction located in Multnomah County, Oregon.
- A. For any such lawsuit, each party to this agreement irrevocably waives any and all right to trial by jury and instead agrees to resolve the dispute in a bench trial decided by a judge.

- B. If another involved party will not consent to a bench trial, the Port, in its sole discretion, has the option to elect a consolidated jury trial. It is understood that the purpose of this paragraph is to allow the Port to determine the best means of achieving a single consolidated proceeding that will minimize duplicative processes and minimize the risk of inconsistent results, in the following order of preference: (1) a consolidated bench trial of all significant parties, if possible; or (2) alternatively, and as a last resort, a consolidated jury trial of all significant parties.
- 15.6 Should any lawsuit, arbitration, or other action be commenced in connection with any dispute arising out of this Contract, the prevailing party shall be entitled to recover its costs and disbursements, investigation costs and fees, expert witness costs and fees, and attorney costs and fees, as the court or arbitrator may adjudge reasonable, incurred in connection with such dispute before trial or arbitration, at trial or arbitration, upon any motion for reconsideration, upon any appeal or petition for review, and upon any collection efforts or proceedings. Only parties to this Contract are entitled to recover their costs and fees under this provision, and the Port does not agree to compensate any third party, including but not limited to design professionals, subcontractors, and suppliers, for costs or fees, whether on a pass-through basis or otherwise.
- 15.7 Except to the extent performance may be legally excused under the particular circumstances, each party shall continue to perform its duties under this Contract while the resolution of a dispute is pending. Failure to comply with this requirement shall be a material breach of this Contract.

ARTICLE 16 - MISCELLANEOUS

Giving Notice

- 16.1 When this Contract requires that written notice be given, notice shall be deemed valid if it is delivered to the individual who signed the Contract or to the Port's or the Contractor's Representative. Notice shall be deemed as delivered if it is:
- A. Sent through the Port's online construction management system, or
 - B. Hand-carried to the person to whom it is intended, or
 - C. Hand-carried to an officer of the firm for which it is intended, or
 - D. Sent by registered or certified "Return Receipt Requested" mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Time

- 16.2 Any period of time referred to in this Contract by days shall be computed to exclude the first and include the last day of such period. If the last day of any time period falls on a Saturday or Sunday or on a day made a legal holiday by the Law of the applicable jurisdiction, such day shall not be included in determining the time period.

Liability Claims

- 16.3 Should the Port or the Contractor suffer injury or damage to person or property because of any error, omission, or act of the other party or of any of the other party's employees, contractors, or agents or others for whose acts the other party is legally liable, claim shall be made: (1) in writing, and (2) to the other party within a reasonable time of the first observance of such injury or damage.

Rights and Remedies

- 16.4 These General Conditions impose duties and obligations on the Contract parties and provide for rights and remedies. The rights and remedies available to each party are in addition to, and shall not limit, actions allowed by Law or other parts of this Contract. All representations, warranties, and guaranties made in this Contract shall survive final payment and/or termination (whether for cause or convenience) and/or completion of this Contract. The content of this paragraph shall apply as if repeated specifically in this Contract in connection with each duty, obligation, right, and remedy.

Commencement of Limitations Period

- 16.5 As to acts, omissions, breaches of contract or warranty, negligence, misrepresentation, strict liability, fraud, or any other improper conduct of the Contractor or those persons or entities for whom the Contractor is responsible, whether occurring prior to or after completion of the Work, all applicable limitations periods shall not commence to run and any alleged cause of action shall not be deemed to have accrued unless and until the Port is aware of all three of the following: (1) the identity of all party(ies) responsible; (2) the actual magnitude of the damage or injury; and (3) the cause(s) of the damage or injury. The discovery rule provided herein applies in lieu of any otherwise applicable statute or case authority.

Apprentice Utilization Program and Monthly Workforce Reporting

- 16.6 Contractors awarded construction contracts over \$500,000 shall:
- A. Submit an apprentice utilization plan to the Port at the preconstruction meeting (form follows these General Conditions). The plan shall be updated and resubmitted as the work progresses.
 - B. Submit proof of registration with the Bureau of Labor and Industries Apprenticeship and Training Division as a training agent for each trade where apprentices will be employed. The Contractor shall also submit such proof for each Subcontractor employing registered apprentices if the subcontract is greater than \$100,000.
 - C. Enter all labor hours worked using the Port's online reporting system at www.portofportland.dbesystem.com. Labor hours shall include journeyman hours and registered apprentice hours by trade. Include hours worked by registered apprentices of Subcontractors if the subcontract is greater than \$100,000.
 - D. In the event that the Contractor is unable to accomplish the Port's target for registered apprentice participation, the Contractor shall demonstrate that a good faith effort has been made. In fulfilling the good faith effort, the Contractor shall perform and, when appropriate, require its Subcontractors to perform the following steps:
 - 1. Solicit apprentices from registered or accredited programs.
 - 2. Document the solicitation and, in the event apprentices are not available, obtain supporting documentation from the registered or accredited programs.
 - 3. Demonstrate that the plan was updated as required by the Contract Documents.
 - 4. Submit documentation demonstrating what efforts the Contractor has taken to require Subcontractors to solicit and employ apprentices.

- E. In the event that the preceding steps have been followed, the Contractor may also supplement the good faith efforts as follows:
1. Submit documentation demonstrating successful apprentice utilization on previous contracts.
 2. Submit documentation indicating company-wide apprentice utilization efforts and percentages of attainment.

WAIVER OF CLAIMS TO DATE

_____ (“the Contractor”) and the Port of Portland (“the Port”) have entered into an agreement (“the Agreement”) for the construction of a certain improvements project at _____ commonly referred to as the _____ Project.

The Agreement provides monthly progress payments, provided, among other things, the Contractor executes and submits this Waiver of Claims to Date with respect to all claims through the end of the period covered by the immediately preceding progress payment.

The date of the request for progress payment with which this Waiver of Claims to Date is submitted (“Current Progress Payment”) is _____ (“Current End Date”). The end of the period covered by the immediately preceding progress payment (“Last Progress Payment”) was _____ (“Last End Date”).

The Contractor certifies that all work covered by the Current Progress Payment is complete.

The Contractor certifies that all subcontractors, laborers, suppliers, and materialmen have been paid in full, less any retainage properly withheld by the Contractor, for all work performed and material provided for which the Contractor received payment in the Last Progress Payment.

The Contractor certifies that no extras have been furnished prior to the Last End Date for which payment has not been received.

The Contractor certifies that no claims are reserved by the Contractor or the Contractor’s subcontractors, laborers, suppliers, or materialmen as of the Current End Date.

The Contractor, on behalf of the Contractor and all the Contractor’s subcontractors, laborers, suppliers, and materialmen, hereby waives and releases the Port from any mechanic’s lien, stop notice, bond right, or other claim related to the Agreement through the Last End Date.

Exceptions, if any:

I declare under penalty of perjury under the laws of the State of Oregon that the foregoing is true and correct.

CONTRACTOR’S REPRESENTATIVE

By:

(Signature)

Printed Name:

Title:

Date:

Date: _____ EAN Number: _____

Project
Name: _____Prime
Contractor: _____

Known Subcontractors:

The information in this form shall be kept up-to-date on a monthly basis at a minimum. In addition, the information shall be used as part of project safety briefings and posted at the job site.

Scope of Work Summary – Include Location(s):

Potential Work Hazards/Concerns Identified (check ALL that apply). Each hazard checked shall be addressed in Job Hazard Analyses (JHAs).

- | | | |
|--|---|---|
| ☐ Fall Exposure | ☐ Traffic Control | ☐ Scaffolding |
| ☐ Excavation | ☐ Chemicals | ☐ Ladders |
| ☐ Confined Space Entry | ☐ Crane/Rigging | ☐ Aerial Lift |
| ☐ Electrical | ☐ Demolition | ☐ Airborne Contaminants/Dust |
| ☐ Hazardous Energy/Lockout-Tagout | ☐ Protection of the Public | ☐ High Noise |
| ☐ Asbestos/Lead | ☐ Hot Work/Fire Hazard | ☐ Painting |
| ☐ Stainless Steel Welding | ☐ Compressed Gas | ☐ Silica |
| ☐ Work Over/Near Water | ☐ _____ | ☐ _____ |

Note: Attach any company safety programs, policies, or procedures that will apply to your work at the Port.

Responsible Persons

List onsite Competent Person(s) responsible for monitoring work performed on this project. Note: a “Competent Person” by OSHA definition has the ability to identify hazards and has responsibility and authority to take immediate corrective actions. This includes known subcontractors.

Name:	Competent Area(s):	Training (i.e., OSHA 30, etc.)

A. Personal Protective Equipment (PPE) required for workers at the job site:

☐ Hardhat	☐ High Visibility Clothing	☐ Safety Glasses
☐ Safety Boots	☐ Hearing Protection	☐ Gloves
☐ Respiratory Protection	☐ Welding PPE	☐ Fall Arrest Gear
☐ Personal Floatation Device	☐ _____	☐ _____
☐ _____	☐ _____	☐ _____

B. Mandatory PPE for visitors to the job site:

☐ Hardhat	☐ High Visibility Clothing	☐ Safety Glasses
☐ Safety Boots	☐ Hearing Protection	☐ Gloves
☐ Personal Floatation Device	☐ _____	☐ _____

First Aid/CPR/AED

Contractor or subcontractor person(s) trained and current in first aid/CPR/AED. Mandatory for electrical work per NFPA 70E.

Name:	Date Trained:

Safety Data Sheets (formerly MSDS)

List all known or anticipated products that will be brought onsite that require a Safety Data Sheet (SDS).

Product Name:	Flammable? Y/N If yes, Port Fire Department will review.

Contractor's Project Manager:

Name: _____ Phone: _____

Contractor's Primary Onsite Safety Contact:

Name: _____ Phone: _____

Worksheet Prepared by:

Name: _____ Title: _____ Date: _____

*****PORT USE ONLY*****

Port CCM/Project Manager:

Name: _____ Phone: _____

Lead Inspector(s):

Name: _____ Phone: _____

Name: _____ Phone: _____

Distribution: Safety Department

APPRENTICE UTILIZATION PLAN

PROJECT NAME _____

PRIME CONTRACTOR _____

CONTACT NAME AND PHONE NUMBER _____

CONTRACT NO. _____ SOLICITATION NO. _____

PRIME CONTRACT AMOUNT \$ _____

			ESTIMATED TOTALS		
Projected Start Date (mm/dd/yy)	Name of Contractor/ Subcontractor	Trade/Craft (Scope of Work) (choose from list below)	Apprentice Hours	Journeyman Hours	Total Labor Hours
<u>LIST OF TRADES/CRAFTS</u> Brick and stone masons, cement masons, carpenters, carpet installers, drywall installers, electricians, glaziers, glassworkers, insulation workers, laborers, operating engineers, painters, plasterers, plumbers, pipefitters, roofers, sheet metal workers, truck drivers, welders/cutters		Subtotal This Page			
		Continuation Sheet			
		Grand Total			

Contractor Authorized Signature

Print Name

Title

Date

Submit at preconstruction meeting.

DOCUMENT 007301
SUPPLEMENTARY CONDITIONS FOR FEDERALLY ASSISTED CONTRACTS
UNDER THE FAA AIRPORT IMPROVEMENT PROGRAM (AIP)

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THE FOLLOWING PROVISIONS APPLY TO ALL CONSTRUCTION CONTRACTS UNLESS OTHERWISE NOTED:

1.1 TITLE VI LIST OF PERTINENT NONDISCRIMINATION ACTS AND AUTHORITIES

[49 U.S.C. § 47123]

- A. 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 U.S.C. § 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) including amendments thereto;
 - The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 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 U.S.C. § 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 U.S.C. § 6101 *et seq.*) (prohibits discrimination on the basis of age);
 - Airport and Airway Improvement Act of 1982 (49 U.S.C. § 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 U.S.C. § 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;
 - Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. § 1681, *et seq.*).

1.2 COMPLIANCE WITH NONDISCRIMINATION REQUIREMENTS

[49 U.S.C. § 47123; APPENDIX A OF APPENDIX 4 OF FAA ORDER 1400.11]

- A. 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
 - a. The Contractor (hereinafter includes consultants) shall 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
 - a. The Contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, national origin, creed, sex, age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor shall not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any program set forth in Appendix B of 49 CFR Part 21 including amendments thereto.
3. Solicitations for Subcontracts, including Procurements of Materials and Equipment
 - a. 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 shall be notified by the Contractor of the Contractor's obligations under this contract and the Nondiscrimination Acts and Authorities relative to nondiscrimination on the grounds of race, color, or national origin.
4. Information and Reports
 - a. The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Port of Portland (Port) or the FAA to be pertinent to ascertain compliance with such Regulations, orders, 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 shall so certify to the Port or the FAA, as appropriate, and shall set forth what efforts it has made to obtain the information.
5. Sanctions for Noncompliance
 - a. In the event of a Contractor's noncompliance with the nondiscrimination provisions of this contract, the Port will impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:
 - 1) Withholding payments to the Contractor under the contract until the Contractor complies; and/or
 - 2) Cancelling, terminating, or suspending a contract, in whole or in part.
6. Incorporation of Provisions
 - a. The Contractor shall include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by Regulations or directives issued pursuant thereto. The Contractor shall take action with respect to any subcontract or procurement as the Port or the FAA

may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that in the event the Contractor becomes involved in, or is threatened with litigation by a subcontractor or supplier because of such direction, the Contractor may request the Port to enter into such litigation to protect the interests of the Port. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

1.3 GENERAL CIVIL RIGHTS PROVISIONS
[49 U.S.C. § 47123]

- A. 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, creed, sex, 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.
- B. The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

1.4 ACCESS TO RECORDS AND REPORTS
[2 CFR § 200.334; 2 CFR § 200.337; FAA ORDER 5100.38]

- A. The Contractor shall maintain an acceptable cost accounting system. The Contractor agrees to provide the Port, the FAA, 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.

1.5 DISADVANTAGED BUSINESS ENTERPRISES (DBE) – PORT POLICY AND PROGRAM
[PORT COMMISSION POLICY 6.1.9; 49 CFR PART 26]

- A. The DBE requirements of 49 CFR Part 26 apply to this contract.
- B. [Reserved]
- C. The Contractor shall make available upon request a copy of all DBE subcontracts. The Contractor shall ensure that all subcontracts or agreements with DBEs to supply labor or materials require that the subcontract and all lower-tier subcontracts be performed in accordance with the provisions of 49 CFR Part 26.
- D. Prior to Notice to Proceed
 - 1. [Reserved]
 - 2. Reporting Information:
 - a. The Port uses an electronic reporting system to collect subcontractor payment utilization reports, workforce utilization reports, and certified payroll reports. This system can be accessed online at www.portofportland.dbesystem.com. The Contractor shall ensure that reports for the Contractor and its subcontractors at all levels are reported in the system at the frequency required per report type. The Contractor shall fill out and submit an “Assignment of Roles” form (provided by the

Port) upon Contract execution indicating who will be responsible for these reports on behalf of the Contractor

E. [Reserved]

F. [Reserved]

G. [Reserved]

H. Material Breach

1. Failure to substantially comply with the DBE requirements of the contract is a material breach of the contract.

1.6 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT
[2 CFR PART 200, APPENDIX II(K); 2 CFR § 200.216]

- A. The Contractor and each subcontractor agrees 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 P.L. 115-232 § 889(f)(1).

1.7 RIGHTS TO INVENTIONS
[2 CFR PART 200, APPENDIX II(F); 37 CFR PART 401]

- A. Contracts or agreements that include the performance of experimental, developmental, or research work must provide for the rights of the Federal Government and the Port in any resulting invention as established by 37 CFR Part 401, Rights to Inventions Made by Non-profit Organizations and Small Business Firms under Government Grants, Contracts, and Cooperative Agreements. This Contract incorporates by reference the patent and inventions rights as specified within 37 CFR §401.14. The Contractor must include this requirement in all sub-tier contracts involving experimental, developmental or research work.

1.8 TRADE RESTRICTION CERTIFICATION
[49 U.S.C. § 50104; 49 CFR PART 30]

- A. By submission of a bid or proposal, the bidder/offeror certifies that with respect to this solicitation and any resultant contract, the bidder/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.
- B. 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 18 U.S.C. § 1001.

- C. The Contractor shall provide immediate written notice to the Port if the 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 shall require subcontractors to provide written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.
 - D. 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 a contractor 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;
 - 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.
 - A. 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.
 - B. The bidder 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 Contractor has knowledge that the certification is erroneous.
 - C. This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the FAA may direct, through the Port, cancellation of the contract or subcontract for default at no cost to the Port or the FAA.
- 1.9 VETERAN'S PREFERENCE
[49 U.S.C. § 47112(C)]
- A. In the employment of labor (excluding executive, administrative, and supervisory positions), the Contractor and all sub-tier contractors shall give preference to covered veterans as defined within 49 U.S.C § 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 U.S.C. § 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.
- 1.10 FEDERAL FAIR LABOR STANDARDS ACT
[29 U.S.C. § 201, ET SEQ; 2 CFR § 200.430]
- A. All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR Part 201, et seq, 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.

- B. The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor shall address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.
- 1.11 FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT
[20 CFR PART 1910]
- A. 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 shall address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.
- 1.12 SEISMIC SAFETY
[49 CFR PART 41]
- A. 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.
- 1.13 CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS
[SECTION 8113 OF THE CONSOLIDATED APPROPRIATIONS ACT, 2022 (PUBLIC LAW 117-103); DOT ORDER 4200.6]
- A. By submitting a bid under this solicitation, the bidder certifies to its current status as it relates to tax delinquency and felony conviction under the certification statements set forth in the solicitation for this Contract. The bidder will incorporate this provision for certification in all lower-tier subcontracts.
- 1.14 PROHIBITION OF COVERED UNMANNED AIRCRAFT SYSTEMS (UAS)
[FAA REAUTHORIZATION ACT OF 2024 (P.L. 118-63), § 936; 49 U.S.C. § 44801 NOTE]
- A. The bidder or offeror certifies that they are aware of and comply with relevant Federal statutes and regulations, including those from the FAA, for operating unmanned aircraft systems (UAS) in accordance, and in compliance with all related requirements in the FAA Reauthorization Act of 2024 (P.L. 118-63), § 936 (49 U.S.C. § 44801 note).
- B. Contractor warrants that all UAS operations will be conducted in full compliance with all applicable FAA regulations, including but not limited to 14 CFR Part 107, and any other applicable local, state, or Federal laws and regulations.
- C. The Port and subgrant recipients cannot use AIP grant funds to enter into, extend, or renew a contract related to covered UAS. This includes both procurement and operational contracts, as well as contracts with entities that operate such systems.

**THE FOLLOWING ADDITIONAL PROVISIONS APPLY TO CONSTRUCTION CONTRACTS
EXCEEDING \$2,000:**

1.15 COPELAND "ANTI-KICKBACK" ACT

[2 CFR PART 200, APPENDIX II(D); 29 CFR PARTS 3 AND 5]

- A. The Contractor shall comply with the requirements of the Copeland "Anti-Kickback" Act (18 U.S.C. § 874 and 40 U.S.C. § 3145), as supplemented by Department of Labor regulation 29 CFR Part 3. The 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 shall submit to the Port, a weekly statement on the wages paid to each employee performing on covered work during the prior week. The Port will report any violations of the Act to the Federal Aviation Administration.

1.16 DAVIS BACON REQUIREMENTS

[2 CFR PART 200, APPENDIX II(D); 29 CFR PART 5; 49 U.S.C. § 47112(B); 40 U.S.C. §§ 3141-3144, 3146, AND 3147]

A. Minimum Wages

1. 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 regulations implementing 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 to this contract (Wage Determination) 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 subparagraph 4 below. 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 this subsection) 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.
2.
 - a. The contracting officer shall require any class of laborers or mechanics which is not listed in the Wage Determination and which is to be employed under the contract to be classified in conformance with the Wage Determination. The contracting officer

shall approve an additional classification and wage rate and fringe benefits therefor 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, U.S. Department of Labor, Washington, D.C. 20210. Such Administrator (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 the foregoing subsections b and c, 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.
3. 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
4. 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.

B. Withholding

1. The FAA or the Port 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 the work all or part of the wages required by the contract, the FAA may, after written notice to the Contractor and the Port, 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.

C. Payrolls and Basic Records

1. 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 section 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 records which 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.
2.
 - a. The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Port for transmission to the FAA. 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 <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The 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 FAA if the agency is a party to the contract, but if the agency is not such a party, the Contractor shall submit them to the Port, as the case may be, for transmission to the FAA 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 the Contractor to require a subcontractor to provide addresses and social security numbers to the Contractor for its own records, without weekly submission to Port.

- 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) That the payroll for the payroll period contains the information required to be maintained above and that such information is correct and complete;
 - 2) That 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) That 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 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.
3. The Contractor or subcontractor shall make the records required under this section available for inspection, copying or transcription by authorized representatives of the Port, the FAA 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 or the Port, 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.

D. Apprentices and Trainees

- 1. Apprentices
 - a. Apprentices will be permitted to work at less than the pre-determined rate for the work they perform 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, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, 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 Office of Apprenticeship Training, Employer and Labor Services, 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 journeyman 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 Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, 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.

2. Trainees

- a. 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 no 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 that provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who 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.

E. Compliance with Copeland Act Requirements

1. The Contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference into this contract.

F. Subcontracts

1. The Contractor and subcontractors shall insert in any subcontracts the clauses contained in 29 CFR §§ 5.5(a)(1) through (10) and such other clauses as the FAA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The Contractor shall be responsible for compliance by subcontractors at any tier with all the contract clauses in 29 CFR § 5.5.

G. Contract Termination: Debarment

1. A breach of the contract clauses in paragraphs A through J of this section may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 CFR § 5.12.

H. Compliance with Davis-Bacon and Related Act Requirements

1. 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.

I. Disputes Concerning Labor Standards

1. 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 Port, the U.S. Department of Labor, or the employees or their representatives.

J. Certification of Eligibility

1. 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).
2. 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 of 29 CFR § 5.12(a)(1).
3. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. § 1001.

**THE FOLLOWING ADDITIONAL PROVISIONS APPLY TO CONSTRUCTION CONTRACTS
EXCEEDING \$10,000:**

- 1.17 **PROCUREMENT OF RECOVERED MATERIALS**
[2 CFR § 200.323; 2 CFR PART 200, APPENDIX II(J); 40 CFR PART 247; 42 U.S.C. § 6901, ET SEQ]
- A. The 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.
- B. The list of EPA-designated items is available at www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.
- C. Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the Contractor can demonstrate the item is:
1. Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
 2. Fails to meet reasonable contract performance requirements; or
 3. Is only available at an unreasonable price.
- 1.18 **TERMINATION OF CONTRACT**
[2 CFR PART 200, APPENDIX II(B); FAA ADVISORY CIRCULAR 150/5370-10, SECTION 80-09]
- A. Termination for Convenience:
1. The Port 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 Port. Upon receipt of a written notice of termination, except as explicitly directed by the Port, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:
 - a. The Contractor shall immediately discontinue work as specified in the written notice.
 - b. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
 - c. Discontinue orders for materials and services except as directed by the written notice.
 - d. Deliver to the Port 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.

- e. Complete performance of the work not terminated by the notice.
 - f. Take action as directed by the Port to protect and preserve property and work related to this contract that Port will take possession.
- 2. The Port agrees to pay Contractor for:
 - a. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
 - b. 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;
 - c. Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and suppliers; and
 - d. Reasonable and substantiated expenses to the contractor directly attributable to Port's termination action.
 - 3. The Port will not pay the Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Port's termination action.
 - 4. The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.
- B. Termination for Default:
- 1. Section 80-09 of FAA Advisory Circular 150/5370-10 establishes standard language for conditions, rights and remedies associated with Port termination of this contract for cause due to default of the Contractor.

THE FOLLOWING ADDITIONAL PROVISIONS APPLY TO CONSTRUCTION CONTRACTS EXCEEDING \$15,000:

- 1.19 ADDRESSING DEI DISCRIMINATION BY FEDERAL CONTRACTORS (APRIL 2026)
[EXECUTIVE ORDER 14398; FAR 52.222-90]
 - A. Definitions. As used in this clause, program participation means membership or participation in, or access or admission to: training, mentoring, or leadership development programs; educational opportunities; clubs; associations; or similar opportunities that are sponsored or established by the contractor or subcontractor. Racially discriminatory diversity, equity, and inclusion (DEI) activities means disparate treatment based on race or ethnicity in the recruitment, employment (e.g., hiring, promotions), contracting (e.g., vendor agreements), program participation, or allocation or deployment of an entity's resources.
 - B. In connection with the performance of work under this contract, the Contractor agrees as follows:
 - 1. The Contractor will not engage in any racially discriminatory DEI activities.
 - 2. The Contractor will furnish all information and reports, including providing access to books, records, and accounts, as required by the contracting officer, for purposes of ascertaining compliance with this clause.

3. In the event of the Contractor's or a subcontractor's noncompliance with this clause, this contract may be canceled, terminated, or suspended in whole or in part, and the Contractor or subcontractor may be declared ineligible for further Government contracts.
 4. The Contractor will report any subcontractor's known or reasonably knowable conduct that may violate this clause to the contracting officer and take any appropriate remedial actions directed by the contracting officer.
 5. The Contractor will inform the contracting officer if a subcontractor sues the Contractor and the suit puts at issue, in any way, the validity of this clause.
 6. The Contractor recognizes that compliance with the requirements of this clause are material to the Government's payment decisions for purposes of 31 U.S.C. 3729(b)(4).
- C. The Contractor must include the substance of this clause, including this paragraph C, in subcontracts at any tier, including those for commercial products and commercial services, for which the place of delivery or performance is in the United States.
- 1.20 TEXTING WHEN DRIVING
[EXECUTIVE ORDER 13513; DOT ORDER 3902.10]
- A. 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 FAA 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.
- B. In support of this initiative, the Port 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 \$15,000 that involve driving a motor vehicle in performance of work activities associated with the project.

THE FOLLOWING ADDITIONAL PROVISIONS APPLY TO CONSTRUCTION CONTRACTS EXCEEDING \$25,000:

- 1.21 CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT
[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]
- A. 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.
- B. The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a "covered transaction," must confirm 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 shall 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 Offeror/Bidder Regarding Debarment," above; and

3. Inserting a clause or condition in the covered transaction with the lower tier contract.
- C. If the FAA 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.

THE FOLLOWING ADDITIONAL PROVISIONS APPLY TO CONSTRUCTION CONTRACTS EXCEEDING \$100,000:

1.22 CONTRACT WORK HOURS AND SAFETY STANDARDS ACT REQUIREMENTS

[2 CFR PART 200, APPENDIX II(E); 2 CFR § 5.5(B); 40 U.S.C. § 3702; 40 U.S.C. § 3704]

A. Overtime Requirements

1. 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.

B. Violation; Liability for Unpaid Wages; Liquidated Damages

1. In the event of any violation of the clause set forth in paragraph A of this clause, the Contractor and any subcontractor responsible therefore 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 A of this clause, in the sum of \$33 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 A of this clause.

C. Withholding for Unpaid Wages and Liquidated Damages

1. The Federal Aviation Administration (FAA) or the Port 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 monies 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 B of this clause.

D. Subcontractors

1. The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs A through D and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The Contractor shall be responsible for

compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs A through D of this clause.

1.23 CERTIFICATION REGARDING LOBBYING

[31 U.S.C. § 1352 – BYRD ANTI-LOBBYING AMENDMENT; 2 CFR PART 200, APPENDIX II(I); 49 CFR PART 20, APPENDIX A]

- A. The bidder or offeror certifies, 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.
- B. 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 31 U.S.C. § 1352. 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.

THE FOLLOWING ADDITIONAL PROVISIONS APPLY TO CONSTRUCTION CONTRACTS EXCEEDING \$150,000:

1.24 CLEAN AIR AND WATER POLLUTION CONTROL

[2 CFR PART 200, APPENDIX II(G); 42 U.S.C. § 7401, ET SEQ; 33 U.S.C. § 1251, ET SEQ]

- A. The Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 U.S.C. §§ 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. §§ 1251-1387). The Contractor agrees to report any violation to the Port immediately upon discovery. The Port assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.
- B. The Contractor must include this requirement in all subcontracts that exceed \$150,000.

**THE FOLLOWING ADDITIONAL PROVISIONS APPLY TO CONSTRUCTION CONTRACTS
EXCEEDING \$350,000:**

1.25 BREACH OF CONTRACT TERMS
[49 CFR § 18.36(I)(1)]

- A. 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.
- B. The Port will provide the Contractor written notice that describes the nature of the breach and corrective actions the Contractor must undertake in order to avoid termination of the contract. Port reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Port elects to terminate the contract. The Port's notice will identify a specific date by which the Contractor must correct the breach. The Port may proceed with termination of the contract if the Contractor fails to correct the breach by deadline indicated in the Port's notice.
- C. 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.

1.26 DISADVANTAGED BUSINESS ENTERPRISES
[49 CFR § 26.13; 49 CFR § 26.29; 49 CFR § 26.53(F); 49 U.S.C. § 47113]

A. Contract Assurance

- 1. The Contractor, subrecipient 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, including any amendments thereto, 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 Port deems appropriate, which may include, but is not limited to:
 - a. withholding monthly progress payments;
 - b. assessing sanctions;
 - c. liquidated damages; and/or disqualifying the Contractor from future bidding as non-responsible.

B. Prompt Payment

- 1. The Contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 10 days from the receipt of each payment the Contractor receives from the Port. The Contractor agrees further to return retainage payments to each subcontractor within 10 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 Port. This clause applies to both DBE and non-DBE subcontractors.

C. Termination of DBE Subcontracts

1. The Contractor must not terminate a DBE subcontractor listed in response to the solicitation for this Contract (or an approved substitute DBE firm) without prior written consent of the Port. This includes, but is not limited to, instances in which the 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.
2. 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 written consent from the Port. Unless Port consent is provided, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.
3. The Port may provide such written consent only if the Port agrees, for reasons stated in the concurrence document, that the 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.
4. Before transmitting to the Port its request to terminate and/or substitute a DBE subcontractor, the Contractor must give notice in writing to the DBE subcontractor, with a copy to the Port, of its intent to request to terminate and/or substitute, and the reason for the request.
5. The Contractor must give the DBE five days to respond to the Contractor's notice and advise the Port and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Port should not approve the Contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), the Port may provide a response period shorter than five days.
6. 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.

DOCUMENT 007346
WAGE RATES



Christina E. Stephenson
Labor Commissioner
Rates Effective July 5, 2026

The Contractor is required to pay the higher of the applicable state or federal prevailing wage rates. The wage rates and amendments in effect on the date this project is advertised are the rates that shall apply for the duration of the work. Oregon Bureau of Labor and Industries (BOLI) wage rates may be obtained from BOLI's web site at www.boli.state.or.us. Federal Davis-Bacon wage rates may be obtained at <https://sam.gov/content/wage-determinations>



General Decision Number: OR20260100 05/18/2026

State: Oregon

Construction Type: Building

Counties: Oregon Multnomah

Mod No.	Publication Date
0	01/02/2026
1	05/18/2026
ASBE0036-003 03/31/2025	

SECTION 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work includes but is not limited to:

Providing wayfinding signage in the concourses, terminal building, and other areas as shown on the drawings.

- B. The existing state prevailing rate of wage and, if applicable, the federal prevailing rate of wage required under the Davis-Bacon Act (40 USC 3141 et seq.) apply to this work. See the contract documents for more information.
- C. The work will require the Contractor, its employees, and subcontractors to obtain and display security identification badges.

1.2 UNEXPECTED SITE CONDITIONS

- A. Suspected Hazardous or Environmentally Sensitive Conditions:

1. If the Contractor encounters suspected hazardous or environmentally sensitive conditions in the work area beyond those mentioned in these specifications or the drawings, the Contractor shall immediately stop all work in the area of the suspected condition and notify the Port.
2. The Port will make arrangements for testing and appropriate abatement, if required.
3. The Contractor shall alert its employees to these facts and shall assure that no operations occur that disturb the suspected hazardous or environmentally sensitive condition.

1.3 REGULATED BUILDING MATERIAL EMERGENCY PROCEDURES

- A. In the event of an asbestos or other regulated building material emergency such as an uncontrolled release or suspected release of asbestos fibers, lead dust, or mercury vapor that could impact human health or the environment, do the following:
1. Notify the PDX Communications Center (503) 460-4000.
 2. Evacuate workers from the area and restrict access to the area with barricades, caution tape, etc. If possible, seal the area and post signage warning of potential hazard. Do not allow workers or the public to come in contact with the material.
 3. If air handling units serving the area are under the control of the Contractor, turn off the flow of air.
 4. Do not attempt to clear up the released material. This will be performed by the Port.

1.4 WELDING, CUTTING, AND BURNING PERMIT

- A. Obtain a welding, cutting, and burning permit from the Airport Fire Department prior to the start of any flame welding, cutting, or burning work. In addition, notify the Airport Fire Department prior to beginning each flame welding, cutting, or burning operation.

1.5 INTERNATIONAL BUILDING CODE

- A. Work shall conform to the International Building Code (IBC), as amended by the OSSC, State of Oregon and as enforced by the City of Portland Bureau of Development Services.

1.6 PLUMBING CODE

- A. Water systems (except fire sprinkler systems), sanitary sewers, and storm drainage work shall comply with the Uniform Plumbing Code as amended by the Oregon Plumbing Specialty Code (OPSC) by the State of Oregon and as enforced by the City of Portland Bureau of Development Services.

1.7 MECHANICAL CODE

- A. Work shall comply with the International Mechanical Code and International Fuel Gas Code as amended by the Oregon Mechanical Specialty Code (OMSC) by the State of Oregon and as enforced by the City of Portland Bureau of Development Services.

1.8 CODE FOR ELEVATORS, ESCALATORS, AND MOVING WALKS

- A. Work shall comply with the American Society of Mechanical Engineers (ASME) Code and the Oregon Specialty Lift Code as amended by the Oregon Elevator Specialty Code by the State of Oregon and as enforced by the authorities having jurisdiction.
- B. The Contractor performing electrical, mechanical, and/or erection work shall be, and remain, in compliance with licensing requirements of the authorities having jurisdiction. Personnel performing work on this project shall be individually licensed, as required by the State of Oregon.
- C. Submit complete shop drawings, plans, and material lists to the State of Oregon, 1535 Edgewater N.W., P.O. Box 14470, Salem, Oregon 97309-0404, for review and approval.
- D. The Contractor shall coordinate and pay for all required inspections, including those required for obtaining operating permits.

1.9 ELECTRICAL CODE

- A. Work shall comply with the National Electrical Code (NEC), as amended by the Oregon Electrical Specialty Code (OESC) by the State of Oregon and as enforced by the City of Portland Bureau

of Development Services, except for work within the designated restricted areas which is enforced by the Port and the FAA.

1. Work within the contract limits is subject to inspection by the Port and the Federal Aviation Administration (FAA).
2. Work within the contract limits is subject to inspection by the City of Portland.
3. Inspections by the City of Portland of any of this work located within the restricted areas of the airport shall be scheduled in advance with the Port.
4. City of Portland inspectors will be escorted by Port personnel on inspections within the restricted areas. The Contractor shall not be the sole escort or conduct such inspections with City of Portland personnel without Port escort.

- B. The Contractor shall be, and remain, in compliance with licensing requirements of the State of Oregon and the City of Portland including required individual state electrical licensing for personnel performing electrical work on this project.

1.10 ENERGY CODE

- A. Work shall comply with the International Energy Conservation Code (IECC) as amended by the Oregon Energy Efficiency Specialty Code (OEESC) by the State of Oregon and as enforced by the City of Portland Bureau of Development Services.

1.11 SOLAR CODE

- A. Work shall comply with the Oregon Solar Installation Specialty Code (OSISC), as developed by the State of Oregon and as enforced by the City of Portland Bureau of Development Services.

1.12 THIRD-PARTY CERTIFICATION REQUIREMENTS

- A. Electrical equipment furnished or installed shall bear the seal of a State of Oregon Electrical and Elevator Board approved testing laboratory.
1. Underwriters' Laboratories (UL) and Canadian Standards Association (CSA) are approved laboratories for all categories of electrical products.
 2. Additional approved laboratories may exist. Examples of other approved laboratories include the Federal Aviation Administration (FAA) for airport lighting equipment specifically conforming to FAA standards, and FM Global (FM) for categories of equipment for hazardous locations, fire pump controls, and electronic protective systems. Other laboratories will be allowed if the Contractor can demonstrate that the laboratory is approved by the State of Oregon Electrical and Elevator Board.
- B. Equipment Without Proper Labeling:
1. A letter of acceptance by a State of Oregon Special Deputy Electrical Inspector will be accepted in lieu of a testing laboratory certification for specific and/or unusual equipment not normally listed. Unless otherwise specified, costs, work, and time required for obtaining state acceptance shall be the Contractor's responsibility.
 2. Labels or permits will not be required for equipment and materials specifically considered exempt by the authority having jurisdiction.

1.13 SPECIAL INSPECTIONS

- A. In accordance with the International Building Code (IBC) Chapter 17, special inspections are required for the following types of work:
 - 1. Concrete
 - 2. Bolts Installed in Concrete
 - 3. Ductile Moment-Resisting Concrete Frame
 - 4. Reinforcing Steel and Prestressing Steel
 - 5. Welding
 - 6. High-Strength Bolting
 - 7. Structural Masonry
 - 8. Reinforced Gypsum Concrete
 - 9. Insulating Concrete Fill
 - 10. Spray-Applied Fireproofing
- B. The Contractor shall be responsible for the timely coordination of all special inspections required. The Port will determine which testing agency or agencies to use and will make arrangements for the testing agency's or agencies' reimbursement.

1.14 WARRANTY REQUIREMENTS

- A. The Contractor shall be responsible for compliance with manufacturers' warranty requirements, including inspections.

1.15 PROGRESS MEETINGS

- A. Regularly scheduled job meetings will be held between the Contractor and the Port. The Contractor's representative at job meetings shall be the person directly responsible for the work. The time and place of the meetings will be established by the Port.
- B. Other unscheduled meetings may be required to resolve specific issues at the work area.

END OF SECTION 011100

SECTION 012200 – UNIT PRICES

PART 1 - GENERAL

1.1 INCIDENTAL WORK

- A. Consider work not listed, but necessary to complete the work, as incidental. Each bid item has incidental work associated with it. Some of the incidentals may be identified. However, the list is not complete. This does not relieve the Contractor from the responsibility for completing the incidental work.

1.2 BID ITEMS

- A. Payment constitutes total compensation for furnishing materials; for preparation of these materials; and for labor, equipment, tools and incidentals necessary to complete the work as specified and shown on the drawings. Measurement will not include unauthorized work performed beyond the design limits. Replace material removed without authorization at no added cost to the Port. The method of measurement and the basis of payment for bid items will be as follows.

PART 2 - BASE BID ITEMS

1 MOBILIZATION, CLEANUP, AND DEMOBILIZATION – L.S.

- A. Payment will be made at the contract lump sum price for mobilization and demobilization of personnel, equipment, supplies, offices and other facilities necessary for the work; and cleanup. The price includes premium on bonds and insurance and other costs which are incurred before beginning the work.

2 SIGN GROUP 1 – L.S.

- A. Payment will be made at the contract lump sum price for providing sign types CM2, FM2, and FM3 in Sectors 70, 71, 72, 73, 40, and 41 as shown on the drawings. The price includes structural, data, and electrical work.

3 SIGN GROUP 2 – L.S.

- A. Payment will be made at the contract lump sum price for providing sign types CM2, CM2D, CMB2, CMC3, FM3, FM4, FMD2, LG1, WM2, and WM4 in Sectors 51, 52, 53, 00, 01, 02, and 11 as shown on the drawings. The price includes structural, data, and electrical work.

4 SIGN GROUP 3 – L.S.

- A. Payment will be made at the contract lump sum price for providing sign types FD6, FD7, and PB1 in the locations shown on the drawings. The price includes any structural, data, and electrical work for sign type PB1 as required.

5 SIGN GROUP 4 – L.S.

- A. Payment will be made at the contract lump sum price for providing sign types AE1, AE2, AE3, DR1, DRE1, GN1, ID1, IF1, IF2, IFW, K10, MW1, MW2, PGL7, RN1, RN2, RR1, RR10, ST2, ST3, ST4, VM1, VM2, and VM4 in the locations shown on the drawings.

PART 3 - ADDITIVE ALTERNATE BID ITEMS

1 SIGN GROUP 5 – L.S.

- A. Payment will be made at the contract lump sum price for providing sign type CBL in Sector 72 as shown on the drawings. The price includes structural, data, and electrical work.

END OF SECTION 012200

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 PORT/TENANT OPERATIONS

- A. Work in coordination and cooperation through the Port with airlines, tenants, and other contractors so that normal operations may be carried on without interruption.
- B. The Port, airline, or tenant operations may require that certain of the Contractor's operations be scheduled around Port, airline, or tenant activities, and certain areas of the work may be required to be bypassed and accomplished when Port, airline, or tenant operations permit.

1.2 OTHER CONTRACTORS

- A. The Port reserves the right to award other contracts for work in the vicinity of work covered by this contract.
- B. Contemplate in planning and work scheduling the following projects which will be in progress in the vicinity during the time of this contract:
 - 1. Circulation and Capacity Improvements
 - 2. Terminal Core Redevelopment (TCORE)
- C. The various contractors and the Port will mutually establish a schedule of construction for the use of common work areas.

1.3 CONTRACTOR'S COORDINATION

- A. The Contractor is responsible for overall coordination of the work.
- B. The drawings and specifications are arranged for convenience only and do not necessarily determine which trades perform the various portions of the work.
- C. Transmit to the trades doing the work of other divisions the information required for work to be provided under their respective sections (such as foundations, electric wiring, access door locations, etc.) in ample time for their installation.
- D. Consult with the trades doing the work of other divisions so that, whenever possible, motors, motor controls, pumps, valves, etc., shall be of the same manufacturer.
- E. Compare the drawings and specifications of the separate trades before proceeding, noting discrepancies and conflicts. Obtain written instructions for changes necessary. Before installation, make provisions to avoid interferences.

- F. Prior to the installation and connection of mechanical and electrical work for work of other sections, or of other contractors, verify the requirements indicated in those divisions with the requirements and characteristics of the other crafts or other contractors' equipment.
 - 1. Coordinate layout of mechanical and electrical work before fabrication and installation begins.
 - 2. Bring deviations and conflicts to the attention of the Port immediately.
- G. Mechanical and electrical drawings show the general arrangement of the work. Follow as closely as actual building construction and the work of other trades permit.
 - 1. Electrical drawings are diagrammatic and do not show all offsets, fittings, and accessories which may be required.
 - 2. Investigate the structure and finish conditions affecting the work and arrange the work accordingly.

END OF SECTION 013100

SECTION 013200 – CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work progress schedule requirement is established to ensure adequate planning, scheduling, management, and execution of the work by the Contractor, and to enable the Port to evaluate work progress and make contract time adjustments. The work specified in this section consists of submitting a contract schedule, monthly updates, four-week schedules for progress meetings, and a final as-built schedule. The planning, scheduling, management, and execution of the work in accordance with the contract is the responsibility of the Contractor.

1.2 SUBMITTALS

- A. Except as modified in this section, the procedures required by Section 013300, Submittal Procedures, shall be observed.
- B. Submit a statement of Critical Path Method (CPM) capability within 10 days following the Port's delivery of the fully executed contract, stating that the Contractor has in-house capability, or if not, naming a scheduling subcontractor to be employed by the Contractor to prepare the schedules required. Include with this submittal scheduler's name and list of qualifications demonstrating that the scheduler has performed scheduling for projects of the same magnitude and complexity of this project. Failure to provide this information may result in disqualification of the proposed scheduler.
- C. At least one week prior to the preconstruction meeting or sooner if requested by the Port, submit for review by the Port, a work progress schedule meeting the requirements below.
- D. Within 5 days of receipt of review comments from the Port, incorporate the Port's comments, finalize, and resubmit the work progress schedule for Port approval.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 CONTRACT SCHEDULE SUBMITTAL REQUIREMENTS

- A. Develop the contract schedule submittal in CPM format using Primavera Project Management (P6)®, Microsoft Project®, or equal. It shall include:

1. A CPM Network Diagram:
 - a. Time-scaled (by week, starting Monday), grouped by work areas and sorted by early start dates.
 - b. The diagram shall be clear, neat, and legible. Each sheet shall contain a title block, a revision block, project name and contract number, Contractor, type of tabulation (initial, update, project status), project duration, scheduled substantial completion date, and a legend explaining the basic notation, terms, and codes used.
 - c. Identify critical path activities, including critical paths to contract milestone dates.
 - d. Activity durations shall not exceed 10 days. Should an activity require more than 10 days, it shall be subdivided to define appropriate activities. The Port may approve using longer durations on such non-construction activities as the procurement and fabrication of materials and equipment.
 - e. All activity descriptions shall clearly define the location and type of work to be performed.
 - f. Show schedule critical deliverables (i.e., permits, submittals, etc).
 - g. Schedule fabrication and delivery of all materials and equipment.
 - h. Scheduled start or completion dates imposed on the schedule by the Contractor shall be consistent with contract milestone dates and other restrictions. Contract milestone dates are the work area starting and completion dates and shall be clearly identified and connected to the appropriate activities.
 - i. Schedule shall include contingencies for normal weather delays and seasonal periods of heavy traffic flow.
 - j. Schedule shall list resources required to perform work within durations shown. Indicate the estimated quantities of work anticipated where applicable.
 - k. Failure to include any element of work required for performance of this contract shall not excuse the Contractor from timely completion of work required to achieve the contract milestones, notwithstanding the acceptance of the contract schedule submittal.
 - l. The contract duration shall be the duration specified in the contract documents and awarded by the Port.
 - m. Schedules extending beyond the contract completion date will not be accepted.
 - n. Schedules showing the work completed in less than the contract duration may be found by the Port to be impractical, requiring resubmittal.
 - o. Schedules showing the work completed in less than the contract duration, if practical to the Port, shall be considered to have Float. Float is the time between the scheduled duration of the work and the contract duration. Float is a resource available to both the Contractor and the Port, and is non-compensable. Acceptance of a schedule showing the work completed in less than the contract duration shall not constitute a change to the contract completion date.
 - p. Schedule shall be coded by activity identifying shift work, restricted hours, electrical work, etc.
2. Narrative: The contract schedule submittal shall include a “stand-alone” document that conveys, in writing:
 - a. The Contractor’s schedule assumptions; constraints; critical path/critical activities and why they are critical; permit requirements; coordination required with the Port, airlines, other contractors, utilities or any other parties; and long lead delivery items.
 - b. Basis for resources. Include anticipated quantities of work for each activity and the production rates used in determining resource allocation for activities.

3. The contract schedule submittal shall include a compact disc containing a copy of the project files. All data shall be written to disk via the Primavera Project Management (P6)®, Microsoft Project® Backup, or equal utility.
- B. The final, accepted work progress schedule shall be the baseline from which changes in duration and logic shall be determined and shall be the basis for planning, scheduling, managing and executing the work.

3.2 MONTHLY UPDATE REPORT

- A. No later than 30 days after acceptance of the contract schedule and monthly thereafter, the Contractor shall submit a Monthly Update Report.
- B. The Monthly Update Report shall consist of:
 1. An updated CPM Network Diagram of the contract schedule, format as previously specified herein, and a compact disc containing an exact copy of the submittal. All data shall be written to disk via the Primavera Project Management (P6)®, Microsoft Project® Backup, or equal utility.
 2. A narrative which identifies the work actually completed and reflects the progress along the critical path in terms of days ahead of or behind the contract milestone dates. Specific requirements of the narrative are as follows:
 - a. If the Monthly Update Report indicates an actual or potential delay to the contract milestone dates, the narrative shall identify the problem, cause, and the activities affected.
 - b. The narrative shall also address the following:
 - 1) A detailed change in duration of any activity and/or logic changes to activities which were performed in a sequence different from the accepted contract schedule.
 - 2) Activities proposed to be added to or deleted from the contract schedule.
 - 3) Identification of executed change orders.
 3. Incorporation of all Port-accepted schedule revisions.
 4. The mutually agreed-to Monthly Update Report shall be the basis for evaluating the Contractor's progress. Documents in a single Monthly Update Report shall have the same data date irrespective of the dates of preparation of the individual documents.
 5. If the latest completion time for any required contract milestone date as indicated by the current Monthly Update Report does not fall within the time allowed by the contract, the Contractor shall prepare and submit a plan to recover the lost time.
- C. The Port may call for more frequent status meetings (weekly, biweekly, etc.), at no additional cost to the Port, at which the Contractor shall provide the required information.
- D. Review of Monthly Update Report:
 1. The Port will review the monthly report and respond within 7 days after receipt.
 2. If necessary, the Contractor shall resubmit within 7 days of receipt of review comments.
- E. Applications for Payment: Submission of monthly schedule updates shall accompany applications for progress payments, and will be a condition of payment.

3.3 PROGRESS MEETING SCHEDULES

- A. During on-site construction, at each progress meeting, provide a one week back and three-week forward activity schedule. This schedule shall be in Gantt bar chart form and include, but not be limited to, reporting of the following:
 - 1. Detailed listing of specific work items, duration of work items, actual work hours, resources to be used in accomplishing work items, work area closing and opening dates and times, operational impacts, and other pertinent items.
 - 2. The weekly progress meeting schedules shall be submitted not less than 24 hours in advance of the scheduled progress meeting.

3.4 SCHEDULE MONITORING

- A. If the progress of critical path activities falls behind the time lines shown on the latest, accepted version of the CPM schedule by 7 days, the Contractor shall document the means it will employ to bring work back on schedule.

3.5 CONTRACT SCHEDULE REVISIONS

- A. Proposed revisions to the accepted contract schedule shall be submitted to the Port on a separate fragnet for review and acceptance prior to incorporation into the current contract schedule. This fragnet shall clearly outline the impact of the revision within the context of the contract schedule. Each proposed revision shall be submitted with the following minimum components:
 - 1. A CPM Network Diagram showing revised and affected activities.
 - 2. An Activity Report and Predecessor/Successor Report for all revised and affected activities.

3.6 CONTRACT TIME ADJUSTMENTS

- A. Float is not for the exclusive use or benefit of either the Port or the Contractor. Extensions of time for contract performance as specified in the contract will be granted only to the extent that time adjustments to the affected work items exceed the total float time along the affected path(s) of the contract schedule current at the time of the delay.

3.7 AS-BUILT SCHEDULE AND DOCUMENTATION

- A. Within 15 days after substantial completion, the Contractor shall submit for the Port's acceptance a final, as-built CPM Network Diagram.

3.8 SUSPENSION OF PAYMENTS

- A. If the Contractor fails at any time to submit a schedule or update as noted above, the Port reserves the right to suspend progress payments wholly or in part until the Contractor submits a schedule which is accepted by the Port.

END OF SECTION 013200

SECTION 013300 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes administrative and procedural requirements for all types of submittals.

1.2 PROCESS, CONTENT, AND FORMAT – ALL SUBMITTALS

- A. Unless specified otherwise in the applicable technical sections, transmit submittals electronically using the Port's online construction management system as described in this section. See the General Conditions for information regarding account set up and system access requirements. The Contractor shall also use Adobe Acrobat X Professional software, Bluebeam, or pre-bid approved equal, as part of this process.
- B. Update the Submittal Register and create submittal packages in the Submittals module of the Port's online construction management system.
- C. Accepted Submittal Attachment File Types:
 - 1. PDF: Each file shall be a resolution of 300 dpi or greater.
 - 2. DOC, DOCX, XLS, XLSX: Convert these file types to PDF format prior to submission. If this is not possible, only one Microsoft Word document and/or one Excel document is allowed for each submittal.
 - 3. The use of any other file types requires the Port's approval prior to submission.
- D. Organize each submittal by specification section and paragraph number as directed by the Port. Do not include items from more than one specification section per submittal package.
- E. Include the following information with each submittal:
 - 1. The names of: The subcontractor, supplier, and manufacturer.
 - 2. Identification of product or material, with the appropriate specification section and paragraph number marked on each item.
 - 3. Relation to adjacent critical features of work or materials. A clearly detailed sectional drawing of each system, identifying all components and their method of attachment to supporting structure, adjacent Contractor-designed work, or both.
 - 4. Field dimensions, clearly identified as such.
 - 5. Applicable standards.
 - 6. Identification of deviations from contract documents. Products shall be accompanied by a substitution request form.
 - 7. The Contractor's stamp.
- F. Resubmission Requirements:
 - 1. Revise initial submittals as directed by the Port and create a revision of the submittal package in the Port's online construction management system to resubmit as specified for the initial submittal.
 - 2. Indicate on the submittals any changes which have been made to the initial submittal.

- G. If the submittal content includes material samples, systems manuals, or operation and maintenance manuals, or if requested by the Port, the following revisions to this article shall apply:
 - 1. Complete an electronic submittal in the Port's online construction management system, noting in the Comments section that hard copies are being forwarded under separate cover.
 - 2. Submit three packages of sorted and collated documentation and samples.

1.3 SHOP DRAWINGS

- A. Submit complete shop drawings as required by the applicable technical sections.
- B. Present data in a clear and thorough manner.
 - 1. Drawings shall be identified by reference to the specification section and paragraph number when the item is called out in the specifications and by the original sheet and detail number, schedule, or room numbers when the item is shown on the drawings.
 - 2. Structural items shall be identified by location in the completed structure.
- C. Shop drawing quality:
 - 1. All line work shall be clean and crisp with no feathering or fading.
 - 2. Line work important to the drawing shall be emphasized by increasing the line weight and density.
 - 3. Text size shall be a minimum of 1/8 inch in height and shall be Helvetica style font.
 - 4. Notes shall be clear and concise.
 - 5. CAD-generated drawings are preferred.

1.4 PRODUCT/MATERIAL DATA AND OTHER INFORMATION

- A. Submit for Port review prior to commencement of related on-site work all product/material data and other information required by the applicable technical sections.
- B. Product/material data consists of manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data. Catalog cuts or brochures for items which are standard products shall show the type, size ratings, style, color, manufacturer, and catalog number of each item and be complete enough to provide for positive and rapid identification in the field. Catalog data shall be organized by specification section and paragraph number. Each product/material data item shall be clearly marked and annotated with the appropriate specification section and paragraph number. General catalogs or partial lists will not be accepted.
 - 1. Clearly mark each copy to identify pertinent product, or models.
 - 2. Show dimensions, weights, and clearances required.
 - 3. Show performance data consisting of capabilities, RPM, KW, pressure drops, design and operating pressures, temperatures, performance curves, noise level curves, power characteristics and consumption; conforming as closely as possible to the test methods referenced in the drawings and specifications.
 - 4. Show wiring or piping diagrams and controls.
 - 5. Modify manufacturer's standard schematic drawings and diagrams to indicate which information is not applicable.
 - 6. Supplement standard information to provide information specifically applicable to the work.

1.5 WARRANTY OUTLINE

- A. Within 30 days of Notice to Proceed, submit an outline of warranties required in the contract documents. Include a list of associated products and services, and available warranty requirements such as for registration, inspection, installation, etc.
- B. See the technical specification sections for specific warranty requirements.

1.6 SAMPLES

- A. Office Samples:
 - 1. Provide samples of sufficient size and quantity to clearly illustrate the item.
 - 2. Show functional characteristics of product or material, with integrally related parts and attachment devices.
 - 3. Provide full range of color samples.
 - 4. After review, samples may be used in the work, if approved by the Port.
- B. Where “match sample” is specified, the Contractor’s samples shall match the Port’s existing sample.
- C. Field Samples and Mock-Ups:
 - 1. Construct, at the work area, at a location acceptable to the Port.
 - 2. Size or Area: As specified in the respective specification section.
- D. Submit the number and type stated in each specification section, or seven copies, whichever is greater.

1.7 OPERATION AND MAINTENANCE MANUALS

- A. Prior to preparation and 10 weeks prior to the anticipated date of substantial completion, submit to the Port proposed outlines of operation and maintenance manuals. In an effort to produce comprehensive, high quality, useable manuals, provide examples and preliminary information when available. Within specified submittal review period, the Port will review and return comments.
- B. At least 45 days prior to anticipated date of substantial completion submit an electronic copy of draft operation and maintenance manuals. Within specified submittal review period, the Port will review and return with comments.
 - 1. The draft manuals shall be indexed and organized by specification section and paragraph number. Clearly mark each item with the appropriate specification section and paragraph number.
 - 2. Data shall include, but not be limited to, manufacturer’s catalog information, shop drawings, installation, startup, and operation and maintenance guides, warranty requirements and forms, recommended spare parts list, wiring and termination diagrams, control system schematic diagrams, operators’ and programmer’s manuals, field and factory test reports, equipment performance curves, calculations and certifications, and other information needed for startup, operation, troubleshooting, preventative maintenance, repair, restoration, and overhaul of systems and equipment.

- C. At substantial completion, submit an electronic copy of final operation and maintenance manuals. Allow 15 days for the Port to review and return with comments. Within 30 days following substantial completion, revise and resubmit those items noted as deficient.
- D. As a condition of final acceptance, submit two complete sets and an electronic copy of final operation and maintenance manuals.
- E. Hard copy manuals shall be clearly organized and loose-leaf bound, complete with information needed or useful for the continued operation, maintenance, and repair of the system. If the Contractor's standard maintenance manuals and parts catalogs apply to more than one model or size of unit, cross out nonapplicable data.
 - 1. The binders shall be D-ring and maximum 3-inch.
 - 2. Do not overfill the binders.
 - 3. Organize with tabs to match specification section and section title. Organize in order of specification section number and paragraph number.
 - 4. Include an index at the beginning of each new section listing all the items included in that section.
 - 5. Warranty documentation shall be submitted in a separate binder and not combined with material from other divisions.
 - 6. Mechanical, electrical, and baggage conveyor divisions shall be in separate binders and not combined with material from other divisions.
- F. The electronic copy of the manual shall have specifications bookmarked in accordance with the manual's index.
- G. Manuals shall include:
 - 1. A cover page containing the name and date of the project, the Contractor's company name, address, and telephone number, the names of the Contractor's project managers and foremen. Additionally, if applicable, list the company names, addresses, telephone numbers, and staff personnel of subcontractors utilized on the project.
 - 2. A detailed table of contents for all items included in each division and section.
 - 3. For each section include a separate tab with all applicable information in that section. Include for each of these items:
 - a. The supplier's company name;
 - b. The local representative's name and telephone number;
 - 4. A complete copy of as-constructed data, including the following:
 - a. Copy of approved product and material data, including description of the equipment, products, quantities supplied, and physical locations;
 - b. Operating data, operating instructions including sequence of operation and response to the total system;
 - c. Maintenance data, installation, repair, overhaul, and maintenance instructions, including adjustments, tolerances, and replacement and repair procedures; recommended practices, logic diagrams, and diagnostic and troubleshooting procedures; and preventative maintenance procedures and schedules.
 - d. Updated shop drawings, including illustrations and/or exploded views identifying each part and subassembly by name, applicable catalog or part number; schematics of electrical, electronic, and any other type of control equipment, and electronic circuit board diagrams, in a separate manual, for all printed circuit diagrams, including parts lists with commercial part numbers. Manufacturers' part numbers will not be acceptable. The Port acknowledges the proprietary nature of circuit diagrams. Subject to the requirements of evaluation of the manufacturer and public

disclosure laws, the Port will endeavor to protect against unnecessary disclosure of information, drawings, or design details so designated. Shop drawings shall be updated to accurately show changes made during fabrication, installation, or final adjustment. Include electronic files of the native CAD-generated format.

- e. Manufacturer and service provider warranty procedures, receipts, completed reports, registrations and questionnaires, purchaser responsibilities, certification requirements, and any other documentation necessary for the Port to avail itself of the full benefit of all warranties required in the contract documents.
 - f. Test reports, certificates, calculations, valve tag directory, equipment nameplate directory, and other information which would be required by an owner to be able to operate and maintain that equipment.
 - g. Recommended spare parts list noting the location of each item, and a cross-reference to local available sources.
 - h. Software documentation, in a separate user's manual, with complete description of all functions, including sample written programs and reports.
- H. Cross out non-applicable data from the Contractor's standard maintenance, operation, or software manuals or parts catalogs which include data for other models.
- I. See technical specification sections for additional operation and maintenance manual requirements.

1.8 OPERATIONAL AND FUNCTIONAL TESTING PLANS, PROCEDURES, AND REPORTS

- A. For each new system tested by the Contractor, submit copies of the test plan for each testing phase for review by the Port. Detail the objectives of all tests. The tests shall clearly demonstrate that the system and its components fully comply with the requirements specified in the contract documents. At a minimum, define participant responsibilities, documentation for tests, duration and schedule of tests, explicit requirements to demonstrate contractual compliance, and procedures for dealing with discrepancies and failures during the test. Unless specified otherwise, submit test plan no less than 30 days prior to the scheduled start of the first test.
- B. Test Procedures: Submit copies of the test procedures document which shall be the means by which all tests specified in the test plan are executed. Unless specified otherwise, submit test procedures for each test to the Port for review 60 days prior to the start of each test. Describe each step-in detail such that an operator would need no other document or prior knowledge of the system to execute the test. Divide test procedures into logical sections and as a minimum include in each section:
- 1. A statement of purpose so that the goals and methods of testing can be understood.
 - 2. An outline of the section, if further subdivision is required.
 - 3. A specification of the equipment, component, hardware, and/or software to be tested in that section.
 - 4. A specification of the software, equipment, hardware and/or data communications, required to execute that section.
 - 5. Installation Test Procedure form, to be used during testing for initialing by the Port and the Contractor. Include in the form:
 - a. Test number, name and description for each test.
 - b. Step-by-step procedures, providing the expected response for each step and providing space for the actual response.
 - c. Space for approval by both the Port and the Contractor at each test.

6. An overall test schedule that includes time for unstructured testing.
- C. Test Report: Prepare, for each test, a test report document which shall certify successful completion of that test. Submit copies of the test report to the Port for review and acceptance within seven days following each test. The test report shall contain, at a minimum:
1. Commentary on test results.
 2. A listing and discussion of all discrepancies between expected and actual results and of all failures encountered during the test and their resolution.
 3. Complete copy of test procedures and test data sheets with annotations showing dates, times, initials, and any other comments entered during execution of the test.
 4. Signatures of persons who performed and witnessed the test.
 5. Graphs, tables, and charts necessary for the execution of the test.

1.9 REDLINE (AS-CONSTRUCTED) DRAWINGS

- A. At the start of construction, the Port will provide the Contractor with a full-sized set of drawings for use in recording changes that develop during construction. These changes shall be shown on the drawings as “redlines” using red pencil or pen to indicate the actual installation where it varies appreciably from the installation shown originally.
1. Special attention shall be paid to legibility and reproducibility of redline drawings. Give particular attention to information on concealed elements which would be difficult to identify or measure and record later. Items required to be marked include but are not limited to:
 - a. Dimensional changes to the original drawings.
 - b. Changes to details shown on the original drawings.
 - c. Depths of foundations below the first floor.
 - d. Locations and depths of underground utilities (if different by more than 1 inch in depth or more than 1 foot in location).
 - e. Changes to routing of piping and conduits (if different by more than 1 foot from where shown).
 - f. Changes to electrical circuitry.
 - g. Actual equipment locations, including baggage conveyor, if applicable (located to within 1 inch).
 - h. Routing and size of ductwork, piping, and conduit (located to within 1 inch).
 - i. Locations of concealed internal utilities (located to within 1 inch).
 - j. Details not on original drawings.
 2. Completely and accurately redline contract drawings.
 3. All attached documents to the redline drawings shall reference original drawings and sheet numbers.
 4. Redline important additional information which was either shown schematically or omitted from original drawings.
 5. Note construction contract change numbers, alternate numbers, change order numbers, RFI numbers, and similar identification.
 6. Accurately record information in an understandable drawing technique.
 7. Record data as soon as possible after it has been obtained. In the case of concealed installations, record and check the redline prior to concealment.
- B. Store the Contractor’s redline drawings in the field office, apart from contract documents used for construction. Do not permit redline drawings to be used for construction purposes. Maintain redline drawings in good order, and in a clean, dry, legible condition.

- C. The Contractor's redline drawings shall be available at all times for inspection by the Port.
- D. As a condition of final acceptance:
 - 1. Submit the final redline drawings in both electronic and hardcopy format for Port review and approval. Revise and resubmit any items noted as deficient.
 - 2. Submit final updated shop drawings.

1.10 TRAINING PLANS

- A. Thirty days prior to scheduled commencement date of training sessions, submit a final course schedule and outline for each training course to be conducted for Port personnel.
- B. In addition to the subject matter, include in each course outline a short review of the prerequisite subjects (where appropriate); how this course fits into the overall training program; the objective; the standards of evaluation; and any other topics which will enhance the training environment.

1.11 APPRENTICE UTILIZATION PROGRAM

- A. See the Supplementary Conditions for submittals required under the Port's apprentice utilization program.

END OF SECTION 013300

SECTION 013513 - AIRPORT SECURITY, SAFETY, AND OPERATING REGULATIONS

PART 1 - GENERAL

1.1 AIRFIELD SECURITY

- A. The Contractor shall maintain security against unauthorized access to the airfield area through openings in the building exterior, which are within the work area, into portions of the Sterile Area and/or Restricted Area.
- B. Modifications to the airport security perimeter requires a 45-day notice to the TSA. The Port will submit the application for any changes required and the Contractor shall provide information regarding schedules, phasing, temporary measures, materials, methods, etc. Changes to the access control system requires close coordination and active communications between the Port and TSA thus the Contractor may be required to provide additional information during the 45-day review period.
- C. Access to the work site located within the Restricted Area shall be through the project security gate as shown on the drawings. If requested, the Port will provide a security officer at this gate who will control access to the Restricted Area. Valid PDX security badges and appropriate vehicle markings will be verified at each checkpoint. Individual vehicles and/or contents may be subject to inspection.
- D. The Contractor may be allowed to construct a temporary opening in the security fence provided need and location are approved by the Aviation Security Department. Temporary openings are allowed for no more than 60 days, unless otherwise approved by the Aviation Security Department. If a temporary opening is authorized, the Contractor shall provide a security officer to attend the opening in the security fence during the hours of operation. The Contractor-provided security officer(s) shall meet all entry control requirements as directed by the Port.
- E. Temporary openings in the security fence shall be properly secured when not in use or when they cannot be attended to by the authorized officer. Secure temporary openings with replaceable panels, temporary fencing, or a locked gate when not in use. Gates in temporary openings shall be locked with Port-provided locks. Only the Port will retain a key. The Contractor shall make arrangements with the Port to unlock such gates.
- F. Temporary fence replacement panels and gates shall provide the same level of security and protection against unauthorized access as the adjacent security fence. Temporary fences may utilize undamaged salvaged fence materials. Fence materials need not be galvanized, and posts may be driven. Temporary fence or gate fabric shall be 7 feet high, woven with 9-gauge carbon steel in a 2-inch mesh, and topped with 1-foot-high extension brackets and 3 strands of barbed wire. Temporary terminal posts shall be round, 2.875 inches O.D., and 5.79 pounds per foot. Line posts shall be round, 2.375 O.D., and 2.27 pounds per foot. No more than a 2-inch gap at the bottom of the fence will be allowed. Top rail need not be used provided a 7-gauge steel tension wire is utilized. Use of such panels is subject to the Port's approval.

- G. All equipment and vehicles shall be positioned a minimum of 10 feet away from either side of the perimeter security fence.

1.2 REGULATIONS FOR CONTRACTORS

- A. This section contains rules and regulations related to construction activities at Portland International Airport (PDX). To the extent that any rules and regulations contained in this section conflict with the rules and regulations now or hereafter adopted by the Port (PDX Rules), the PDX Rules shall control.
- B. The regulations contained in this section and the PDX Rules are subject to change at any time without notice. Current PDX Rules can be found on the Port's public website at https://popcdn.azureedge.net/pdfs/PDX_Rules.pdf.

1.3 DEFINITIONS AND ABBREVIATIONS

- A. Air Operations Area (AOA): This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas for use by aircraft regulated under FAA and TSA regulations, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the Secured Area but is part of the Restricted Area (RA). The AOA is a Security Identification Display Area (SIDA).
- B. Airport Duty Manager: Airside operations staff who is responsible for managing the day-to-day operations on the airfield.
- C. Airport Security Coordinator (ASC): The person appointed by the airport operator to serve as the primary and immediate contact for security-related activities and communications with TSA.
- D. Airport Security Program (ASP): A PDX security program that describes security measures, policies, and procedures which are mandated and regulated by the TSA.
- E. Apron: All areas and facilities used for aircraft support and servicing operations. It includes the following subcomponents:
 - 1. Aircraft parking positions - used for parking aircraft to enplane and deplane passengers, load or unload cargo.
 - 2. Aircraft service areas - on or adjacent to an aircraft parking position. These areas are used by airline personnel/equipment for servicing aircraft and staging baggage, freight, and mail for loading and unloading of aircraft.
 - 3. Taxilane - reserved to provide taxiing aircraft with access to and from parking positions.
 - 4. Service/Fire lanes - identified routes on apron designated for aircraft ground service vehicles and fire equipment.
- F. Authorized Signatory: Person(s) named by each Contractor employee who will sign for the company's PDX security badges and will validate that each applicant from their company and any subcontractors have a valid need for a PDX security badge and construction keys.

- G. Criminal History Record Check (CHRC): A review of a fingerprint-based criminal history record to determine if a person has been convicted of a disqualifying crime as mandated in TSR §1542.209.
- H. Central Utility Plant (CUP) environment: Areas restricted to public access within the fenced area surrounding the CUP or within the CUP itself.
- I. Equipment: Every self-propelled vehicle not capable of being used on a street or roadway.
- J. Ground control procedures: System of metering aircraft access between the parking and movement area that is controlled by the FAA Airport Traffic Control Tower (ATCT).
- K. Loading bridge: A device that facilitates the movement of passengers to/from a terminal gate to/from a parked aircraft.
- L. Movement area: The area of an airport open and used by aircraft for taxiing, takeoff, and landing. Aircraft or vehicle operations within this area require an air traffic control clearance.
- M. Operations Impact Coordinator: The person who is responsible for coordinating all operational impacts resulting from airside and landside construction/maintenance projects.
- N. Restricted Area (RA): All the areas within the perimeter fence, including the SA and AOA, are classified as Restricted Areas and access is limited to those personnel who possess and appropriately display PDX security badges issued in accordance with this ASP. The GA is the only non-SIDA portion of the RA.
- O. Ramp: Paved areas adjacent to runways and taxiways where aircraft are positioned for servicing or parking.
- P. Secured Area (SA): The area around the terminal where aircraft operators enplane and deplane passengers and sort and load baggage, and any adjacent areas not separated by adequate security measures. The SA is designated as a SIDA.
- Q. Security gate: Any controlled, securable opening in the security fence.
- R. SIDA: Security Identification Display Area.
- S. Security Threat Assessment (STA): The TSA process of verifying that an individual is not a threat to civil aviation security by checking the individual against various U.S. Department of Homeland Security records.
- T. Sterile Area: The area in the terminal beyond the security screening checkpoints providing access to aircraft boarding gates and to which access is controlled by the TSA through the screening of persons and property.
- U. Terminal gate: An area where passengers enplane and deplane to/from an aircraft.
- V. Transportation Security Administration (TSA): The U.S. federal agency under the Department of Homeland Security responsible for regulating aviation security standards.

- W. Vehicle: Every licensed, self-propelled vehicle capable of being used on a street or roadway.
- X. Work Area: Limits of work established by a perimeter boundary shown on the drawings or otherwise designated by the Port.

1.4 PERSONNEL SECURITY REGULATIONS

A. Access to Restricted Areas (Secured Area, AOA, CUP) and Sterile Areas:

1. The Contractor shall obtain and thoroughly review all PDX security badging requirements and PDX Rules pertaining to badging and airport security before commencing any work under this contract. Copies of security and badging information, and PDX Rules are available from the Port upon request. The Contractor shall warrant and ensure that any person who receives a PDX security badge meets all of the requirements for having a badge.
2. No personnel will be permitted within the airfield, CUP, Restricted Area, or Sterile Area environment without PDX security badges or authorized escorts. PDX security badges shall be obtained through the PDX Security Badging Office once all requirements have been met. Security training and fingerprint appointments shall be scheduled through the PDX Security Badging Office.
3. PDX security badges will be issued at the sole discretion of the Port and only to personnel physically working in the Airfield, CUP, Restricted Area, or Sterile Area environments.
4. All unbadged Contractor personnel, subcontractor personnel, material delivery personnel, or visitors with a legitimate business need shall be escorted by an individual who has been issued a valid PDX Secured Area badge in the Secured Area or a valid PDX AOA badge in the AOA locations. An individual with an appropriate and valid PDX security badge with an 'E' icon may escort no more than three unbadged personnel at any one time. Without exception, the PDX security badged individual shall stay within 10 feet of the people they are escorting and be within sight and sound at all times. All escorts must be registered at <https://www.pdx.com/escort>. Escorting may not be used to avoid the badging application process. An individual who has been disqualified through the CHRC or STA process will not be allowed access to the Secured Area, AOA, CUP, and Sterile Area; no exceptions will be made and escorting is not authorized. Contractor personnel can only be escorted up to five times within the course of a year.
5. The Contractor shall ensure that its employees, agents, subcontractors, suppliers or other invitees obtain PDX security badges and wear the badges provided by the Port at all times, or be escorted, when they are engaged in work at the airport. The PDX security badge shall be worn on the outermost garment above the waist and in plain view of those interacting with the employee. The Contractor shall ensure that any PDX security badge provided by the Port is returned promptly to the PDX Security Badging Office when the person to whom the PDX security badge was provided leaves the Contractor's employment, no longer engages in work under this contract at the airport, or has an expired PDX security badge.

B. Additional Access Requirements for Sterile Areas:

1. In addition to requirements of Paragraph 1.4 A, above, access to Sterile Areas necessitates the following be met:
 - a. Tools and other prohibited items may not be carried through any TSA-controlled security screening checkpoint into the Sterile Area. Arrangements shall be made for delivery of tools into the Sterile Area from the Secured Area. Tools and other prohibited items carried or utilized in the Sterile Area shall be under the direct

control of the Contractor at all times, and shall not be left unattended and unsecured in the Sterile Area. Failure to adhere to this requirement will prompt an investigation as a violation of the ASP and PDX Rules.

- b. No Contractor personnel may enter the Sterile Area in a manner that circumvents security screening at a TSA-controlled security screening checkpoint and board a plane as a passenger.

C. Airport Security Identification Badges:

- 1. All PDX security badge applicants will be required to complete a CHRC and STA prior to issuance of a PDX security badge. The background check information will be evaluated for disqualifying criminal convictions before a PDX security badge is issued. Applicants authorized to receive PDX security badges shall successfully complete PDX security badge and applicable construction and endorsement/icon training classes provided by the Port. The average background investigation process takes approximately 3 days to 1 week. However, it may take 1 to 4 weeks to gain applicant approval in some situations.
- 2. There are four main types of PDX security badges and four endorsement/badge icons:
 - a. Badges:
 - 1) AOA Badge: This purple photo identification badge shall be worn by all Contractor personnel (including subcontractors) who are working in AOA areas of the airport and are not authorized to enter the Secured Area and Sterile Area.
 - 2) Secured Area Badge: This red photo identification badge shall be worn by all Contractor personnel (including subcontractors) who enter the Secured Area.
 - 3) Sterile Area Badge: This gray photo identification badge shall be worn by all Contractor personnel (including subcontractors) who enter the Sterile Area without needing access to the AOA or Secured Area.
 - 4) General Aviation Badge: This blue badge shall be worn by all Contractor personnel (including subcontractors) who are working in general aviation areas.
 - b. Endorsements/Badge Icons:
 - 1) All endorsements/icons will be issued at the sole discretion of the Port.
 - 2) 'C' Construction Endorsement/Icon: Designates that an individual is employed by a Contractor or subcontractor. Computer-based training is required for airfield construction.
 - 3) 'D' Restricted Area Driver Endorsement/Icon: This icon authorizes personnel to drive vehicles in the non-movement portions of the airfield. Issuance of this icon requires the individual to complete the computer-based Non-Movement Area Driver course in the Security Badging Office.
 - 4) 'E' Escort Endorsement/Icon: This icon authorizes personnel to escort up to three individuals and/or three vehicles in Restricted Areas. Escort training is included in security badge training for all badge holders. Issuance of this icon is at the discretion of the Contractor's Authorized Signatory and no additional training is required.
 - 5) 'F' Flagger Endorsement/Icon: This icon authorizes personnel to conduct flagging services on the airfield. Prior to issuance, individuals must complete a flagger hands-on training class in addition to all applicable security badge and construction training.
 - 6) 'M' Movement Area Driver Endorsement/Icon: This icon authorizes personnel to drive vehicles within the movement area of the airport (runways and taxiways). Prior to issuance, individuals must complete a computer-based

Movement Area Driver training course, employer-provided driver training, and a check-ride with the PDX Airport Operations Department.

- 7) 'P' Pilot Car Escort Driver Endorsement/Icon: This icon authorizes individuals to escort up to three construction vehicles on the airfield without completing an escort registration. Prior to issuance, individuals must complete a Construction Driver computer-based training course and hands-on training with the PDX Airport Operations Department.

D. The Contractor shall submit to the Port the names of those Authorized Signatories who have the authority to sign for all Contractor and subcontractor personnel.

1. The Authorized Signatories will be required to obtain and maintain a PDX security badge.
2. In addition, the Authorized Signatories shall complete an Authorized Signatory training course and all training courses associated with applicable endorsement/icon training courses.

E. The Contractor's Authorized Signatories shall be responsible for the following:

1. Submitting accurate and complete PDX security badge new and renewal application information to the PDX Security Badging Office for all Contractor and subcontractor personnel scheduled to receive Secured Area access badges, AOA access badges, Sterile Area access badges, or General Aviation access badges. Application information shall be submitted via the Authorized Signatory Portal or a paper application.
2. Ensuring that each applicant brings valid identity and employment eligibility documents to the PDX Security Badging Office as outlined below. Applicant may either present a document from List A or shall present documents from both List B and List C. All applicants shall present original and unexpired documents. Acceptable forms of identification and eligibility shall consist of the following:
 - a. List A (documents that establish both identity and employment eligibility):
 - 1) U.S. Passport or U.S. Passport Card.
 - 2) Permanent Resident Card or Alien Registration Receipt Card (Form I-551).
 - 3) Foreign passport that contains a temporary I-551 stamp or temporary I-551 printed notation on a machine-readable immigrant visa.
 - 4) Employment Authorization Document containing a photograph (Form I-766).
 - 5) In the case of a non-immigrant alien authorized to work for a specific employer incident to status, a foreign passport with Form I-94 or Form I-94A bearing the same name as the passport and containing an endorsement of the alien's non-immigrant status, as long as the period of endorsement has not yet expired and the proposed employment is not in conflict with any restrictions or limitations identified on the form.
 - 6) Passport from the Federated States of Micronesia (FSM) or the Republic of the Marshall Islands (RMI) with Form I-94 or Form I-94A indicating non-immigrant admission under the Compact of Free Association Between the United States and the FSM or RMI.
 - b. List B (documents that establish identity):
 - 1) Driver's license or ID card issued by a state or outlying possession of the United States provided it contains a photograph or information such as name, date of birth, gender, height, eye color, and address.
 - 2) ID card issued by federal, state, or local government agency or entity provided it contains a photograph or information such as name, date of birth, gender, height, eye color, and address.
 - 3) School ID card with a photograph.

- 4) Voter's registration card.
 - 5) U.S. military card or draft record.
 - 6) Military dependent's ID card.
 - 7) U.S. Coast Guard Merchant Mariner Card.
 - 8) Native American tribal document.
 - 9) Driver's license issued by a Canadian government authority.
 - 10) For persons under age 18 who are unable to present a document listed above:
 - a) School record or report card.
 - b) Clinic, doctor, or hospital record.
 - c) Daycare or nursery school record.
 - c. List C (documents that establish employment authorization):
 - 1) Social Security Account Number card other than one that specifies on the face that the issuance of the card does not authorize employment in the United States.
 - 2) Certification of Birth Abroad issued by the Department of State (Form FS-545).
 - 3) Certification of Report of Birth issued by the Department of State (Form DS-1350).
 - 4) Original or certified copy of a birth certificate issued by a state, county, municipal authority, or territory of the United States bearing an official seal.
 - 5) Native American tribal document.
 - 6) U.S. Citizen ID Card (Form I-197).
 - 7) Identification Card for Use of Resident Citizen in the United States (Form I-179).
 - 8) Employment authorization document issued by the Department of Homeland Security.
 3. The following additional requirements apply for employees born outside the U.S.:
 - a. If employees are not U.S. citizens, they shall provide an Alien Registration number or an I-94 Arrival/Departure number.
 - b. If employees hold non-immigrant visas, they shall present the visa number.
 - c. If employees are U.S. citizens born abroad, they shall provide either a U.S. Passport number, a Certificate of Naturalization number, or a Certification of Birth Abroad number.
 4. Ensure that each applicant for a PDX security badge provides the required identity and employment eligibility documents required by the Port and TSA for an STA and CHRC. Eligibility for a PDX security badge will be determined by screening applicants and existing badgeholders against federal regulations and against Port standards for criminal arrest and conviction history. The list of federal regulations and Port standards for criminal history can be found in the PDX Rules.
 5. Set appointment times with the PDX Security Badging Office to fingerprint and train applicants. Currently, fingerprinting and training are done Monday through Friday between the hours of 8 a.m. and 4 p.m.
 6. After the CHRC and the STA have been approved, the Contractor may then pick up its badge from the PDX Security Badging Office any time during business hours.
- F. At the pre-construction meeting, the Contractor shall submit an estimated number of Secured Area, AOA, Sterile Area, or General Aviation badges necessary to adequately perform the work. The Port will pay all fingerprinting, background, and badging processing costs for the estimated number of each type of PDX security badge. If the Contractor exceeds the estimated number by more than 25 percent, the Contractor will be charged a badge processing and background

(criminal history) check cost for each additional application requested. The current badge processing and criminal history check cost is posted in the PDX Security Badging Office and on the PDX Security Badging website. The cost for each Secured Area, Sterile Area, AOA, or General Aviation badge application denied will be deducted from any payments due.

- G. Report lost PDX security badges to the PDX Security Badging Office and/or Port police immediately. The charge for replacement of a lost PDX security badge is \$150 for the first occurrence and \$250 for the second. Badge reissuance after a third lost badge requires approval from the PDX Airport Security Coordinator. Any person who loses three PDX security badges will not be eligible to obtain additional badges.
- H. Prior to final acceptance of the work, the Contractor shall return all PDX security badges to the PDX Security Badging Office and obtain written acknowledgement from the PDX Security Badging Office of their return. Submit a copy of the written acknowledgement to the Port construction contract manager. At final acceptance of the work, \$1,000 will be deducted from the final payment for each PDX security badge not returned to the PDX Security Badging Office.
- I. Employees of Contractors who are continuously working on multiple airport projects without a break in service may keep their PDX security badges from project to project. PDX security badges are deactivated on the expiration date of each project. Personnel changing projects will not be required to repeat the Port training class if they have received security badge training, and they have not been without a PDX security badge for more than 30 days, unless a change in one or more endorsement/icon is requested. PDX security badges are valid for 1 year, and security and endorsement/icon training is valid for 2 years. The Port will pay the cost for badge renewal for badged Contractor employees assigned to the work. Contact the PDX Security Badging Office for additional guidance.
- J. If the Contractor fails to comply with any PDX security badge regulations described herein, the Port may stop the work until compliance is attained. The Contractor will also be subject to any fines levied against the Port, as described in Article 1.9, Remedies of the Port Upon Violation of Regulations Referenced or Contained in this section, as a result of its failure to comply.

1.5 CONSTRUCTION KEYS

- A. Non-Security Keys
 - 1. Non-security keys unlock doors or gates that do not provide direct access to any part of the Restricted Area, or any area with critical infrastructure components, as determined by the Port.
 - 2. To receive a non-security key, the Contractor shall follow the same process as for security keys.
- B. Security Keys
 - 1. Security keys unlock doors or gates providing direct access to any part of the Restricted Area or any area with critical infrastructure components, as determined by the Port.
 - 2. Security keys providing direct access to any part of the Restricted Area will be issued only to those persons in possession of valid PDX security badges which authorize unescorted access to that area.

C. Application for Construction Keys

1. At the pre-construction meeting, the Contractor shall submit the estimated number of keys necessary to adequately perform the work.
2. Security keys identifiable by the Port logo are not transferable.
3. The Contractor or its Authorized Signatories shall submit key requests for all Contractor and subcontractor personnel scheduled to receive keys. Requests shall be submitted via the Authorized Signatory Portal or a paper application.
4. Allow a minimum of 5 days to process key applications.
5. Report lost keys to the PDX Security Badging Office immediately. The charge for replacement of a lost security key is \$50 for the first occurrence, \$100 for the second, and \$200 for the third. Any person who loses three keys will not be eligible to obtain additional keys.
6. When keys are no longer needed for access to a Restricted Area or area with critical infrastructure components, the Contractor shall return it to the PDX Security Badging Office.
7. At final acceptance of the work, \$1,000 will be deducted from the final payment for each key not returned to the Port's badging office.

1.6 TRAINING INFORMATION

- A. As part of the requirements to obtain a PDX security badge, all Contractor personnel who will be working within the Restricted Area shall complete security badge training and, if applicable, endorsement/icon training classes with additional hands-on training conducted by the Port. Upon successful completion of training, the Port may issue an airfield driving permit for personnel required to operate vehicles within the Restricted Area such as superintendents, supervisors, foreman, and escorts. In accordance with FAA policy, driving permits will be kept to a minimum and only issued on an as-required basis, as determined by the Port.
- B. The Contractor shall contact the PDX Security Badging Office by calling 503-460-4500 to schedule training classes for all Contractor's and subcontractors' personnel. A limited number of people can be trained at one time. Training classes are available Monday through Friday at varying times. Personnel approved to receive a Flagger, Movement Area Driver, or Pilot Car Escort endorsement/icon shall successfully complete additional hands-on training with Airside Operations staff before the appropriate icons are added to the PDX security badge.
- C. The Contractor shall provide as much notice as possible, a minimum of 2 business days, to schedule training class requests for large PDX security badge groups.
- D. Classes will not be scheduled until the CHRC and STA have been completed and approved.
- E. The approximate duration of the training classes are as follows:
- | | |
|--|---------|
| 1. Security badge training class (no endorsements/icons) | 1 hour |
| 2. Security badge, Construction and Non-Movement driver training | 3 hours |
| 3. Security badge, Construction, and Movement Area driver training | 4 hours |
| 4. Flagger/Pilot Car Escort Driver | 2 hours |

1.7 DRIVING REGULATIONS

- A. The purpose of these regulations is to maintain the safety of vehicle operations in the Restricted Area.
- B. Enforcement of these regulations will be by Port police and Port Airside Operations.
- C. Violations of the regulations may be cause for the project to be stopped and project safety procedures evaluated. The Port will decide if and when work will continue.
- D. The driving regulations are as follows:
 - 1. Yield the right-of-way to moving aircraft, whether under tow or their own power, and pedestrians.
 - 2. Within the Restricted Area, equipment, vehicle, and personnel travel outside the work area is restricted to the route(s) shown on the drawings.
 - 3. Obey stop signs and markings.
 - 4. Do not drive under loading bridge or between an aircraft and a terminal gate.
 - 5. Under no circumstances may a vehicle drive between an aircraft and a terminal gate during ramp deplaning or enplaning of passengers.
 - 6. Yield right-of-way to emergency vehicles displaying rotating beacons (other than yellow) and/or using sirens and other audible emergency signals.
 - 7. Observe the posted speed limits.
 - 8. Regardless of a posted speed limit, a lower speed may be required in order to account for congestion, reduced visibility, slippery surfaces, or other hazardous condition. No vehicle shall be driven in a manner that endangers persons or property.
 - 9. The speed limit of off-ramp service roads (perimeter road) is 35 MPH or as posted.
 - 10. Non-motorized equipment shall have reflective devices displayed on the front, back, and sides.
 - 11. Operators shall have a current and valid state driver's license on their person.
 - 12. Do not leave the engine running on an unattended vehicle.
 - 13. Park unattended vehicles clear of service and perimeter roads.
 - 14. Loads being carried shall be contained by sufficient means to assure no loss of any portion of the load.
- E. Vehicles within the Restricted Area shall display professionally manufactured company identification markings on both sides of the vehicle. In accordance with FAA AC 150/5210-20A, decals, corporate signs, or company logos shall be at least 12 inches in diameter/square. Lettering shall be at least 3 inches in height with contrasting background color. Vehicles shall also be equipped with headlights, taillights, and flashers that shall be used between sunset and sunrise, or when visibility is low.
- F. Vehicles which operate unescorted within the Restricted Area but outside the work area shall be equipped with an omni-directional amber flashing light mounted above the cab, which can be seen from a distance of 300 feet, and which shall be used whenever the vehicles is within the Restricted Area. Such vehicles shall be operated by personnel possessing authorized PDX security badges and Port driving permits.
- G. When outside the work area, all Contractor personnel, vehicle, and equipment movement within the airside security fence shall be under control of the Contractor's personnel authorized by the Port to perform escort driver responsibilities with the Contractor's approved escort vehicle(s).

1. In addition to being equipped with the amber omni-directional flashing light and company identification markings described in Paragraphs E and F above, the Contractor's escort vehicle(s) shall have signs mounted on the front and back. Signs shall consist of a black background and yellow lettering containing the Contractor's name and the words, "ESCORT ONLY." Signs shall be readable from a distance of 300 feet. Escort vehicle(s) shall have an FAA orange and white checked flag, 3 feet by 3 feet minimum, attached to a pole mounted on the rear bumper, and visible from 300 feet at all angles.
2. Prior to assuming escort driver responsibilities, the escort vehicle driver shall possess an authorized PDX security badge with escort driver endorsement/icon.
3. The escort vehicle driver shall serve as liaison and shall be responsible for transporting all workers to and from the work area.
4. Personnel and vehicles authorized to be in the Restricted Area shall remain with the escort vehicle(s) while traveling to and from the work area.
5. Vehicles may be escorted in convoy formation. Convoy vehicles shall travel in close formation, and the escort vehicle driver shall control speed to maintain safety. Convoys shall normally consist of no more than three vehicles or two trucks and trailers plus the escort vehicle, unless otherwise approved by the Port.
6. All of the Contractor's activities within aircraft movement areas shall have an additional escort provided by Port personnel.

1.8 OTHER SECURITY AND SAFETY REGULATIONS

- A. No smoking will be allowed within the Restricted Area except as designated by the Port.
- B. Adequate hearing protection (earplugs or earmuffs) shall be furnished by the Contractor for personnel in AOA's to eliminate the chance of ear damage.
- C. While driving or working in the Restricted Area, there shall be no devices in or on ears other than those used to protect hearing or communicate company business.
- D. Use a guide person when it is necessary to back vehicles out of work areas within the Restricted Area.
- E. Confine parking, loading, and unloading of vehicles and equipment to within the work area.
- F. Construction equipment that extends 20 feet or more above ground level shall be approved by the Port prior to being moved onto worksite. Equipment that may be lowered readily shall be lowered at night, during reduced daytime visibility, and when not in use.
- G. If directed by the Port, construction equipment that cannot be lowered below the 20-foot height limitation shall be lighted at night and during periods of reduced daytime visibility. Light shall be mounted on highest point of equipment; shall be omni-directional; and shall consist of, as a minimum, one 100-watt bulb or equivalent A19 or A21 LED enclosed within an aviation red lens. Also, for daytime operations, mount an FAA-approved three-foot-square orange and white checkered flag at the high point.
- H. Place barricades or stakes around perimeters of work areas as shown on the drawings. Work area limits shall be staked with 3-foot stakes at 50-foot intervals in areas of dirt or grass.

- I. All radio communication with FAA ground control will be coordinated through Port Airside Operations and performed by Port personnel only.
- J. Ensure that the Restricted Area is kept continuously free of construction debris, equipment, and/or materials that might endanger or be ingested by aircraft.
- K. The use of caution tape is not allowed within the Restricted Area.
- L. For emergency purposes, all escort vehicles shall be equipped with radio, telephone, or similar devices for contact by Port security or operations personnel. In the event of an emergency, be prepared to move workers, vehicles, and equipment immediately at the direction of the Port.
- M. Report emergencies to the Port and to the airport communications center (503-460-4000).
- N. When cranes are used, the following requirements shall be met:
 - 1. An FAA-approved, 3-foot orange and white checkered flag and a solid red light shall be mounted at the highest point on the crane.
 - 2. During daylight hours with severe visibility problems or heavy fog, cranes shall not operate.
 - 3. The Port will determine when visibility problems exist and will coordinate and designate requirements for position and location of flag and light.

1.9 REMEDIES OF THE PORT UPON VIOLATION OF REGULATIONS REFERENCED OR CONTAINED IN THIS SECTION

- A. In addition to any other rights or remedies that the Port may have in the event that the Contractor, subcontractor, anyone directly or indirectly employed by any of them, and anyone for whose acts any of them may be liable fails to comply with the regulations referenced or contained in this section, the Port shall have the right to:
 - 1. Revoke the PDX security badge, superintendent endorsement/icon, escort driver endorsement/icon, flagger endorsement/icon, or driving permission of the offending individual and/or the Contractor permanently or for a prescribed period of time.
 - 2. Suspend the work or any portion thereof and continue the suspension until completion of any investigation or evaluation by the Port and full compliance with any corrective measures which the Port may reasonably require.
 - 3. Require the Contractor to provide to the Port a written plan, satisfactory to the Port, to demonstrate the Contractor's ability to prevent future violations.
- B. The Contractor shall be fully liable to the Port for any costs or damages incurred by the Port as a result of any breach of security or violation of security regulations by the Contractor. The Contractor shall also be liable to reimburse the Port for any fines, penalties, assessments, judgments or other costs imposed upon the Port as a result of the Contractor's breach of security or violation of security regulations, as described herein. As used herein, reference to the Contractor shall include all of its employees, agents, subcontractors, suppliers, or other invitees.
- C. The Contractor shall defend, indemnify, and hold harmless the Port against any and all claims of any nature made against the Port by any party resulting, in whole or in part, from the Contractor's breach of security or security violations. Defense shall be provided by legal counsel acceptable

to the Port. As used herein, reference to the Contractor shall include all of its employees, agents, subcontractors, suppliers, or other invitees.

END OF SECTION 013513

SECTION 014500 - QUALITY CONTROL

PART 1 - GENERAL

1.1 INSPECTION AND TESTING

- A. No work shall commence or be covered until approved by the Port.
- B. Unless otherwise specified, the Port will perform acceptance tests (surveys, measurements, or evaluations called for in the specifications or deemed necessary by the Port).
- C. Prior to requesting acceptance tests, the Contractor shall perform check tests (monitoring of construction products, methods, and progress to assure work acceptability). Include check testing costs in the price(s) bid; no separate payment will be made for this work.
- D. The Port will have the right to perform various types of tests at any time prior to formal acceptance. This may include evaluation of line, elevation, grade, depth, thickness, compaction, density, material, composition, pressure, or other analyses deemed necessary by the Port.
- E. Acceptance tests by the Port will be initiated by the Contractor's request for approval.
 - 1. Acceptance surveys will be performed by the differential leveling method, using a mutually agreed upon grid not to exceed 25-feet transverse by 50-feet longitudinal.
 - 2. Compaction testing will be conducted in accordance with ASTM D6938 for subgrade, subbase, and aggregate base.
- F. The Contractor shall allow sufficient time in its schedule to accommodate Port acceptance testing. No separate payment will be made for delays or standby during this time.
- G. Results of the Port's acceptance tests will be made known to the Contractor as soon as practical; however, it remains the responsibility of the Contractor to obtain the specified requirements at all times. Any delay in advising the Contractor of test results shall not act as a waiver of this responsibility.
- H. Acceptance tests which fail to meet the specified requirements may be re-checked by the Port after the Contractor takes remedial action. The cost of re-checking shall be borne by the Contractor.
- I. Furnish, for approval or evaluation by the Port whenever requested, samples of materials as directed. These samples shall be completely representative of the materials or products proposed to be used in the work. The results will be used as a basis for acceptance or rejection in accordance with the specifications for the particular material(s).
- J. Specific testing tasks are specified in individual sections as required.

1.2 WELDING

- A. The Port will hire an approved third-party testing agency to provide the inspection and testing of all welds as required by Chapter 17 of the IBC and OSSC.
- B. Coordinate the fabrication/erection inspection and testing of all welds through the Port. This inspection and testing will be performed by an AWS-certified welding inspector in the case of visual inspection and by an NDT Level II-certified inspector in the case of nondestructive testing. The inspectors and inspection will be as outlined in AWS D1.1, Clause 6.
- C. All fabrication/erection welds will be inspected 100 percent visually and all “tension complete penetration” welds will be 100 percent nondestructively tested by the designated welding inspector(s) unless otherwise approved by the Port. All “compression complete penetration” welds will be 25 percent nondestructively tested. The inspection/acceptance criteria of all welds will be AWS D1.1, Clause 6.
- D. The Port’s designated inspection/testing company will submit original copies of test reports directly to the Port with copies to the Contractor.
- E. In addition to the required fabrication/erection inspection, the Port may also provide verification inspection (both visual and NDT) of the Contractor-installed welds. Allow some contingency in the work schedule to allow for Port inspection. No time extensions or standby charges will be allowed in the event that the Port elects to provide additional inspection. Visual, U/T, and magnetic particle inspection methods will be used for pipe piles and fabricated steel inspection.
- F. Rejection of any portion of a weld inspected on a less than 100 percent basis shall require inspection of 100 percent of that weld. All welds which do not meet the requirements of the specifications shall be repaired and retested as necessary at no additional expense to the Port. Inspection by the Port shall in no way relieve the Contractor of responsibility for the performance of welding which meets the requirements of said specifications for quality and workmanship.
- G. All welders, welding operators, and tackers shall be City of Portland-certified by an independent testing laboratory (approved by the Port) as qualified for the materials, processes, and types of welds being performed. The testing and certification shall be as specified in AWS D1.1. Welds installed using unqualified procedures or welding performed by non-qualified or incorrectly qualified welders shall be rejected, removed, and replaced by the work of properly qualified personnel at no additional expense to the Port.
 - 1. All welders shall be project-qualified 3G and 4G unless the Contractor can provide documentation that all project-related welding will be performed in either the flat or horizontal positions, in which case 2F and 2G qualifications are acceptable.
 - 2. Prior to commencement of welding, submit copies of certification for each person who will do welding on the job.

END OF SECTION 014500

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 TEMPORARY UTILITIES

- A. The Contractor may use water and electric power from Port-owned facilities at no cost, as available.
- B. Maintain temporary facilities in a safe and proper manner and completely remove from the site prior to final acceptance.
- C. Provide labor and equipment for temporary lines and services at no additional cost to the Port.

1.2 SANITARY FACILITIES

- A. Toilet facilities will be available without charge, as designated by the Port.

1.3 TEMPORARY HEAT

- A. Furnish and maintain temporary movable heating units where temporary heat is required or requested by the Port. When temporary heat is required in a space for operations such as plastering and painting, provide temporary radiators, fans, piping, etc., and fuel required for same until final acceptance of the building.

1.4 FIRE PROTECTION

- A. Provide adequate firefighting equipment to contain an equipment fire. Make available and accessible in the work area.
- B. Provide fire protection as required by Oregon Administrative Rules, Division 3, Chapter 437, Subdivision F, for building construction and demolition.

1.5 TEMPORARY CONSTRUCTION WALLS AND BARRICADE WALLS

- A. Where fire-resistance-rated temporary walls are indicated or are required by authorities having jurisdiction, construct walls according to the rated assemblies.
- B. For non-rated temporary walls, construct partitions consisting of 3 5/8-inch metal studs at 16 inches on center, with 5/8-inch thick Type X gypsum board applied to the public side of the wall. Finish public side of gypsum board to a level 4 finish unless it is in a back-of-house area or will have applied graphics. If the wall will have graphics applied to it finish the public side to a level 5 finish. If the wall is in a back-of-house area provide a level 2 finish. Paint public-facing side of walls with one coat of primer and one coat of Port white. Confirm height of walls with

the Port prior to installation. No mechanical fasteners shall be used to attach temporary walls to terrazzo flooring. All materials and workmanship shall be in accordance with Division 9.

C. Temporary Barricade Walls:

1. Where temporary barricade walls are indicated and allowed by authorities having jurisdiction, provide one of the following or equal:
 - a. Rented barricade walls obtained from Mal-Wal Barricades that are erected, maintained, and removed by a Mal-Wal authorized installer such as Diamond Specialties Inc., 22825 NW Dogwood, Hillsboro, OR 97124; contact Brian Hathaway; by office phone: (503) 640-4699, by cell phone: (503) 860-7984, or by email: malwal@frontier.com.
 - b. RealWall from STARC Systems.
 - c. Temporary construction wall from Edge Guard.
2. Temporary barricade walls are non-rated and non-structural and shall not be used to support personnel, materials, or other structures in any way.
3. Height shall be from floor to ceiling unless indicated otherwise.

D. Locks for Doors within Temporary Walls and Temporary Barricade Walls:

1. Locks, including cylinders, shall be Schlage, no substitution.
2. Locks shall be of the type that remain locked so that when the doors are shut they are automatically locked and are openable from the inside with the knob, latch, or handle and from the outside with a key.
3. Door thickness of 1 3/8 inch or less: Provide a Schlage F series lock or equivalent with a Schlage C/SC4 keyway 6 pin KNK cylinder.
4. Door thickness of 1 3/4 inch or more: Provide a Schlage ND or L series lock with a Schlage C/SC4 keyway 6 pin LFIC cylinder.
5. Provide construction cylinders with a zero biting (blank key with no cuts). Schlage construction core SCH 23-030-ICX.
6. The Port will provide the core inserts. Coordinate the timing of the core insert replacement with the Port.

1.6 INTERIOR BARRIERS

- A. Install and maintain barricades to keep the public out of areas where work is being performed, material is being stored for acclimating, adhesive is being cured, or for any other reason people or materials need to be protected. Remove barriers when not needed in an area.
- B. Temporary construction type barriers, such as candlesticks with caution tape, will be accepted in the following situations:
 1. Night-time work hours. Remove at the end of each night's work.
 2. Where material is laid out to acclimate.
- C. Barriers at holdrooms may be rows of holdroom seating lined up end to end.
- D. All other barriers will be Port-furnished, Contractor-installed Tensabarrier.

1.7 INTERIOR DUST CONTROL

- A. Submit a dust control plan when work includes demolition, removal of materials, or other building interior activities that could create dust or other small airborne particles.
- B. The dust control plan shall include, but not be limited to, the following:
 - 1. Measures to be implemented before, during, and after any dust generating activity for the duration of the work.
 - 2. Measures to ensure there are no visible dust emissions in the air or collecting on surfaces outside the work area.
 - 3. Measures to prevent tracking of dust into non-work areas by feet or equipment.
 - 4. Measures for clean-up of settled or tracked dust found outside the work area.
- C. Do not proceed with the work until the Port has approved the plan. Perform dust control in accordance with the approved plan.
- D. Excessive airborne particles within the work area may require that the Contractor cover smoke detectors during that portion of the work and then uncover them when opening the area for use at the end of the work shift.
- E. If plastic sheeting is used for containment of dust, it shall be fire-retardant treated sheeting.
- F. Do not allow general nuisance dust outside the work area to exceed the American Conference of Governmental Industrial Hygienists guideline of 10 mg/m³. The Port reserves the right to perform dust level monitoring to ensure there is no violation of this limit.

1.8 CONTROL OF SILICA IN CONCRETE

- A. When coring, cutting, breaking up, grinding, or removing concrete or performing other such activities, control the release of dust from concrete that contains or has the possibility to contain silica that could be released with the dust in levels greater than those allowed under the OR-OSHA Silica Rule, OAR-437-002-0382, Table Z3. Control measures shall comply with Table 1 of the new OR-OSHA silica rule, OAR-437-002-1057.

1.9 NOISE CONTROL

- A. Comply with the requirements of OAR 437, Division 2/G, 1910.95, Occupational Noise Exposure.
- B. Where the public and tenants are exposed to construction noise that is harmful or disruptive, take steps to mitigate the noise level. Adequate mitigation may require performing some items of work outside of normal working hours. Coordinate with the Port.

1.10 SOLID WASTE MANAGEMENT

- A. The Contractor shall be solely responsible for determining the proper disposition of all solid waste, including documentation showing that the solid waste and recyclables are not regulated as

hazardous waste in accordance with state and federal regulations. Upon request, this documentation shall be made available to the Port.

B. Receptacles:

1. All drop boxes, bins, totes, and cans located in areas exposed to wind or precipitation shall be equipped with metal, canvas, or plastic covers. Drop boxes, bins, totes, and cans shall be kept closed at all times, except when adding waste material.
2. Where possible, large receptacles such as drop boxes, bins, and totes shall be placed on impervious areas such as concrete or asphalt pavement at locations away from public traffic, storm drain inlets, ditches, and other conveyances.
3. If any receptacle is observed to be leaking any liquid, it shall be considered a solid waste leachate. The Contractor shall immediately take action to contain the leakage.
4. Discarding of aerosol cans, used oil, paints, solvents, fluorescent light tubes, or any hazardous waste into the receptacle is strictly prohibited.
5. Receptacles larger than 33-gallon capacity used for recyclables and general solid waste and portable toilets shall not be located within 50 feet of a storm drain inlet, drainage ditch, surface water, or wetland.
6. Ensure that all recyclable and solid waste receptacles are kept closed, are not overfilled, are not leaking, and general housekeeping is performed in the area.
7. All recyclable and general solid waste hauled from the Port shall be secured prior to leaving the work site so that no waste material blows out, falls out, or leaks out during transportation to the designated offsite location.

1.11 DISPOSAL

- A. Dispose of waste material off Port property and in accordance with applicable state, federal, and local regulations.
- B. Burning or burying of waste material within Port property is not permitted.
- C. Disposal of waste material within a river, stream, wetland, or other waterway or waterfront is not permitted.

1.12 OWNERSHIP OF MATERIAL REMOVED FROM PORT PROPERTY

- A. Unless directed otherwise in the specifications, the Contractor accepts ownership of material removed from Port property under this contract, and accepts all costs and liability associated with its handling, transportation, removal, and disposal. The Contractor releases the Port from any claims, actions, proceedings, damages, liabilities, and expenses of every kind, whether known or unknown, resulting from or arising out of such material.

1.13 PDX TERMINAL DELIVERIES

- A. Schedule the delivery of major system components with the Port at least one 24-hour business day in advance.

1.14 MOVEMENT AND PROTECTION

- A. Movement of construction tools, materials, supplies, fixtures, and demolition debris through the building shall be performed in accordance with the following restrictions:
 - 1. The Port will determine route and time restrictions, as well as time windows for material movement or work that may disturb building occupants.
 - 2. Do not block or prevent public use of building areas without the Port's approval.
 - 3. Use of hand trucks or carts with metal, plastic, or hard rubber wheels/casters will not be permitted. Only pneumatic tires will be allowed.
 - 4. Handle with care to prevent damage to equipment and to property. Should soiling or damage occur, items will be cleaned/repared by the Port at the Contractor's expense. (Exercise special care to protect carpeting, terrazzo, ceramic tile, wall surfaces, elevator surfaces, and doors.)
 - 5. Packing and debris shall be transported in enclosed containers or carts and disposed of off Port property.
 - 6. Clean up any dirt or debris dropped while moving items and equipment through the building.

1.15 PROTECTION OF PORT CARPET

- A. Use only pneumatic tire carts and vehicles on newly installed carpet within the first 72 hours after installation.
- B. Minimize the potential for new and existing carpet delamination, scuffing, or fiber tear-out by operating carts, storage boxes, lifts, and other wheeled items such that all directional changes are made in gentle turns. Otherwise place protection boards over the carpet where hard turns will be made.
- C. Limit use of adhesive-backed plastic protection sheets over new and existing carpet to non-traffic (including foot traffic) areas only. Do not use the protection sheets at any given location for longer than necessary and in no instance shall the duration be longer than one week.

1.16 STAGING, PARKING, AND WORK AREA

- A. Access to and from staging, parking, and work areas shall be as shown on the drawings.
- B. Perform operations and movement within the staging, parking, and work areas in strict conformance with Port rules and regulations.
- C. Employees' vehicles shall be parked in the staging/employee parking area. The Contractor shall be responsible for transporting workers between the parking area and the work area.
- D. Only marked Contractor-owned or operated vehicles required for proper execution of the work will be allowed in the work area. No private passenger vehicles will be admitted.
- E. The area around the terminal building is extremely congested. The Port will attempt to accommodate the Contractor's requests for use of perimeter areas; however, the Port will make the final determination for use of space.

- F. Where the Contractor's lock is used for access through Port gates, mark the lock to identify the Contractor. Place the lock in series with existing locks. Take care to assure that no existing lock is omitted from the series. Remove the Contractor's lock upon completion of the work. Failure to adhere to these requirements will result in the Contractor's lock being removed by the Port.

1.17 STORAGE AND PROTECTION OF MATERIAL AND EQUIPMENT

- A. The Port will designate the area in which the Contractor may store material and equipment.
- B. Protect materials and equipment from damage, pilfering, etc., and fully relieve the Port of this responsibility.
- C. Upon completion of the work, remove unused materials and equipment and restore the area to original condition, including any grading necessary to restore drainage patterns and surface smoothness.
- D. Store materials to be salvaged by the Contractor in the staging area.
- E. Store materials and equipment at least 10 feet from the airport security fence.

1.18 CRANE LIFTS

- A. Coordinate all lift activities with the Port.
- B. Submit a complete lift plan for review by the Port. The lift plan shall be prepared by a qualified person, as defined by OR-OSHA, and shall include, but not be limited to, the following information:
 - 1. A brief narrative describing the reason for the lift, a description of the lift, the lift procedure, and any safety concerns. Include date and time of lift, anticipated weather conditions and wind speeds, and the load weights. Calculated load weights may be used in lieu of measured load weights only when the latter are unavailable.
 - 2. A scaled plan view of the lift site including:
 - a. Work area, including position and configuration of the crane, and any set-up, support, and/or haul vehicles. Include any buildings or other obstructions that may interfere with the lift.
 - b. Initial lifting position and final placement of the load including load radius.
 - c. Safety zones to be established and demarcated around the crane to deter entry into the work area, to include pinch points.
 - d. Safety zones to be established, demarcated, and controlled by qualified Contractor personnel inside buildings, if applicable, to identify the swing of the load with a buffer.
 - e. Utilities above and below ground and associated structures located within the work area.
 - 3. A scaled elevation view of the lift site including:
 - a. Crane location relative to the final placement site.
 - b. Buildings with heights clearly marked.
 - c. Boom height and lifting radius.

4. Specification for the crane to be used in the lift including make, model, dimensions, weights, working range diagram, and lift capacity chart. Include a copy of the crane's current certification.
 5. A lift analysis including:
 - a. Tabulation of the gross load weight including the weight of all blocks and rigging tackle.
 - b. Rigging attachment points and special rigging requirements. Include a rigging diagram showing the configuration of all rigging to be used in the lift.
 - c. Gross rated capacity of the crane in the configuration specified.
 - d. Calculation of the percentage of the crane's rated capacity at which the lift will be made.
 - e. Crane-imposed loads.
 - 1) Axle loads of crane in transit configuration.
 - 2) Outrigger loads at load radius in the configuration that produces the greatest load effect on any one outrigger.
 - 3) If required by the Port, provide calculations signed and stamped by a structural engineer licensed in the State of Oregon showing these loads do not exceed Port design criteria of lift site and access route.
 6. A copy of the current load test shall be submitted to the Port. Load tests shall be performed:
 - a. In accordance with the manufacturer's requirements, generally on an annual basis.
 - b. If a load bearing component on the crane requires assembly at the work site. This would include lattice boom cranes that necessitate reassembly of booms that were disassembled for transit to the work site, however this does not include installation of counterweights.
 - c. At 100 to 110 percent of the anticipated load.
 7. A list of all personnel involved and a copy of their National Commission for the Certification of Crane Operators (NCCCO) certifications for the crane operator, and proof of training for riggers and signal persons. In addition, submit documentation from the crane employer that the operator has been trained and evaluated in the safe operation of assigned crane activities. Designate one qualified person to supervise and manage all lift activities.
 8. A communications plan detailing methods of communication to be used with personnel operating the crane. Provide radio communications for all nighttime lifts and any time Contractor personnel are not in visual contact with the crane operator. Provide make, model, and operating frequency of radios used for approval (by FAA if within airport transition zones). Designate one person to handle all communications with the crane operator.
 9. A list of all Port, tenant, or other activities affected by the lift activities and how each effect will be remedied.
- C. Upon request, the Port will provide existing drawings of the work area and/or design criteria for work area and access route.

1.19 EXTERIOR WARNING SIGNS AND BARRICADES

- A. Before starting work, provide and have available all signs, flaggers, escort vehicles and drivers, barricades, and lights necessary for protection of the work.

- B. Install and maintain adequate warning signs and lighted barricades to protect property and personnel in the work area. Barricades shall be weighted or anchored to prevent overturning from wind.
- C. Barricade design shall conform to recommendations in the Manual on Uniform Traffic Control Devices, Type II barricade, minimum. Mount a Type A barricade warning light flasher on top of each barricade. Keep flashers visible and operating at all times.
- D. Space barricades a maximum of 20 feet apart unless directed otherwise by the Port.
- E. Relocate barricades, at the direction of the Port, whenever required to maintain protection of the work area or when changing work areas.
- F. Open trenches, excavations, or obstructions not being actively worked shall be marked with lighted and weighted barricades which can be seen from a reasonable distance.

1.20 EXTERIOR SITE PROTECTION

- A. Take extreme care to ensure no work-related debris or other loose items are allowed to be blown by wind or jet engine blast. The Contractor shall be responsible for any resulting damage to jet engines and/or other property arising from failure to secure and/or protect debris, tools, supplies, or other loose items.

1.21 TRANSPORTATION OF MATERIAL

- A. If shipments of hazardous material (including hazardous debris, contaminated soil or water, and hazardous waste) will be unloaded onto or loaded from Port property, the Contractor shall have a qualified person available onsite when shipments are received or made who is current with U.S. Department of Transportation (DOT) approved training for the transportation of hazardous materials. The storage and shipment of hazardous waste shall also comply with the requirements of these specifications.
- B. Ensure that hazardous goods and material delivered to or from the construction site meet applicable DOT labeling and placarding requirements.
- C. Properly characterize and manifest waste material leaving Port property for disposal.
- D. Minimize and abate the creation of nuisance dust conditions during the loading and unloading of vehicles used to haul debris, rubble, soil, trash, or other material that may create dust during loading or unloading operations.
- E. Before leaving the loading area, adequately secure and cover vehicles used to haul debris, rubble, soil, trash, or other material that may be blown or fall during transportation onsite or over public thoroughfares.
- F. In areas that may result in the tracking of soil, sediments, or hazardous materials on the wheels of hauling equipment outside areas that are enclosed by erosion and silt/sediment control devices, the Contractor shall provide the means and methods to remove these materials prior to the vehicle

exiting the controlled area. If water wash stations are used, the Contractor shall provide systems for the collection, treatment, and disposal of wheel wash water and accumulated sediment.

1.22 TRAFFIC CONTROL

- A. The work is in areas where there will be traffic involved in terminal activities and cargo handling. Make arrangements for the safe handling of traffic in the work area, and coordinate the work with the Port.
- B. Construct and maintain bridges across trenches and/or temporary access ways to carry appropriate traffic in a safe manner. Mark open trenches, excavations, or obstructions with lighted and weighted barricades which can be seen from a reasonable distance. Plan for traffic interruption in the work progress schedule.
- C. Schedule and phase work to maintain movement of traffic through the work area. Provide signing, barricades, markers, flaggers, and other traffic regulation to maintain safe and efficient control of traffic around or through the work area. Types of devices and their use shall conform to Part VI of the Manual on Uniform Traffic Control Devices for Streets and Highways - USDOT/FHWA.
- D. Submit traffic control plan to the Port for approval. Demonstrate how traffic will be handled. Include dates, times, location, traffic control devices, and a brief description of the work operations to occur.
- E. Keep pavement surfaces free and clear of dirt, mud, and debris.
- F. Keep a minimum of one lane of traffic open at all times. Provide flaggers to control congestion. At the end of each workday, open all lanes to traffic.

1.23 HAUL ROUTE CONSTRUCTION AND MAINTENANCE

- A. The term "haul route" applies to any designated paved or unpaved road used by the Contractor for travel of construction equipment.
- B. Construction equipment shall follow agreed-upon haul routes.
- C. Do not cross electrical or communication cables unless protected by approved means.
- D. Equipment operated on haul routes over existing pavements shall conform to legal load limits for public highways unless approved protection is provided. Keep pavement areas free of material spillage and foreign matter at all times. Continuously clean pavement surfaces with regenerative-air vacuum sweepers.
- E. Maintain haul routes over unpaved areas in good usable condition during the course of the work. Sprinkle roads as necessary to prevent dust.
- F. Restore paved roads to original condition at the conclusion of construction and prior to final acceptance. Remove haul roads over unpaved areas by scarifying and smooth grading in conformance with existing drainage patterns.

- G. Construct, maintain, and restore haul routes to the satisfaction of the Port. Cost shall be considered an incidental item.

1.24 HARD HATS AND SAFETY CLOTHING

- A. Wear hard hats and high visibility clothing that comply with current ANSI requirements. All safety equipment shall be in good repair.

1.25 SIGN POLICY

- A. Policy for Contractor identification signs at Portland International Airport:
 - 1. Sign, and all aspects of installation, shall have prior approval of the Port.
 - 2. Displayed sign shall be for the prime Contractor only.
 - 3. Exterior sign shall not exceed 3 feet by 5 feet. The size of an interior sign shall be approved by the Port prior to use.
 - 4. Sign shall be professionally prepared.
 - 5. Signing is allowed only at work area.
 - 6. No lighted sign permitted.
 - 7. Sign shall be removed upon completion of work.

END OF SECTION 015000

SECTION 015719 - ENVIRONMENTAL CONSTRUCTION CONTROLS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes required environmental practices for construction work on Port property.

1.2 SUBMITTALS

- A. Where hazardous materials or products are stored in quantities of 42 gallons or more, submit a spill response that includes a map indicating storage site locations.
- B. If total petroleum product storage, including fuels and oil (e.g. drummed lubricants), exceeds 1,320 gallons, obtain special approval from the Port and submit a Spill Prevention Control and Countermeasures (SPCC) plan in accordance with federal regulations (40 CFR 112). Total storage is equal to the sum of all drums, receptacles, tanks, etc. equal to or greater than 55 gallons, including mobile storage tanks that are parked on site.
- C. Submit a monthly written report that provides:
 - 1. A complete inventory of all hazardous waste generated that month;
 - 2. The current inventory of Contractor-generated hazardous waste stored on Port property; and
 - 3. The date(s) the waste was placed into onsite storage.

1.3 EMERGENCY CONTACT AND NOTIFICATION INFORMATION

- A. Provide a notification sign with Contractor's appropriate emergency contact information, and including the Port's emergency dispatch number, in the following locations:
 - 1. Areas where fuel, hazardous waste, or hazardous liquid products are dispensed or stored.
 - 2. Areas where more than 42 gallons of hazardous materials are stored.
 - 3. On-board mobile motor fueling equipment. (If the mobile fueling equipment leaves Port property, the Port emergency dispatch notification sign shall be removed prior to leaving.)
 - 4. Tank farms on Port property.
 - 5. Asphalt or concrete plants on Port property.

1.4 RELEASE OF CONTAMINANTS

- A. Protect against the entry of petroleum products and other contaminants into a waterway (including river, stream, slough, wetland, etc.), other drainage system (including stormwater collection systems) or overland to any drainage ditch or swale.
- B. In the event of a spill outside a containment area:
 - 1. Notify the Port immediately if a spill occurs or if contamination is discovered which indicates a release of petroleum products or other contaminants to the environment.

2. Immediately contain and remove the spilled material.
 3. If contaminants enter a waterway, immediately begin containment and cleanup.
- C. Notify the appropriate regulatory agencies and provide written follow-up. Submit to the Port copies of all reports, written follow-ups, documentations, and agencies responses.
- D. All cleanup costs, reporting requirements, fines, and fees shall be the sole responsibility of the Contractor.

1.5 SPILL KITS

- A. A clearly labeled spill kit shall be located within 50 feet of the following:
1. Fueling areas.
 2. Liquid products storage and dispensing areas.
 3. Hazardous materials storage areas.
 4. Vehicle and equipment maintenance areas.
 5. Tank farm areas on Port property.
 6. Asphalt or concrete plant areas on Port property.
 7. Any surface water if work is being performed in the vicinity.
- B. Spill kits shall contain an ample supply of oil-absorbent ground booms, socks, pads, bagged sorbents, flat-blade shovels, salvage drums suitable for collection of spilled materials and absorbents, provisions for preventing spilled materials from entering any storm drain inlet or conveyance, supplies to protect at least two storm drain inlets, and personnel protective equipment suitable for the quantity and type of hazardous substances handled.
- C. Provide spill kits as described above for the following types of mobile equipment:
1. Mobile fueling, maintenance, and storage equipment.
 2. Mobile equipment service vehicles (including oilers).
 3. Mobile tanker equipment (e.g. tanker vehicles used to apply bituminous tack material) and hazardous material transport vehicles.

1.6 HAZARDOUS MATERIAL MANAGEMENT

- A. General:
1. Minimize the volume and number of locations where hazardous material is used and stored by the Contractor on Port property.
 2. Minimize the type and volume of material used onsite that will be regulated as hazardous waste when the material becomes spent or unfit for further use.
 3. Ensure that any hazardous material or hazardous substance for which the use, storage, or disposal is regulated under federal, state, or local requirements is handled and managed in accordance with the requirements applicable to those substances.
 4. The use of degreasing or cleaning products containing chlorinated solvents such as 1,1,1-trichloroethane, perchloroethylene, and methylene chloride is prohibited unless approved by the Port.
 5. Immediately clean up hazardous material spilled outside any designated secondary containment system in accordance with Oregon DEQ, U.S. EPA, or Oregon OSHA requirements. Clean up, as soon as possible, any hazardous materials spilled inside a secondary containment system.

6. Where hazardous materials or products are stored in quantities of 42 gallons or more, submit a spill response plan including a map indicating storage site locations.
7. Ensure that every hazardous material container is clearly labeled with its contents or original product label. Indicate the Contractor's name and contact number on the side of every container greater than 5 gallons in size with legible size lettering. If hazardous material is transferred into a secondary container (i.e., any container used to transfer material from a storage location to a point of use or storage prior to use, including but not limited to buckets, pails, pans, drums, bottles, cans, etc.), this container shall also be labeled with the contents, the Contractor's name, and contract number.
8. Storage of flammable or reactive hazardous material/waste on Port property or within 50 feet of the Port property line is not permitted unless stored inside a building or other portable device approved by the Fire Marshal (or airport fire department within the PDX security fence).
9. Keep an up-to-date file or notebook of Safety Data Sheets (SDS) for all hazardous materials located by the Contractor on Port property. Upon request, this information shall be made available to the Port.
10. All containers used for storing, dispensing, or accumulating hazardous materials shall be placed inside a structure or under cover whenever possible. All containers not inside a structure shall be equipped with secondary containment.
11. Do not locate fuel and hazardous substances storage and dispensing areas where runoff flows from nearby roof drains.

B. Onsite Storage of Petroleum Products:

1. Do not install or use underground storage tanks (USTs) on Port property.
2. Storage racks and vehicles shall be equipped with drip collection devices and enclosures.
3. Provide an emergency dispenser shut-off switch. Switch shall be located at least 15 feet from tanks or the minimum distance approved by the Fire Marshal (or airport fire department within the PDX security fence), whichever is greater.
4. Use bollards or other vehicle restraint devices (e.g., Jersey barriers) to prevent vehicles from damaging tanks and containment area.
5. Tanks, containment areas, and dispensing pads shall be under cover or under a temporary shelter to minimize contact with, or accumulation of, precipitation, unless otherwise approved by the Port.

C. Large Containers (20 Gallons or More):

1. Store containers of hazardous liquids on an impervious surface (i.e., concrete, asphalt, or field-erected system [heavy plastic ground sheeting] capable of withstanding normal wear and tear from construction equipment and other traffic throughout the course of the work) and inside or under cover in a location that does not have any storm drain inlets or floor drains within 50 feet of the storage location.
2. For containers of liquids that are not, or cannot, be stored inside a structure, equip the storage area with some form of secondary containment. Acceptable secondary containment devices may include, but are not limited to:
 - a. Field constructed secondary containment area such as a perimeter berm with impervious interior surface; or
 - b. Movable pallet systems with integrated secondary containment and covers (these systems are available in one, two, and four drum capacities).
3. Secondary containment systems shall have sufficient capacity to contain 10 percent of the total volume of hazardous material containers stored, or 110 percent of the volume of the largest container, whichever volume is greater.

4. Dispense from liquid-filled containers using a manually operated pump. Do not dispense from gravity feed spigots. Containers shall be used in an upright vertical position.
- D. Small Containers (Less Than 20 Gallons):
1. Store containers of flammable liquids in National Fire Protection Association (NFPA) Code 30 approved safety cabinets, or equal.
 2. Store containers of non-flammable liquids in cabinets or other devices equipped with secondary containment.
- E. Empty Containers:
1. A container is deemed empty when all possible material has been removed using normal practices (e.g. pouring, pumping, aspirating, etc.) and no more than 1 inch of residue remains on the bottom of the container or inner liner.
 2. Transferring of the liquid heel at the bottom of containers into other containers shall be done only in areas equipped with secondary containment.
 3. Do not store empty containers upside down, although they may be stored in a horizontal position if the bungs/lids are securely fastened.
 4. Do not rinse empty containers on the work site.
 5. Manage empty or unwanted containers as solid waste in accordance with the requirements of this section.
 6. Do not offer empty containers to employees or the public on Port property.

1.7 HAZARDOUS WASTE MANAGEMENT

- A. General:
1. Obtain the necessary generator identification numbers from the Oregon Department of Environmental Quality (DEQ). Perform required characterization tests to determine if waste material produced is regulated as hazardous waste. Manage, transport, and dispose or recycle such waste in accordance with state and federal regulations.
 2. In addition to that required by federal or state regulations, the storage of containers containing hazardous waste shall be in accordance with the requirements described elsewhere in this section.
 3. Disposal of hazardous waste down any floor drain, sink, storm drain inlet, onto the ground, or into any water conveyance is strictly prohibited by state and federal law.
 4. Submit a monthly written report to the Port that provides:
 - a. A complete inventory of all hazardous waste generated that month;
 - b. The current inventory of Contractor-generated hazardous waste stored on Port property; and
 - c. The date(s) the waste was placed into onsite storage.
 5. Keep all required hazardous waste documentation, including, but not limited to, testing records, inspection logs, manifests, and contingency plans onsite during the course of the work. Upon request, the Contractor shall make this information available to the Port.
 6. Loading and transportation of hazardous waste from Port property shall be in accordance with the requirements described elsewhere in this section.

1.8 VIOLATION OF STORM WATER SYSTEM REQUIREMENTS

- A. The Contractor is responsible for reviewing Port Ordinance 361, Storm Water Regulation, available at https://cdn.portofportland.com/pdfs/Ordinance%20361_%20Storm%20Water%20Regulation.pdf or

from the Port upon request, and the Port's Storm Water System Enforcement Rules adopted in accordance with Ordinance 361 (also available upon request). Violation of Ordinance 361 and the Storm Water System Enforcement Rules will be considered acts or omissions for purposes of the Contractor's indemnification obligation set forth in the Contract Documents, and will represent a material breach of the Contract for which the Port may exercise all remedies available at law or under this Contract, including but not limited to the enforcement mechanisms and penalties provided for under such ordinance and rules. Such enforcement mechanisms and penalties may include, but not be limited to:

1. Suspension or revocation of a permit or other authorization to engage in a particular activity on Port property; and
2. Issuance of a citation punishable by a fine as authorized under ORS 777.990(2) and 778.990.

1.9 WASHDOWNS

- A. The washdown or hosing of hazardous material storage areas, refueling areas, or tank farm and containment areas is prohibited unless the Contractor provides for the collection and disposal of the washdown liquids.
- B. Limit washdown of vehicle and equipment service pads and other work areas. Limit steam cleaning and high pressure or other types of washing of vehicles and equipment. Liquids from these activities shall be collected, managed as contaminated wastewater, and properly disposed.

1.10 APPLICATION AND MANAGEMENT OF COATING SYSTEMS

- A. General:
 1. Onsite storage, dispensing, and management of coating systems, paints, solvents, thinners, and related products that contain hazardous materials shall be in accordance with the requirements of this section.
 2. Unless otherwise specified by the Port, make all reasonable attempts to use low volatile organic compound (VOC) content coating systems in the course of the work.
 3. Minimize the use of aerosol spray products containing VOCs or VOC propellants.
 4. Do not dispose of aerosol spray product containers as general solid waste unless the can has been depressurized and all liquid contents drained into a waste container outfitted with a device specifically designed to puncture aerosol cans. The waste container shall also be outfitted with a carbon filter apparatus to minimize the loss of VOCs into the air and managed as solid or hazardous waste in accordance with the requirements of this section.
 5. Take all reasonable steps to minimize public exposure to VOCs and nuisance odors.
 6. Waste generated from painting operations such as scrap paint and solvents may be regulated as hazardous waste. Manage these materials in accordance with the requirements of this section.
 7. If a spray booth is used at the work site for the application of coating systems, ensure that the spray booth is properly serviced, maintained, and operated in accordance with local, state, and federal worker safety and environmental regulations, including permitting.
 8. Containers with small amounts of residual paint or solvent, unapproved paints, bad batches, or dirty cleaning solvents shall not be allowed to evaporate in open air. All liquids shall be poured, pumped, aspirated, or otherwise placed into a waste container, reused, or returned to the vendor.

9. The mixing and dispensing of all coating systems and paints for use, as well as the cleaning of coating system and painting equipment, shall be conducted over an impervious surface at least 50 feet from the nearest storm drain inlet, drainage ditch, surface water, or wetland. Any spill shall be immediately cleaned up.
10. Other Conditions: If sandblasting operations are performed, take all reasonable precautions to prevent particulate matter from becoming airborne. Reasonable precautions include, but are not limited to, providing temporary enclosed shelters for sandblasting operations and providing covers or containment for the storage of spent abrasive materials. Sandblasting waste shall be collected and managed as hazardous or solid waste.
11. Disposal of any latex paint or washwater down any drain, onto the ground, or into any stormwater conveyance system is prohibited.
12. Manage empty containers in accordance with the requirements of this section.

B. Coating Systems, Paints, and Solvents Containing VOCs:

1. Take all reasonable precautions to minimize VOC emissions to the environment during the storage and use of these products, including, but not limited to:
 - a. Keeping all product and waste containers tightly closed, except when dispensing or filling the container.
 - b. Using airless sprayers to the maximum extent practicable.
 - c. Assuring that the spray nozzles are appropriately sized for the application.
 - d. Minimizing the use of thinners to the amount recommended by the manufacturer for the specific application.
 - e. Minimizing the volume of coating systems and paints that is premixed for use, but may not be immediately applied.
 - f. Not spraying cleaning solvents through spray equipment to clean buckets, lines, guns, and nozzles into the open air. Spray cleaning solvents into a container to capture and reuse as much cleaning solvent as possible.

C. Latex Paints:

1. Take all reasonable precautions to prevent latex paint emissions to the environment during the storage and use of these products, including, but not limited to:
 - a. Keeping product and waste containers tightly closed, except when dispensing or filling the container.
 - b. Minimizing the use of solvents, water, and detergents for the cleanup of latex painting equipment.
 - c. Not spraying cleaning solvents or water through spray equipment to clean buckets, lines, guns, and nozzles into the open air. Spray cleaning solvents or water into a container to capture and reuse as much cleaning solvent as possible.

1.11 EQUIPMENT FUELING AND MAINTENANCE

A. Ultra Low Sulfur Diesel (ULSD) Fuel:

1. All diesel-powered off-road vehicles and equipment used on the project site for three consecutive days or more shall be fueled with ultra low sulfur diesel. This includes vehicles with engine horsepower ratings of 50 HP and above, and internal combustion engines used to power generators, compressors, and similar equipment.
2. The ULSD fuel shall contain no more than 15 parts per million sulfur.
3. If sufficient quantities of ULSD are not available, or if the price of ULSD is at least 3 percent greater than diesel fuel with a sulfur content in excess of 15 parts per million, the

Port may allow the use of higher sulfur fuel. Such exceptions will be made on a case-by-case basis.

B. Fueling Operations:

1. Do not top off vehicle tanks when fueling on Port property.
2. Where practicable, fuel and liquid product dispensing shall be done over an impervious surface such as a concrete pad or field-constructed temporary pad (e.g. an aggregate pad with membrane bottom and side liner), at least 50 feet from the nearest storm drain inlet, drainage ditch, surface water, wetland, or other drainage conveyance. Install temporary impervious covers over storm drain inlets. Provide storm drainage diversion away from drainage ditches, surface water, wetlands, or other drainage conveyances.

C. Equipment and Vehicle Maintenance Operations:

1. Comply with requirements specified elsewhere in this section regarding onsite storage and use of hazardous material and management of hazardous or solid waste produced during the course of the work.
2. Perform daily equipment checks for leaking oil and fluids. Visible spills shall be immediately cleaned up.
3. Equipment with leaking oil or fluids shall be repaired prior to being operated on Port property.
4. To the extent practicable, park vehicles and equipment indoors, under a roof, or on an impervious surface to prevent stormwater contact in the area.
5. If a vehicle or equipment is known to be leaking oil or other fluids, and service cannot be completed that day, install a drip pan or absorbent materials to contain the leak until service and repair is completed.

D. Equipment Maintenance Areas:

1. To the extent practicable, vehicle and equipment servicing shall be done indoors or under cover.
2. Perform vehicle and equipment maintenance over an impervious floor or pad (concrete, chemical-resistant coated asphalt, or other field-erected system). Ensure that contaminated liquids including, but not limited to, contaminated stormwater are not discharged to any storm drain inlet, drainage ditch, swale, or other surface water conveyance.
3. For equipment that cannot practicably be moved to an equipment service area, take all reasonable precautions to prevent chemical spills onto the ground or into water. Use protective ground sheeting or absorbent materials beneath and around equipment areas that may be vulnerable to chemical spills.
4. Contaminated stormwater from vehicle and equipment maintenance areas shall not be allowed to discharge into the stormwater collection system, discharge onto the ground, or run overland to any drainage ditch or swale.
5. Solvent or caustic parts washing stations shall not be used outdoors, unless the area is covered and equipped with appropriate secondary containment as described elsewhere in this section.

E. Mobile Equipment Service Vehicles (Including Oilers):

1. Multi-purpose mobile equipment maintenance vehicles (oilers) that are equipped with multiple tanks or containers of lubricants, fuels, hydraulic fluids, greases, chemicals, etc., may be used on Port property under the following conditions:
 - a. The vehicle is equipped with a spill kit.

- b. The vehicle is equipped with a sufficient supply of containers for the collection of fluids that may be removed from the equipment being serviced (e.g. used oil, waste antifreeze, chemicals, etc.).
 - 2. If equipment service is performed within 50 feet of a storm drain inlet, drainage ditch, surface water, or wetland, the Contractor shall install a flexible storm drain cover over the storm drain inlet or place oil absorbent booms or socks around the inlet or other drainage conveyance prior to commencing work.
 - 3. Mobile tanker, mobile fueling, or equipment service personnel shall be appropriately trained in spill response techniques. At least one spill response-trained person shall be present at all times where fueling, fuel staging, or fuel transfers are made.
 - 4. Mobile motor fueling equipment shall be equipped with an emergency dispenser shutoff switch located in the cab or on the opposite side of the vehicle or trailer from the pump(s).
 - 5. Overnight/weekend parking of mobile equipment service vehicles shall not occur within 50 feet of the nearest storm drain inlet, drainage ditch, surface water, or wetland area unless the storm drain inlet, ditch, and all drainage conveyances leading to the surface water or wetland have been equipped with oil absorbent booms or pads.
- F. Storage and Handling of Waste Oil, Fluids, and Filters:
- 1. The Contractor shall determine whether or not waste oil, fluids, filters, and other materials generated from onsite maintenance activities are regulated as hazardous waste under state and federal regulations.
 - 2. Regardless of the regulatory status of waste oil, fluids, filters, and other material, if the waste material is accumulated and stored on Port property, the Contractor shall provide proper storage.

END OF SECTION 015719

SECTION 015720 – CONSTRUCTION EQUIPMENT IDLING, FUEL, AND ENGINE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes construction equipment idling, fuel, and engine standards.
- B. At all times during performance of the work, the Contractor and its subcontractors shall minimize diesel emissions generated by applicable vehicles and equipment and otherwise comply with all construction equipment idling, fuel, and engine standards set forth in this section. The requirements herein apply to all construction activity, vehicles, and equipment, as specified, unless waived in accordance with Article 1.8 below. Marine propulsion engines and marine auxiliary engines are exempt from these requirements.

1.2 DEFINITIONS

- A. Alternative Fuel: A fuel other than petroleum diesel, including without limitation: compressed natural gas (CNG); liquified petroleum gas (LPG); ethanol; electricity; and 99 percent or greater renewable diesel, biodiesel, or renewable diesel/biodiesel blends. The Contractor shall obtain written approval from the Port for the use of any alternative fuel not expressly described in this paragraph.
- B. Applicable Vehicles and Equipment: Any nonroad construction equipment (including but not limited to front-end loaders, excavators, tractors, cranes, and generators) with a diesel engine over 25 horsepower, and diesel-powered on-road concrete mixers and dump trucks.
- C. BACT: Best available control technology.
- D. CARB: The California Air Resources Board, a state regulatory agency charged with regulating the air quality in California.
- E. DERA: The U.S. Diesel Emissions Reduction Act.
- F. Diesel Particulate Matter: The solid or liquid particles found in the air which are released through diesel combustion exhaust. Exposure to diesel particulate matter increases the risk of heart attack, stroke, and cardiovascular disease, exacerbates asthma, and can lead to low-weight and pre-term births. Diesel particulate matter is also a known human carcinogen as determined by the International Agency for Research on Cancer.
- G. DOC: Diesel oxidation catalyst. A flow-through device designed to reduce harmful diesel emissions such as carbon monoxide, hydrocarbons, and diesel particulate emissions, with a diesel particulate matter removal efficiency of at least 20 percent.
- H. DPF: Diesel particulate filter. A device designed to trap diesel particulate matter above a certain size with a removal efficiency of at least 85 percent.

- I. Emission Control Device: Technology added to equipment to reduce harmful emissions; includes DPFs and DOCs.
- J. EPA: The U.S. Environmental Protection Agency: A federal regulatory agency charged with protecting human health and the environment.
- K. Nonroad: Construction equipment and vehicles that fall under the EPA nonroad engine equipment category, which includes all diesel equipment not intended for highway use. For purposes of this section, nonroad includes only diesel construction equipment and vehicles with engines larger than 25 horsepower, which includes tractors, excavators, dozers, scrapers, and other construction equipment and vehicles.
- L. Recognized Service Provider: An installer authorized by the manufacturer of the emission control device.

1.3 DIESEL EMISSIONS CONTROLS – VEHICLES AND EQUIPMENT

- A. Limit idling of applicable vehicles and equipment to 5 minutes when the vehicle or equipment is not in use or in motion, except as follows:
 - 1. When traffic conditions or mechanical difficulties, over which the operator has no control, force the vehicle or equipment to remain motionless.
 - 2. When operating the vehicle or equipment's heating, cooling, or auxiliary systems using a diesel-powered engine is necessary to accomplish the intended use.
 - 3. To bring the vehicle or equipment to the manufacturer's recommended operating temperature.
 - 4. When the outdoor temperature is below 40°F or above 90°F.
 - 5. When needed to repair the vehicle or equipment.
 - 6. When the safety of work site personnel or visitors may be compromised if the vehicle or equipment is turned off; for example, where the vehicle or equipment protects workers that are working in a trench.
 - 7. When the vehicle or equipment meets EPA Tier 4 emissions standards or has been retrofitted with a DPF.
 - 8. Under other circumstances specifically authorized by the Port.
- B. The Contractor shall post "Five Minute Limit" anti-idling signs near vehicle and equipment work site entrances and/or gathering areas where signage is highly visible to onsite workers. All nonroad vehicles and equipment shall have decals/prompts visible to the operator to remind them to shut down the vehicle or equipment after 5 minutes of inactivity.

1.4 ELECTRIFICATION

- A. Lights, compressors, and any other stationary equipment shall be electrical grid-powered to the extent practicable. The Contractor shall apply for a grid power connection as early as possible before commencing construction at any given site and shall distribute power as needed throughout the site(s) so as to ensure the availability of grid power.

1.5 DIESEL FUEL AND ENGINE REQUIREMENTS

- A. Diesel equipment and vehicles are required to use renewable R99 diesel fuel unless otherwise approved by the Port.
- B. No applicable vehicles and equipment shall be brought on the work site without meeting the following requirements, unless retrofitted with an Emissions Control Device, powered by Alternative Fuel, or a waiver has been granted by the Port, as specified in this section.
 - 1. Nonroad Equipment:
 - a. Only EPA Tier 4 nonroad engines are allowed.
 - 2. On-Road Concrete Mixers and Dump Trucks:
 - a. Only 2007 and newer diesel concrete mixers and dump trucks are allowed.

1.6 ALTERNATIVE EMISSIONS CONTROL DEVICE RETROFITS

- A. Applicable vehicles and equipment which do not meet the diesel engine standards under this section may alternatively be retrofitted with an Emissions Control Device utilizing the BACT described below.
 - 1. DPFs, or an Emissions Control Device with an equivalent removal efficiency, shall be used wherever the use of such a device is feasible in the opinion of a Recognized Service Provider. Both active and passive filter regeneration mechanisms shall be considered for DPFs.
 - 2. A DOC may be used on a limited basis as described in this section, in cases where a DPF is determined by a Recognized Service Provider to be infeasible for technical or safety reasons. The Contractor shall provide a statement from a Recognized Service Provider that a DPF is not suitable for the vehicle or equipment.
 - 3. New and existing DOC retrofits are not allowed.
 - 4. Allowable DPFs are those that are on the EPA's and/or CARB's verified technology list at the time of retrofit acquisition.
 - 5. Allowable DOCs for on-road concrete mixers and dump trucks are those that are on the EPA's Verified Retrofit Technology List and CARB's then-current list of verified retrofits.
 - 6. All BACT devices shall be maintained in good working order for the duration of the project.

1.7 VEHICLE AND EQUIPMENT REGISTRATION

- A. At least 45 days prior to commencing work, the Contractor shall submit a vehicle plan showing all applicable vehicles and equipment to be used on the work site. Include information showing the registration of all applicable vehicles and equipment in the database located on the Clean Air Construction Standards website at www.Portland.gov/cac/TheYard. The Contractor shall ensure that all subcontractors register their applicable vehicles and equipment in the same manner within the same period. No work shall commence until the Port has verified compliance with the registration requirements set forth in this subsection. Required vehicle/equipment information includes:
 - 1. Owner name or rental agency name.
 - 2. Owner role (e.g., Contractor, subcontractor, supplier).
 - 3. Type (e.g., excavator, dozer, loader).
 - 4. Engine information including manufacturer, serial number, and family number (information on locating engine information is provided in the Clean Air Construction Standards website).

5. On-road or nonroad.
6. Model year.
7. Horsepower.
8. Diesel Engines: Indicate whether any EPA- or CARB-verified aftermarket emissions control devices have been installed, and the type of control device (DPF or DOC).

1.8 WAIVERS; EXEMPTION

- A. When submitting the vehicle plan required under Article 1.7, the Contractor may request a waiver from the Port for each vehicle or piece of equipment that cannot meet the engine emissions tier or BACT requirements set forth in this section. All technology and safety-based waiver requests shall be accompanied by a written statement from a Recognized Service Provider substantiating the basis of the waiver request. The Contractor shall receive an approved waiver from the Port before bringing any non-compliant vehicle or piece of equipment to the work site.
- B. Technology Waiver. A technology waiver may be granted when:
 1. The vehicle or equipment cannot be retrofitted with BACT device for a valid mechanical reason.
 2. A retrofitted engine would not function properly.
 3. A retrofit device would void the engine warranty.
 4. No EPA- or CARB-certified BACT device exists for the specific engine.
 5. No compliant rental equipment is available within 100 miles of the work site.
- C. Safety Waiver. The vehicle or equipment may qualify for a safety waiver when the required BACT device would obscure operator lines of sight or otherwise impact worker safety.
- D. Unique Circumstances Waiver. A waiver may be provided by the Port during the course of the project when a noncompliant vehicle or piece of equipment is required to respond to an emergency, as a substitute for another vehicle or piece of equipment in need of repair/maintenance, or other unforeseen circumstance. In such cases, the Contractor may orally request approval for an exemption, then must also provide a written waiver request after initial oral approval. Such exemptions shall be valid only for the duration of the unique circumstance provided for under this paragraph.

1.9 COMPLIANCE

- A. Should the Port discover, during the course of the project, that the Contractor or its subcontractors or suppliers are violating any requirements set forth in this section, the Port may issue a notice to the Contractor stating the specifics of the violation and the timeframe within which the Contractor must remedy the violation. The remedy timeframe will not exceed 30 days. If the Contractor fails to remedy the violation in accordance with the Port's notice, the Port may order the Contractor to stop work until the violation is remedied, or exercise other remedies available to the Port under this contract. The Contractor will not be allowed an extension of the contract time or a change in the contract price as a result of the violation.

END OF SECTION 015720

SECTION 016116 - VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes volatile organic compound (VOC) restrictions for product categories listed below under the definitions article. All products of each category that are installed shall comply; Port project goals do not allow for partial compliance.

1.2 DEFINITIONS

- A. VOC-Restricted Products: All products of each of the following categories when installed or applied on-site in the building interior:
 - 1. Carpet, carpet tile, and adhesive.
 - 2. Paints and coatings.
- B. Interior of Building: Anywhere inside the exterior weather barrier.
- C. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives and seam sealers, resilient base adhesives, and pipe jointing adhesives.
- D. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

1.3 REFERENCES

- A. CAL (VOC) - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers (including Addendum 2004-01); State of California Department of Health Services.
- B. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute.
- C. GreenSeal GS-36 - Commercial Adhesives; Green Seal, Inc.
- D. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; www.aqmd.gov.
- E. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; www.aqmd.gov.
- F. SCS (CPD) - SCS Certified Products; Scientific Certification Systems.

1.4 SUBMITTALS

- A. Evidence of Compliance: Submit for each different product in each applicable category.
- B. Product Data: For each VOC-restricted product used in the project, submit product data showing compliance, except when another type of evidence of compliance is required.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Tests shall be performed by an independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All VOC-Restricted Products may not be listed below. Provide products having VOC content of types and volume not greater than those specified in State of California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Current Carpet and Rug Institute Green Label Plus certification; www.carpet-rug.org
 - b. Current SCS Floorscore certification; www.scs-certified.com.
 - c. Current SCS Indoor Advantage Gold certification; www.scs-certified.com.
 - d. Product listing in the CHPS Low-Emitting Materials Product List at www.chps.net/manual/lem_table.htm.
 - e. Current certification by any other agencies acceptable to CHPS.
 - f. Report of laboratory testing performed in accordance with CHPS requirements for getting a product listed in the Low-Emitting Materials Product List; report shall include laboratory's statement that the product meets the specified criteria.
 - 2. Product data submittals showing VOC content are NOT acceptable forms of evidence.
- B. Adhesives, Coatings, Seam Sealers, Primers, and Joint Sealants: Provide only products having volatile organic compound (VOC) content not greater than required by South Coast Air Quality Management District Rule No. 1168.
 - 1. Evidence of Compliance: Report of laboratory testing performed in accordance with requirements.
- C. Aerosol Adhesives: Provide only products having volatile organic compound (VOC) content not greater than required by GreenSeal GS-36.
 - 1. Evidence of Compliance: A current GreenSeal Certification.
- D. Paints and Coatings: Provide products having VOC content not greater than that required by South Coast Air Quality Management District Rule No. 1113.
 - 1. Provide coatings that comply with the most stringent requirements specified in 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.

2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
 3. Evidence of Compliance: Report of laboratory testing performed in accordance with requirements.
- E. Carpet, Carpet Tile, and Adhesive: Provide products having VOC content not greater than that required for CRI Green Label Plus certification.
1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Current Green Label Plus Certification.
 - b. Report of laboratory testing performed in accordance with requirements.
- F. Other Product Categories: Comply with limitations specified elsewhere.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. The Port reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Port.
- B. All additional costs to restore indoor air quality due to installation of non-compliant products shall be borne by Contractor.

END OF SECTION 016116

SECTION 017000 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 INSPECTION OF WORK AREA

- A. Examine the work area and become satisfied as to the conditions of the work involved and the quantities of materials required for the performance of the work.
- B. Prior to any drilling, coring, or cutting of existing floor slabs, use ground-penetrating radar or similar to identify location of embedded items such as utilities, conduit raceways, prestressing/post-tensioning cables, reinforcing steel, etc.
- C. Address penetrations through new or existing structures as indicated in the contract documents. Where the contract documents do not cover the conditions encountered, submit a coordinated plan showing penetration sizes and locations required by all trades for Port approval prior to proceeding with the work.

1.2 NOTIFICATION TO PORT

- A. Notify the Port at least 48 hours before intent to commence work. Do not start work until authorized to do so by the Port.

1.3 VERIFICATION OF MEASUREMENTS

- A. Before ordering material or doing work, verify measurements of the building and be responsible for the correctness of same. Submit discrepancies to the Port before proceeding with the work. The Contractor will not receive extra compensation for verification of measurements or for work performed based on incorrect measurements that, could have been, but were not verified by the Contractor.

1.4 EXISTING UTILITIES

- A. Notify the Oregon Utility Notification Center (OUNC), and owners of underground utilities within the construction area or within affected public rights-of-way or easements, via the “one-call” notification system (1-800-332-2344) in advance of the commencement of excavation activities, as prescribed in Oregon Revised Statutes (ORS) 757.541 to 757.571, Excavation Regulations.
- B. Notify the Port when the “one-call” request is being initiated.
- C. Protect existing utilities, and other public and private facilities and improvements which are to remain in place, from damage in the course of the work.

- D. Perform any shutdown of utilities only when such shutdown will not interfere with Port or tenant operations. Schedule shutdowns through the Port, allowing time for adequate coordination.
- E. In the event of interruption to field-located utility services as a result of the work, promptly notify the Port first, and then the proper authority. Cooperate with said authority in restoring service as promptly as possible. If required, the Contractor shall install suitable temporary service until permanent repair is completed and bear the cost of repair and temporary service.
- F. Unless noted as abandoned, expose utilities only by hand excavation.
- G. Notify the Port of all utilities exposed. Do not disrupt or cut utilities until identified and the Port has approved the cut.
- H. Repair damages that result from execution of the work at no additional cost to the Port. Repairs shall be subject to approval of the Port.

1.5 CEILING SYSTEMS

- A. Work requiring the temporary removal and subsequent replacement of existing ceiling systems shall be performed in a manner such that, when complete, the ceiling is equal to its original condition.
 - 1. All components shall be clean and free of damage.
 - 2. The ceiling plane shall be maintained at a constant elevation.
 - 3. Light fixtures, if present, shall be reinstalled at their original location if removed.
 - 4. Insulating materials, if originally present, shall be replaced, providing uniform coverage.
- B. Portions of the terminal building have an aluminum slat type suspended ceiling system — Alcan “Planar.” This system is composed of parallel formed aluminum strips, approximately 4 inches wide by 10 feet in length, snapped into special suspended cross-bars which are on about a 4-foot spacing. In some areas, approximately 1 1/2-inch-thick insulating batting is lying atop the system. The following are some recommendations concerning the handling of this ceiling system.
 - 1. The slats are formed from relatively thin aluminum and are susceptible to damage, kinking in particular, if improperly handled. Where applicable, slats are provided with end caps; butt joints have a hidden splice piece.
 - 2. When a small area of ceiling is to be removed temporarily, mark each piece (use a method that will not damage the surface) so it can be replaced at the same location, then carefully snap out individual slat pieces and store them in a secure location where they will be properly supported and kept free from accidental damage. A recommended procedure is to fabricate simple wire hooks which hook to cross bars of the ceiling system immediately adjacent to, and unaffected by, the removal work; the individual slats can then be suspended individually from these hooks.
 - 3. If insulating batting is present, simply slide it to the side, atop adjacent ceiling and batting.
 - 4. After necessary inspections, the ceiling shall then be reinstalled in the reverse procedure with insulation in place. The finished ceiling system shall be level.
 - 5. The Port will inspect the reinstalled portion of the ceiling. Repair or replacement of any damaged elements shall be the Contractor’s responsibility under the direction of the Port.
- C. Port personnel will, upon request, be available to advise and train the Contractor’s personnel in the procedure described.

1.6 POWER-ACTUATED FASTENERS (PAFs)

- A. Do not use PAFs for attachments for any work other than the following.
 - 1. Attachment of confined space signage.
 - 2. Anchorage of non-structural light gauge cold-formed steel framing to structure.
 - 3. Attachment of steel floor decking.
 - 4. Suspended ceiling applications, in accordance with ASCE 7-10, Chapter 13, if accompanied by calculations stamped and signed by an engineer registered in the state of Oregon, and in the following applications:
 - a. Shear loading.
 - b. Tension loading where the service load on any individual fastener in concrete does not exceed 90 pounds, or in steel does not exceed 250 pounds.
 - 5. Slack wires where there is no continuous loading in tension for items such as light fixtures.
- B. PAFs shall have silencers.
- C. PAFs may only be used during night work hours when the public and tenants are not present and during the day in areas where the public and tenants are well separated from the sound. Coordinate with the Port prior to performing the work.

1.7 EXISTING PORT CARPET

- A. The existing Port carpet is a custom broadloom carpet that is abnormally thick and dense, and is difficult to work with. The field carpet is tufted with some loop and the border carpet is loop. Any new carpet required by the work for patching or repairing existing carpet shall be obtained from Port maintenance. All work with new and existing carpet shall be performed by individuals skilled at working with broadloom carpet.
 - 1. Match finish elevation at seams including between the new and existing carpet. This requires extra care at the border carpet because some of the cushion attached to the border carpet has differing thickness.
 - 2. Coring holes through concrete floor slab: Carefully cut and remove the carpet 1/4-inch beyond the diameter of the hole that will be cut or bored into the floor. Align drill bit or coring bit in center of the carpet cut-out and hold securely so drill bit or coring bit doesn't wander and catch on the carpet edge. Do not bolt the core drill to the floor without prior approval from the Port. Attach the drill to a large piece of steel plate that is heavy enough to hold it in place. If the core drill needs to be bolted to the floor, do not bolt core drill to slab through carpet; instead, carefully cut and remove approximately 3' x 3' of carpet and adhesive so that core drill can be attached directly to the floor. Locate and size the area to be removed by cutting across pattern in as few spots as possible. Cut across areas of solid color where possible as this best hides the seam and helps hide pattern match issues. When removing carpet from floor, start from the center and work out toward an edge to reduce possible damage to the edge of the carpet. Follow instructions for installing patches as described above.
 - 3. In all instances, apply sealer to both primary and secondary backings. This is most critical for the border carpet which has an attached cushion. The sealer shall be applied to the backing yarns where they meet the attached cushion. Allow sealer to dry before gluing the patch into place so as not to contaminate the face yarns.
- B. Patching Existing Carpet:

1. Submit a drawing identifying where each patch will be located. Show size of each patch and dimensions from adjacent features and existing seams. Obtain Port approval for location and dimensions prior to proceeding with the work. The following are guidelines for patching existing Port carpet.
2. To patch very small holes (less than 1" x 1") or pulls in carpet: Cut yarn strands off and apply super glue to the small hole or where yarn pull came out of.
3. To patch small holes in carpet (larger than 1" x 1"): Top cut just outside of problem area. Remove excess carpet and clean substrate. Super glue or seam seal raw edge of cut carpet. Locate same area of pattern in a small scrap of carpet, furnished by Port maintenance, and cut out a fill piece of the appropriate size. Once trimmed to a good fit, seam seal or super glue the fill piece edges. Apply adhesive to substrate and insert patch. Protect area during drying time.
4. To install medium sized patches (e.g. 3' by 3'): Trim existing carpet edges to remove loose or damaged material and so that the patch will cut across pattern in as few spots as possible. Cut across areas of solid color where possible as this best hides the seam and helps hide pattern match issues. Clean adhesive and prep floor as required. Cut the new piece from carpet furnished by Port maintenance, matching fill size and pattern as close as possible. Seal edges of existing carpet on the floor as well as edges of new carpet to be inserted. Adhere carpet to floor and protect area during drying time.
5. Large areas of replacement or where abutting new carpet to existing: Measure four pattern repeats across the width (about 143 inches) of existing adjacent carpet. Measure five pattern repeats down length (about 145 inches) of existing adjacent carpet. Look at the overage roll measurement chart, obtained from Port maintenance, and request from Port maintenance a roll of the same width or slightly narrower than that measured on the existing carpet and has five pattern repeats that is the same or slightly shorter than that measured on the existing carpet, because it is easier to stretch the carpet then to shrink it. Clean any adhesive from substrate and prep floor as required. Seal edges of existing adjacent carpet as well as edges of new carpet being installed. Adhere carpet to floor. Stretch as required to align pattern along edges and within field. Protect area during drying time.

1.8 EQUIPMENT BAR CODE TAGS

- A. Affix an equipment bar coded entity number tag to each item indicated on the drawings to require one. In general, equipment requiring tags include, but are not limited to: baggage handling system components; HVAC equipment; mechanized doors; passenger loading bridges and related equipment such as pre-conditioned air, power supplies and water cabinets; major electrical equipment such as switchgear, transformers, large UPS, sewer lift station components, grease vacuum system components, fire sprinkler system equipment, elevators, escalators, moving walkways, and revenue control equipment. If possible, attach tags adjacent to the equipment manufacturer's name plate, if one exists. If such a name plate doesn't exist, install the tag in a location easily accessible by maintenance personnel. Attach with mechanical fasteners.
- B. Tags shall be as follows:
 1. Minimum 0.02 thick aluminum, anodized a light color such as silver.
 2. Size: 2 1/2" x 1 3/4".
- C. Text shall be as follows:
 1. Port logo followed by PORT OF PORTLAND, and entity number in both text and barcode.
 2. Standard Code 39, I 2 of 5, 2/d DataMatrix, and QR Code with between 2.7 and 15 characters per inch.

3. Block type characters with minimum font size of 12.
 4. Black permanent ink or paint to provide minimal fading under the conditions the tag will experience.
- D. The Port will generate the alphanumeric entity number for each piece of equipment and will provide a list to the Contractor. The Port will also digitally provide the artwork required for printing the Port logo.
- E. Submit three finished sample tags for review.

END OF SECTION 017000

SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section includes cutting, coring, fitting, and patching as required in existing construction.
- B. Perform the work of this section as 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 existing areas and new work damaged by subsequent work.
 - 7. Remove and replace defective and non-conforming work.
 - 8. Repair or removal of hazardous or unsanitary conditions.
 - 9. Uncover portions of the work to provide for installation of ill-timed work.
 - 10. Remove abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring.
- C. Upon Written Instructions:
 - 1. Uncover designated portions of the work for observation of covered work.
 - 2. Remove samples of installed materials for testing beyond that specified.
 - 3. Remove work to provide for alteration of previously installed work.

1.2 SUBMITTALS

- A. Submit a written request to the Port prior to cutting, coring, or alteration which affects the work, the existing facility, or which may affect the structural safety of any portion of the facility. Include:
 - 1. Identification of the project.
 - 2. Description of the affected work.
 - 3. The necessity for doing the cutting, coring, or alteration.
 - 4. The effect on the work, the existing facility, or the structural integrity of the facility.
 - 5. Description of the proposed work:
 - a. The scope of cutting, patching, coring, or alteration.
 - b. The Contractor and trades who will execute the work.
 - c. Products proposed to be used.
 - 6. Alternatives to cutting, coring, or patching.
- B. Submit a written notice to the Port designating the date and the time the work will begin.

1.3 UTILITY SERVICES

- A. Maintain existing utilities indicated to remain, keep in service, and protect against damage.

- B. Include interruptions to existing utilities in the Work Progress Schedule.
- C. Confirm scheduled interruptions with the Port 7 to 14 days in advance of the scheduled interruption. Do not proceed until Port approval has been obtained.
- D. Maintain operation of existing fire sprinkler system. Notify the Port 7 days before system or parts of system must be inactive to allow tie-in of new work. Minimize hazardous exposures during time fire sprinkler system is out of service.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. New Materials: Use materials specified in technical sections of these specifications.
- B. Existing Materials: Determine type and quality of existing materials by inspecting and testing products where necessary.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect existing conditions of the project, especially elements subject to damage or to movement during cutting, coring, patching, and alterations.
- B. Comply with the requirements of Section 017000, Execution Requirements, for investigation prior to penetration of floor slabs.
- C. After uncovering work, inspect the conditions affecting the installation of products or performance of the work.
- D. Report unsatisfactory or dubious conditions to the Port in writing. Proceed with the work only after the Port has provided further instructions.

3.2 PREPARATION

- A. Provide shoring, bracing, and other support as necessary to prevent movement of the structure and to assure the structural safety of that portion of the work.
- B. Provide devices and methods to protect the existing facility and other portions of the work from damage.
- C. Provide protection from the elements for that portion of the existing facility and work which will be exposed by cutting and patching and alterations work.

3.3 CUTTING AND PATCHING

- A. Execute cutting, coring, and demolition by methods which will assure safety, will prevent damage to other work or existing areas to remain, and will provide proper surfaces to receive repairs.
- B. Pneumatic tools will not be allowed without prior written approval.
- C. Fit work air-tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- D. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
- E. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes. Where not specified, match existing materials and finishes for color, texture, and appearance.
- F. Where removal results in adjacent spaces becoming one, rework floors and ceilings to provide smooth planes without breaks, steps or bulkheads, unless otherwise indicated.
- G. Unless shown otherwise, perform cutting so that a smooth transition with new work is possible and terminate existing surface along a straight line at a natural line of division.
- H. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Port review and request instructions.
- I. Restore work that has been cut or removed.
- J. When new work abuts or finishes flush with existing work, make a smooth and workmanlike transition. Patched work shall match existing adjacent work in texture and appearance so that the patch or transition is invisible from a normal viewing distance.
- K. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to nearest intersection or natural break.
 - 2. For an assembly, refinish the entire unit.
- L. At completion of work of each trade, clean area and make surfaces ready for work of successive trades.
- M. 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.
- N. At completion of work in each area, return space to a condition suitable for use.

3.4 ALTERATIONS

- A. Remove existing work as indicated and as required to accomplish new work.
 - 1. 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.

2. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- B. Adhere to requirements for cutting and patching where applicable.
- C. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
- D. Verify that construction and utility arrangements are as shown.
1. Report discrepancies to the Port before disturbing existing installation.
 2. Beginning of alterations work constitutes acceptance of existing conditions.
- E. Keep areas in which alterations are being conducted separate from other areas that are still occupied.
1. Provide, erect, and maintain temporary stanchions or barricades.
 2. Noise, Dust, Vibration, and Odors: Operations that may result in high levels of noise and dust, vibration, odors, or other disruption to occupants will not be allowed without mitigating measures acceptable to the Port.
- F. Services (including but not limited to HVAC, plumbing, baggage conveyor, fire protection, electrical, and telecommunications): 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 and if necessary, modify installation to allow access or provide access panel.
 2. Where existing systems or equipment are not active and the work requires 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 services shown as abandoned are actually abandoned.
 5. Remove abandoned pipe, ducts, conduits, and equipment, where shown, including those above accessible ceilings. Remove back to source of supply where possible otherwise cap stub and tag with identification. Patch holes left by the removal using materials specified for new construction.
- G. Clean existing systems and equipment that become unclean due to the work.
- H. Remove demolition debris and abandoned items from work area and dispose of off-site.

END OF SECTION 017329

SECTION 017419 - CONSTRUCTION WASTE RECYCLING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes recycling goals for construction and demolition work on Port property.
- B. The Contractor shall salvage, reuse, recycle, compost, mulch, or use for energy recovery as many construction, demolition, and yard waste materials as is feasible and cost-effective. The Contractor shall coordinate all salvaging and recycling operations.
- C. Unless specified elsewhere in this contract, salvaged and/or recycled material shall be removed from Port property in accordance with local, state, and federal regulations.

1.2 PROJECT-SPECIFIC RECYCLING

- A. Items to be recycled on this project may include, but are not limited to:
 - 1. Metals (ferrous and non-ferrous).
 - 2. Wood.
 - 3. Corrugated cardboard.
 - 4. Plastics.
 - 5. Electronics and electrical components.
 - 6. Paper.
 - 7. Drywall board.
 - 8. Carpet.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 024119, Selective Interior Demolition

1.4 SUBMITTALS

- A. Initial Pre-Construction Estimate:
 - 1. Before site work begins, submit a completed site waste recycling form for work performed on this project.
 - 2. Use the form attached at the end of this section.
 - 3. The initial form submitted shall identify the types of construction or demolition materials that are expected to be recycled, salvaged, or disposed of over the duration of the work and the destination of the material.

- B. Monthly Reports: Submit updated site waste recycling forms on a monthly basis. The updates shall include the actual amounts of construction and demolition materials recycled, salvaged, or disposed of during the previous period.
 - 1. Report quantities of materials in tons, based on weight slips, bills of lading, etc. If actual quantity of material is unknown, provide an estimate calculated to the nearest 0.5 ton.
 - 2. Use the form attached at the end of this section.
- C. Closeout Project Summary: Prior to contract closeout, submit a final site waste recycling form that records the total amount of construction or demolition materials recycled, salvaged, or disposed of during the duration of the project. Use the form attached at the end of this section. Attach the following information to the form:
 - 1. Summary statement identifying and explaining any discrepancies between the amounts originally estimated and the actual amounts.
 - 2. Copies of receipts, weight slips, bills of lading, etc. for all materials.

1.5 QUALITY ASSURANCE

- A. Comply with applicable regulations pertaining to collection, management, hauling, and disposal of waste or recyclable materials.
- B. Use facilities properly permitted by appropriate jurisdictions.

1.6 RECYCLING PROCESSORS AND FACILITIES

- A. Contact Metro (503-234-3000) for a comprehensive list of recyclable materials and recycling facilities in the Portland area.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide handling, containers, storage, signage, transportation, and other items as required to facilitate the recycling process during the duration of the work.
- B. Designate a “waste coordinator” who shall be responsible for coordinating the Contractor’s recycling measures and verifying the accuracy of the recycling information submitted.
- C. Train employees, subcontractors, and suppliers on proper recycling procedures, as appropriate for the work.
- D. Conduct recycling operations to ensure minimum interference with roads, streets, walkways, and other adjacent occupied and used facilities.

- E. Do not sell or distribute recycled or salvaged items to the public from Port property.

3.2 ON-SITE MATERIALS SORTING

- A. Coordinate with recycling and salvage vendors to determine if materials targeted for recycling will be source-separated or co-mingled on site. Space or other site-specific factors shall be considered.
- B. Separate recyclables from non-recyclable waste materials, trash, and debris.
- C. Provide one or more appropriately marked containers or bins for collecting and managing recyclable waste until it is removed from the work site.
 - 1. Post list of acceptable and unacceptable materials at each container and bin.
 - 2. Inspect containers and bins for contamination and remove contaminated materials if found.

END OF SECTION 017419

SITE WASTE RECYCLING

CONTRACTOR: _____
PROJECT TITLE: _____
PROJECT NO: _____
LOCATION: _____

☐ Initial Pre-Construction Estimate ☐ Monthly Report (from: _____ to _____, 20____) ☐ Closeout Project Summary*

RECYCLED MATERIAL	Not generated at this site	Collected for offsite recycling (tons)	Collected for salvage/reuse (tons)	Collected for disposal (tons)	Destination (facility name and location)	Comments
Concrete						
Asphalt						
Metals (ferrous)						
Metals (non-ferrous)						
Land-Clearing Debris						
Wood						
Corrugated Cardboard						
Plastics						
Electronics and Electrical Components						
Other (specify)						
Other (specify)						

* For closeout project summary, include copies of documentation (receipts, bills of lading, etc.) with this report.

Signature of Waste Coordination Certifying
Accuracy of this Report

Title

Date

Print Name

Contact Telephone Number

See reverse for instructions and additional information.

Submit with Contractor's Monthly Request for Payment to Construction Contract Manager.

INSTRUCTIONS FOR COMPLETING SITE WASTE RECYCLE FORM

This form is to be used multiple times throughout the project as shown in the examples below.

MATERIAL SUMMARY

☒ Initial Pre-Construction Estimate

RECYCLED MATERIAL	Not generated at this site	Collected for offsite recycling (tons)	Collected for salvage/ reuse (tons)	Collected for disposal (tons)
Concrete		X		
Asphalt	X			
Metals (ferrous)	X			
Metals (non-ferrous)	X			
Land-Clearing Debris		X		
Wood			X	
Corrugated Cardboard	X			
Plastics		X		
Electronics and Electrical Components	X			
Other (specify)				X

Pre-Construction Estimate: Prior to beginning work at the site, submit a completed form that indicates the TYPES (not amounts) of site materials expected to be recycled, salvaged, or disposed of. Do this by marking the appropriate columns for each material as shown.

MATERIAL SUMMARY

☒ Monthly Report (from: 4/1 to 4/30 , 2005)

RECYCLED MATERIAL	Not generated at this site	Collected for offsite recycling (tons)	Collected for salvage/ reuse (tons)	Collected for disposal (tons)
Concrete		35		
Asphalt	X			
Metals (ferrous)	X			
Metals (non-ferrous)	X			
Land-Clearing Debris		15		
Wood			1.5	
Corrugated Cardboard	X			
Plastics				
Electronics and Electrical Components	X			
Other (specify)				X

Monthly Report: Each month, submit a completed form that indicates both the TYPES and QUANTITIES (to the nearest 0.5 ton) of site materials that were actually recycled, salvaged, or disposed of during the monthly reporting period. Do this by marking the appropriate columns for each material as shown.

MATERIAL SUMMARY

☒ Closeout Project Summary

RECYCLED MATERIAL	Not generated at this site	Collected for offsite recycling (tons)	Collected for salvage/ reuse (tons)	Collected for disposal (tons)
Concrete		35		
Asphalt	X			
Metals (ferrous)	X			
Metals (non-ferrous)	X			
Land-Clearing Debris		65		
Wood			4.5	
Corrugated Cardboard	X			
Plastics		.5		
Electronics and Electrical Components	X			
Other (specify)				6.5

Closeout Summary: After all site work is completed, submit a completed form that indicates both the TYPES and QUANTITIES (to the nearest 0.5 ton) of site materials that were actually recycled, salvaged, or disposed of during the monthly reporting period. Do this by marking the appropriate columns for each material as shown.

IN ADDITION, include documentation (weight receipts, bills of lading, etc.) that support the numbers reported.

- Forms shall be filled out completely and legibly. All amounts shall be reported in tons.

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 REDLINE DRAWINGS

- A. Upon completion of the work, and as a requirement of final acceptance, submit to the Port a drawing set showing all as-constructed changes and information.
- B. See Section 013300, Submittal Procedures, for requirements.

1.2 OPERATION AND MAINTENANCE MANUALS

- A. See Section 013300, Submittal Procedures, for requirements.

1.3 MAINTENANCE INSTRUCTION

- A. Instruct Port maintenance personnel in the operation, adjustment, and preventive maintenance procedures for the system/equipment.
- B. Schedule instruction through the Port.

1.4 TRAINING

- A. Train Port personnel in the operation of the system/equipment.
- B. Schedule training through the Port.

1.5 CLEANUP

- A. Remove debris from the staging and work area(s).
- B. Thoroughly sweep paved areas prior to final acceptance.
- C. Areas to be opened for Port operations shall be thoroughly swept clean and approved by the Port prior to opening.

1.6 CERTIFICATES OF FINAL APPROVAL

- A. Submit originals or clearly readable copies of certificates of approval from the inspection authority prior to application for final payment.

1.7 RETURN OF SECURITY IDENTIFICATION BADGES

- A. Prior to final acceptance of the work, return all Port security identification badges to the Port badging office and obtain a receipt for their return. Submit a copy of the receipt to the Port's Construction Contract Manager.

END OF SECTION 017700

SECTION 024119 – SELECTIVE INTERIOR DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes the following:
 - 1. Demolition and removal of selected interior portions of building or structure.
 - 2. Salvage of existing items to be reused.

1.2 REFERENCES

- A. ANSI: American National Standards Institute
 - 1. ANSI/ A10.6: Safety Requirements for Demolition Operations
- B. NFPA: National Fire Protection Association
 - 1. NFPA 241: Standard for Safeguarding Construction, Alteration, and Demolition Operations

1.3 SUBMITTALS

- A. Schedule of Selective Demolition Activities. Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Locations of proposed dust- and noise-control temporary partitions and means of egress.
 - 6. Coordination of continuing occupancy of portions of existing building and of partial occupancy of completed work so that operations continue uninterrupted.
 - 7. Means of protection for items to remain and items in path of waste removal from building.
- B. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.
- C. Pre-Demolition Photographs or Videotapes: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Submit before work begins.

1.4 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this project.

- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Pre-Demolition Meeting: Conduct meeting at project site to review methods and procedures related to selective demolition including, but not limited to, the following:
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.5 PROJECT CONDITIONS

- A. The areas of selective demolition are within an existing building with ongoing occupant activities. Conduct selective demolition so ongoing operations will not be disrupted.
- B. Provide notification of discrepancies between existing conditions and drawings before proceeding with selective demolition.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the work.
 - 1. Known hazardous materials will be removed by the Port before start of the work.
 - 2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify the Port and tenant. The Port will remove hazardous materials under a separate contract.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.6 PROTECTION OF EXISTING WARRANTIES

- A. Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.
- F. Perform surveys as the work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. See Section 260500, Common Work Results for Electrical, for services/systems demolition requirements.

3.3 PREPARATION

- A. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent areas to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified elsewhere.
- B. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.4 GENERAL SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated on the drawings. Use methods required to complete the work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. See Division 1 for fire suppression requirements and for welding, cutting, and burning permit.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly. Comply with requirements in Division 1 regarding solid waste management and construction waste management.
- B. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to the Port.
 4. Transport items to the Port's storage area.
 5. Protect items from damage during transport and storage.
- C. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted, items may be removed to a suitable, protected storage location during selective demolition, cleaned, and reinstalled in their original locations after selective demolition operations are complete.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. Except for items or materials indicated to be recycled, reused, salvaged, or reinstalled, remove demolished materials from project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

3.6 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section includes:
 - 1. Structural steel.
 - 2. Grout.
 - 3. Shear stud connectors.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 099100 "Painting" for surface preparation and priming requirements.

1.3 DEFINITIONS

- A. Structural Steel: Elements of the structural frame as described in ANSI/AISC 303 and indicated on the structural drawings.

1.4 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at project site.

1.6 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Shop Drawings: Show fabrication of structural steel.
1. Requirements:
 - a. The steel detailer shall generate all shop drawing fabrication and installation details from the contract documents, including both structural and architectural drawings (collectively referred to as drawings) and the specifications.
 - b. The use of, reproductions or photocopies of the drawings is not permitted.
 - c. Shop drawings shall contain sufficient detail and information for complete fabrication and erection without reference to the drawings either in fabrication or in erection on-site.
 - d. Where CAD, REVIT or other digital files are provided, it is the responsibility of the detailer to remove all information not directly relevant to the creation of shop drawings including the removal all references to files sources.
 - e. Resubmittals: Clearly identify all revisions to previous submittals.
 - 1) Draw clouded outlines (revision clouds) around revised items or areas of individual sheets.
 - 2) Information outside of revision clouds will not be reviewed.
 2. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
 4. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
 5. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
 6. Identify members not to be shop primed.
 7. Show orientation of hollow structural steel members that are exposed to view for locating seams.
- C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs):
1. Provide in accordance with AWS D1.1 for each welded joint qualified by testing, including the following:
 - a. Power source (constant current or constant voltage).
 - b. For heavy sections, applicable manufacturer's certifications that the filler metal meets the supplemental notch toughness requirements, as applicable.
- D. Delegated-Design Submittal: For structural steel elements and connections indicated on drawings as delegated, or deferred, include analysis data signed and sealed a qualified professional engineer, as defined in "quality assurance" article responsible for their preparation.
- E. Design Calculations: Submit design calculations, signed and sealed by a qualified professional engineer as defined in "quality assurance" article, employed by the contractor, for the following:
1. Connections that differ from that indicated in the contract documents.
 2. Requests for substitution of member sizes or material grades.
 3. Modification of the strength or configuration of structural framing for the convenience to accommodate the erection sequence, construction equipment, and/or material availability.

- F. Structural Steel Over Occupied Space: Provide erection plan detailing sequence and methods of erection.
 - 1. The contractor shall provide a comprehensive engineering analysis, signed and sealed by a qualified professional engineer as defined in “quality assurance” article, verifying that the structure erected over occupied space will comply with the current edition of the applicable, governing building code during all phases of construction.
- G. Qualification Data: For firms and persons specified in the “Quality Assurance” article to demonstrate their capabilities and experience. If requested, include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- H. Welding Certificates.
- I. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- J. Mill test reports for structural steel materials, including chemical and physical properties.
- K. Product Test Reports: Signed by manufacturers certifying that the following products comply with requirements:
 - 1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 2. Direct-tension indicators.
 - 3. Tension-control, high-strength bolt-nut-washer assemblies.
 - 4. Shear stud connectors.
 - 5. Shop primers.
 - 6. Grout.
- L. Source quality-control test reports.
- M. Field quality-control test reports.
- N. Survey of existing conditions.
- O. Surveys: Submit certified copies of each survey conducted by a registered land surveyor, showing elevations and locations of base plates and anchor bolts to receive structural steel, and final elevations and locations for major members. Indicate discrepancies between actual installation and Contract Documents.
- P. Quality Assurance Agency Documents: The agency responsible for quality assurance for members part of the SFRS shall submit QA documents as outlined in AISC 341 Chapter J.

1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).
- B. Installer Qualifications: The installer shall have at least five years’ experience in similar type and size of project.

- C. Shop-Painting Applicators: Qualified in accordance with AISC's Sophisticated Paint Endorsement P1 or SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."
- D. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1.
 - 1. Welding and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.
- E. Inspection and Nondestructive Testing Personnel: Visual welding inspection, and NDT (including ultrasonic testing technicians) shall be conducted by personnel qualified in accordance with AWS D1.8.
- F. Professional Engineer Qualifications: A structural engineer who is licensed in the project jurisdiction (State) and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for projects with structural steel similar in material, design, and extent to those indicated for the project.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided the Port's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with provisions of the following specifications and documents using the edition referenced in the applicable building code or current edition where no edition is referenced:
 - 1. AISC 303 "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. AISC 360 "Specification for Structural Steel Buildings."
 - 3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."
 - 4. AISC 358 "Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications."

2.2 STRUCTURAL-STEEL MATERIALS

- A. Structural Steel Shapes and Bars: Refer to the general structural notes on drawings.
- B. Welding Electrodes: Comply with AWS requirements and as indicated on drawings.

2.3 BOLTS AND CONNECTORS

- A. High-Strength A325 and A490 Bolts, Nuts, and Washers: ASTM F3125, Grade A325 and A490 respectively, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers; with plain finish.
 - 1. Direct-Tension Indicators: ASTM F959, Type 325-1/ Type 490-1 respectively, compressible-washer type with plain finish.
- B. Zinc-Coated High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers.
 - 1. Finish: Hot-dip zinc coating.
 - 2. Direct-Tension Indicators: ASTM F959, Type 325-1, compressible-washer type with mechanically deposited zinc coating finish.
- C. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.
- D. Threaded Shear Stud Connectors: ASTM A29, grades 1010 through 1020, fully threaded externally.

2.4 RODS

- A. Threaded Rods: As indicated on the drawings.
 - 1. Nuts: ASTM A563 heavy hex carbon steel.
 - 2. Washers: ASTM A36 carbon steel.
 - 3. Finish: Plain.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.
 - 1. Camber structural-steel members where indicated.
 - 2. Fabricate beams with rolling camber up.
 - 3. Identify high-strength structural steel according to ASTM A6 and maintain markings until structural steel framing has been erected.
 - 4. Mark and match-mark materials for field assembly.
 - 5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

6. Sandblast all exposed surfaces of weathering steel. Sandblasting shall be performed in accordance with SSPC-SP6 "Commercial Blast Cleaning" SSPC's Steel Structures Painting Manual. The appearance of the blast cleaned surface shall approximate Pictorial Standard Sa 2 of SSPC-VIS 1, "Pictorial Surface Preparation Standards for Painting Steel Surfaces" except no mill scale particles shall be allowed; only rust or mill scale stains down in the profile will be allowed. The use of acids to remove scale and stains in the field will not be permitted.
 - a. Exposed surfaces of steel contaminated with stains, oil, or foreign material after the above sand blasting cleaning process shall be promptly cleaned as directed by the Owner to preserve conditions for uniform weathering of steel.
 7. Store weathering steel in a location which will prevent uneven weathering. Store on blocking to prevent contact with ground.
- B. Re-Entrant Corners: Provide 1/2-inch radius at all re-entrant corners, unless noted otherwise.
- C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- D. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- E. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- F. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 1.
- G. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.
1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not enlarge holes by burning. Thermal cutting of holes is permitted with a surface roughness profile not exceeding 1,000 micro-inches as defined in ASME B46.1.
 2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using High Strength Bolts" for type of bolt and type of joint specified.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
 2. Continuously seal joined members exposed to weather by continuous welds.
- C. Erection Connections: Place holes, plates, or other attachments required by the Erector so as not to interfere with or cause any other detrimental effect to structural members or their connections.

2.7 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123.
 - 1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.
 - 2. Weep holes shall be provided at exterior closed sections where moisture may accumulate. Sizes shall be in accordance with ASTM A123.
 - 3. Galvanize assemblies outside the weather barrier.
 - 4. Materials for galvanizing shall be geometrically suitable for galvanizing as specified in ASTM A384 and A385. For built-up members, assemblies shall be fabricated as required to limit warping and distortion.
- B. Bolts, nuts and washers, and iron and steel hardware components shall be galvanized by the hot-dip process in accordance with ASTM A153.
- C. Surface Preparation: Steel shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter: Clean steel in accordance with Steel Structures Painting Council (SSPC) SSPC-SP-6, "Commercial Blast Cleaning."
- D. Coating Requirements:
 - 1. Weight: The weight of the galvanized coating shall conform to Table 2 of ASTM A123 or Table 1 of ASTM A153, as appropriate.
 - 2. Surface Finish: The galvanized coating shall be continuous, adherent, as smooth and evenly distributed as possible, and free from any defect that is detrimental to the stated end use of the coated article.
 - a. Determine the integrity of the coating by visual inspection and coating thickness measurements.
 - b. Where slip factors are required for slip-critical connections, these shall be obtained after galvanizing by suitable treatment of the faying surfaces in accordance with the latest edition of the Specification for Structural Joints Using ASTM A325 or A490 bolts as approved by the Research Council on Structural Connections of the Engineering Foundation.
 - 3. Adhesion: The galvanized coating shall be sufficiently adherent to withstand normal handling during transport and erection.
- E. Touch-Up and Repair
 - 1. Mechanical Damage: Repair areas damaged by welding; flame cutting; or during handling, transport, or erection in accordance with ASTM A780 by one of the following methods:
 - a. Cold Galvanizing Compound (zinc-rich paint): Per Part 2, "Primer" Article, in accordance with ASTM A780, Annex A2.
 - 1) Spray- or brush-apply the touch-up paint in multiple coats to a dry film that matches the hot-dip galvanizing thickness. Provide minimum thickness of at least 6 mils (4 mils for material less than 1/4-inch thick). Apply a finish coat of aluminum paint to provide a color blend with the surrounding galvanizing.
 - 2) Verify coating thickness by measurements with a magnetic or electromagnetic gauge.

- b. Zinc-Based Solder: In accordance with ASTM A780, Annex A1.
 - 1) Apply the zinc-based solder that matches the hot-dip galvanizing thickness. Provide a minimum thickness of 4 mils (3 mils for material less than 1/4-inch thick).
 - 2) Verify coating thickness by measurements with a magnetic or electromagnetic gauge.
 - c. Flame-Sprayed Zinc (metalizing): In accordance with ASTM A780, Annex A3.
 - 1) Apply sprayed zinc coating that matches the hot-dip galvanizing thickness with a minimum thickness of 4 mils (3 mils for material less than 1/4-inch thick).
 - 2. Wet Storage Stain:
 - a. Remove any wet storage stain if formed and discovered prior to leaving the galvanizer's plant unless late pick up or acceptance of delivery has necessitated the material being stored in unfavorable conditions. Remove wet storage stain before installation so that premature failure of the coating will not occur. Remove wet storage stain as follows:
 - 1) Arrange the object so that their surfaces dry rapidly.
 - 2) Remove light deposits by means of a stiff bristle (not wire) brush. Heavier deposits are to be removed by brushing with a 5 percent solution of sodium or potassium dichromate with the addition of 0.1 percent by volume of concentrated sulfuric acid. Apply with a stiff bristle brush, and leave for approximately 30 seconds before thoroughly rinsing and drying.
 - 3) Alternatively, a proprietary product, which is intended for this purpose, may be used according to manufacturer's recommendations.
 - 4) Check coating thickness in the affected areas to ensure that the zinc coating remaining after the removal of wet storage stain is sufficient to meet or exceed the requirements of the specification.

2.8 SHOP PRIMING

- A. Steel Primer(s):
 - 1. See section 999100 "Painting"
 - 2. Insert proprietary primers if required as part of special coating or painting system. Coordinate primer selection with surface preparation and topcoats, requirements for slip-critical joints, and limitations of sprayed fire-resistive materials. Insert color if required.
 - 3. SSPC-Paint 23, latex primer.
 - 4. Fabricator's standard, fast-curing, lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.
 - a. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
 - 5. Water-Based Primer: Emulsion type, anticorrosive primer for mildly corrosive environments that is resistant to flash rusting when applied to cleaned steel, complying with MPI#107 and compatible with topcoat.
 - 6. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

- B. Shop prime steel surfaces except the following:
1. Surfaces embedded in and in direct contact with concrete, mortar or grout. Extend priming of partially embedded members to a depth of 2 inches.
 2. Surfaces to be field welded.
 3. Faying surfaces of slip-critical connections to be high-strength bolted.
 4. Surfaces to receive sprayed fire-resistive materials.
 5. Galvanized surfaces [unless indicated to be painted].
 6. Corrosion-resisting (weathering) steel surfaces.
 7. Surfaces enclosed in interior construction.
- C. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
1. SSPC-SP 2, "Hand Tool Cleaning."
 2. SSPC-SP 3, "Power Tool Cleaning."
 3. SSPC-SP 7 (WAB)/NACE WAB-4, "Brush-Off Blast Cleaning."
 4. SSP C-SP 14 (WAB)/NACE WAB-8, "Industrial Blast Cleaning."
 5. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
 6. SSPC-SP 6 (WAB)/NACE WAB-3, "Commercial Blast Cleaning."
 7. SSPC-SP 10 (WAB)/NACE WAB-2, "Near-White Blast Cleaning."
 8. SSPC-SP 5 (WAB)/NACE WAB-1, "White Metal Blast Cleaning."
 9. SSPC-SP 8, "Pickling."
- D. Surface Preparation of Galvanized Steel: Prepare galvanized-steel surfaces for shop priming by thoroughly cleaning steel of grease, dirt, oil, flux, and other foreign matter, and treating with etching cleaner or in accordance with SSPC-SP 16.
- E. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 2. Apply two coats of shop paint to inaccessible surfaces after assembly or erection. Change color of second coat to distinguish it from first.

2.9 SOURCE QUALITY CONTROL

- A. Testing Agency: The Port will engage a qualified independent testing and inspection agency to inspect shop welds and high-strength bolted connections and tests, and to prepare test reports as indicated in the Drawings and in accordance with "Testing and Inspection" in Part 3.
- B. Fabrication Inspection: When approved by the building official and the Port, full-time special inspection in the fabrication shop by the Port's testing agency may be waived, subject to the following:
1. The fabricator participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant.
 2. All shop inspection is provided by the contractor, per the requirements herein, and is documented. Reports and test results are to be available for the Port's inspector to review.
 3. A specific quality control plan for this project shall be developed and submitted to the structural engineer for approval prior to the prefabrication/pre-erection meeting.

4. Periodic inspection by the Port's inspection agency is allowed by the fabricator.
5. Certified Plants: Continuous plant inspection is not required at plants producing prefabricated steel products which are certified by the building official.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.
 1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.
- B. Baseplates 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. Weld plate washers to top of baseplate.
 3. Snug-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.
 4. Promptly pack shrinkage-resistant 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 grouting.
- C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on drawings.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Do not use thermal cutting during erection, unless it conforms to the requirements of AISC 360 Specification Sections M2.2 and M2.5, and is approved by the Port. Finish thermally cut sections within smoothness limits in AWS D1.1.
- G. Do not enlarge unfair holes in members by burning or using drift pins.
- H. Reaming: Light drifting will be permitted to draw the parts together, but drifting to match unfair holes will not be permitted. Any enlargement of holes necessary to make connections in the field shall be done by reaming with twist drills, care being taken not to weaken the adjoining metal. If, in the judgement of the Port, the extent of the reaming is such that holes cannot be properly filled or accurately adjusted after reaming, the faulty member shall be discarded and replaced with a new one, and all costs and expenses resulting therefrom shall be paid by the contractor.
- I. Cutting and Fitting: No cutting of sections, either flanges, webs, stems or angles shall be done by the Contractor without the consent of the Port, unless this cutting is particularly specified or shown on the drawings.
- J. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear stud connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.
- K. Corrective Measures
 - 1. Any errors in locations or inaccuracies in the setting of anchor bolts, base plates, bearing plates, or other items of attachment or support for steel work shall be reported to the Port, and shall be corrected in a manner subject to the approval of the Port.
 - 2. Any misfits due to errors in fabrication shall be reported immediately to the Port, along with proposed method of correction of same and Port approval obtained before proceeding with corrective measures.
 - 3. No members shall be cut or burned without specific approval in writing.
 - 4. Bolted or welded connections, joints, or fastenings, which are classified as defective in the opinion of the Port, shall be corrected by the contractor in a manner subject to the Port's approval.

3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

- B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
 - 2. Remove backing bars or runoff tabs, unless noted otherwise, back gouge, and grind steel smooth.
 - 3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.
- C. Erection Connections, etc: Place holes, plates, or other attachments required by the erector so as not to interfere with or cause any other detrimental effect to structural members or their connections.
 - 1. Holes and attachments are not permitted in the "protected zone" as defined herein, and in the drawings.

3.5 FIELD QUALITY CONTROL

- A. All structural steel is subject to special inspection.
- B. Testing and Inspection Agency: The Port will engage a qualified independent testing and inspecting agency to provide inspection and required tests, and to prepare test reports as indicated in the drawings.
- C. Testing and Inspecting Agency Requirements:
 - 1. Special Inspector: Testing agency shall provide qualified "special inspector" who will perform the inspection services.
 - 2. Testing agency will conduct and interpret tests, and state in each report whether test specimens comply with or deviate from requirements.
 - 3. Testing agency will notify the Port immediately of discrepancies in the work which are time-critical or affect the construction progress.
 - 4. Personnel inspecting connections part of the SFRS shall be qualified per AISC 341.
- D. Contractor Responsibilities Related to Shop and Field Inspections:
 - 1. Maintain complete records of all quality control and testing performed by the contractor.
 - 2. Furnish all electrical power, turning or moving of members, hoisting, staging, and other facilities required for inspection.
 - 3. Provide testing agency with access to places where structural steel work is being fabricated and erected so required inspection and testing can be accomplished.
 - 4. Correct deficiencies in, or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.
 - 5. Additional testing, at contractor's expense, will be performed to determine compliance of corrected work with specified requirements.
 - 6. Grant inspectors full authority to inspect all material and work that fails to conform in every respect to these specifications.
 - 7. When required by the Port's Independent Testing Agency or contractor's engaged inspection organization, make adequate platforms available to the Inspector for the purpose of checking high-strength bolts and welds. Scaffolding shall be provided to ensure safe performance of this operation.

- E. Shop and Field Tests and Inspections: Inspections and testing shall be performed as indicated in the Contract Documents. Additional requirements are as follows:
1. Bolted Connections: Inspect (and test as required) bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
 2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1.
 - a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1 and the following inspection procedures, at testing agency's option:
 - 1) Liquid Penetrant Inspection: ASTM E165.
 - 2) 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.
 - 3) Radiographic Inspection: ASTM E94 and ASTM E142; minimum quality level "2-2T."
 - 4) Ultrasonic Inspection: ASTM E164.
 - b. Provide testing and inspection of welds for all connections part of the SFRS in accordance with AISC 341 and AWS D1.8.

3.6 REPAIRS

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to equivalent thickness of galvanized finish and complying with ASTM A780.
- B. Touchup, Primers: Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-primed surfaces.
1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
- C. Touchup, Primers: Cleaning and touchup are specified in Section 099100 "Painting."

END OF SECTION 051200

SECTION 055000 – METAL FABRICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes items made from steel shapes, plates, bars, strips, tubes, pipes, and castings which are not a part of structural steel or other metal systems specified elsewhere.

1.2 REFERENCES

- A. AISC: American Institute of Steel Construction
 - 1. AISC Specifications for Structural Steel Buildings
- B. ASTM: American Society for Testing and Materials
 - 1. ASTM A36: Standard Specification for Carbon Structural Steel
 - 2. ASTM A1011: 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
- C. AWS: American Welding Society
 - 1. AWS D1.1: Structural Welding Code – Steel
- D. NAAMM: National Association of Architectural Metal Manufacturers
- E. OR OSHA: Oregon Occupational Safety and Health Administration

1.3 SUBMITTALS

- A. Product Data: Manufacturer's specifications, anchor details, and installation instructions for products to be used in the fabrication of metalwork, including paint products and grout.
- B. Shop Drawings: Show fabrication and erection of metal fabrications. Include drawings, elevations, and details of sections and connections. Show anchorage and accessory items. Provide templates for anchor and bolt installation under other sections.
- C. Structural Analysis: Where design of members and connections is specified as part of the work of this section, submit structural analysis showing loadings and stresses, stamped and signed by a structural engineer registered in Oregon with shop drawings showing these items, similarly stamped and signed.
- D. Safety Procedures: For site welding work, submit a detailed plan of safety procedures that includes fume control and shielding.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: Comply with the provisions of the following codes, standards and specifications, except where more stringent requirements are shown or specified:
 - 1. AISC, "Specifications for Structural Steel Buildings," including the "Commentary on the AISC Specifications."
 - 2. AISI, "Specification for the Design of Cold-Formed Steel Structural Members."
 - 3. AWS D1.1, "Structural Welding Code – Steel."
- B. Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting wherever taking field measurements before fabrication might delay work.
- C. Furnish inserts and anchoring devices which must be set in concrete or built into masonry for installation of metalwork. Coordinate delivery with other work to avoid delay.
- D. Shop Assembly: Preassemble 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 reassembly and coordinated installation.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS

- A. For fabrication of metalwork which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names, and roughness.
- B. Fabricate metal fabrications from ASTM A36, or as recommended by fabricator for the specific application; except where material is specifically identified.
- C. Metal Primer Paint:
 - 1. Black Steel: Acceptable Manufacturers and Products: Amchem Metal-Prep, Tnemec #37 Chem Prime; Rustoleum System, or equal.
 - 2. Verify compatibility with the required finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified elsewhere.

2.2 FABRICATION, GENERAL

- A. Workmanship:
 - 1. Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in finished product. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.
 - 2. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

- B. Weld corners and seams continuously, complying with AWS recommendations. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
- C. Form exposed connection with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, socket type flathead (countersunk) screws or bolts. Provide sufficient backing at screw locations to cover at least three threads.
- D. Provide for anchorage of type suitable for use with supporting structure. Fabricate and space anchoring devices as shown and as required to provide adequate support for intended use.
- E. Cut, reinforce, drill, and tap metal fabrications as required to receive finish hardware and similar items.
- F. Shop Painting:
 - 1. Shop paint metal fabrications (after galvanizing where a zinc coating is specified), except members or portions of members to be embedded in concrete or masonry, unless otherwise specified.
 - 2. Remove scale, rust and other deleterious materials before applying shop coat.
 - 3. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's instructions and at a rate to provide uniform dry film thickness of 1.0 mils for each coat. Use painting methods which will result in full coverage of joints, corners, edges and exposed surfaces.
 - 4. Apply one shop coat to fabricated metal items, except apply two coats of paint to surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

2.3 METAL FABRICATIONS

- A. Rough Hardware:
 - 1. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other steel and iron shapes as required.
 - 2. Manufacture or fabricate items of sizes, shapes, and dimensions required.
- B. Miscellaneous Steel Trim: Provide shapes and sizes as required for profiles shown. Except as otherwise noted, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other work.
- C. Miscellaneous Framing and Supports:
 - 1. Provide miscellaneous steel framing and supports which are not a part of structural steel framework, as required to complete work. Galvanize items at exterior and in exterior walls.
 - 2. Fabricate miscellaneous units to sizes, shapes, and profiles shown or, if not shown, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars, of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware and similar items.

3. Equip units with integrally welded anchor straps for casting into concrete wherever required. Furnish inserts where units must be installed after concrete is placed. Except as otherwise shown, space anchors 24 inches o.c. and provide minimum anchor units of 1 1/4-inch x 1/4-inch, 8-inch steel straps.
 4. Interior Sign Supports: Provide for roof, wall, and ceiling-hung signs.
- D. Provide other miscellaneous steel items. Work of this section is not limited to the items listed above.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine areas and conditions under which metal fabrications are to be installed. Correct conditions which are detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.2 PREPARATION

- A. Provide setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to the work site.

3.3 INSTALLATION

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction including threaded fasteners for concrete inserts, toggle bolts, through-bolts, and other connectors as required.
- B. Cutting, Fitting and Placement:
1. Perform cutting, drilling, and fitting required for installation of metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels with lines visually parallel. Provide temporary bracing or anchors in framework for items which are to be built into concrete or masonry of similar construction.
 2. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop-welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

- C. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.
 - 1. Fume Control: Provide welding fume control to protect personnel and the public from exposure to heavy metals.
 - a. Stainless Steel Welding: Comply with OSHA 29 CFR 1926.353 fume control requirements.
 - 2. Shielding: Provide shielding for arc welding operations to protect personnel and the public that may have visual or other access during the work. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 1.0 mils.
- D. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 1.0 mils.

END OF SECTION 055000

SECTION 078100 – APPLIED FIREPROOFING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes sprayed fire-resistive materials applied to existing construction, and includes the following applications:
 - 1. Sprayed cementitious materials as required to repair existing sprayed fire-resistive materials disturbed or damaged by construction activities.

1.2 REFERENCES

- A. ASTM: American Society for Testing and Materials
 - 1. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials
 - 2. ASTM E119: Standard Test Methods for Fire Tests of Building Construction and Materials
 - 3. ASTM E136: Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
 - 4. ASTM E605: Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members
 - 5. ASTM E736: Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members
 - 6. ASTM E759: Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members
 - 7. ASTM E760: Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members
 - 8. ASTM E761: Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members
 - 9. ASTM E859: Standard Test Method for Air Erosion of Sprayed Fire-Resistive Materials (SFRMs) Applied to Structural Members
 - 10. ASTM E937: Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members
 - 11. ASTM G21: Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
- B. AWCI: Association of the Wall and Ceiling Industry
 - 1. AWCI Technical Manual 12-A: Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials
- C. CFR: Code of Federal Regulations
 - 1. 40 CFR 763: Asbestos
- D. UL: Underwriters Laboratories, Inc.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Submit structural framing plans indicating the following:
 - 1. Locations and types of surface preparations required before applying sprayed fire-resistive material.
 - 2. Extent of sprayed fire-resistive material for each construction and fire-resistance rating, including the following:
 - a. Applicable fire-resistance design designations of a qualified testing agency.
 - b. Minimum thicknesses needed to achieve required fire-resistance ratings of structural components and assemblies.
 - c. Designation of restrained and unrestrained conditions based on definitions in ASTM E119, Appendix X3 or as determined by a qualified professional engineer.
- C. Product Certificates: For each type of sprayed fire-resistive material, signed by product manufacturer.
- D. Qualification Data: For installer, manufacturer, professional engineer, and qualified testing agency.
- E. Compatibility and Adhesion Test Reports: From sprayed fire-resistive material manufacturer indicating the following:
 - 1. Materials have been tested for bond with substrates.
 - 2. Materials have been verified by sprayed fire-resistive material manufacturer to be compatible with substrate primers and coatings.
 - 3. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for proposed sprayed fire-resistive materials.
- G. Research/Evaluation Reports: For sprayed fire-resistive materials.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Installer shall be certified, licensed, or otherwise qualified by sprayed fire-resistive material manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements. A manufacturer's willingness to sell its sprayed fire-resistive materials to the Contractor or to an installer engaged by the Contractor does not in itself confer qualification on the buyer.
 - 1. Installer's responsibilities include providing professional engineering services needed to assume engineering responsibility for designation of restrained and unrestrained conditions.
- B. Manufacturer's Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, with the experience and capability to conduct the testing indicated.

- C. Source Limitations: Obtain sprayed fire-resistive materials through one source from a single manufacturer.
- D. Port-Provided Testing and Inspecting Agency: The Port will hire a testing and inspecting agency who will test for compliance with specified requirements for performance by doing the following:
 - 1. Sprayed Fire-Resistive Materials Testing:
 - a. Sprayed fire-resistive materials will be randomly selected for testing from bags bearing the applicable classification marking of UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Agency will test specimens of sprayed fire-resistive materials that comply with laboratory testing requirements specified in Part 2 and are otherwise identical to installed fire-resistive materials, including application of accelerant, sealers, topcoats, tamping, troweling, rolling, and water overspray, if any of these are used in final application.
 - b. Agency will test specimens whose application the testing and inspecting agency witnessed during preparation and conditioning. Test reports should include a description of preparation and conditioning of laboratory test specimens.
 - 2. Adhesion Testing: Test for bond per ASTM E736 and requirements in UL's "Fire Resistance Directory" for coating materials.
- E. Fire-Test-Response Characteristics: Provide sprayed fire-resistive materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another qualified testing agency. Identify bags containing sprayed fire-resistive materials with appropriate markings of applicable testing agency.
 - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency for sprayed fire-resistive material serving as direct-applied protection tested per ASTM E119.
 - 2. Surface-Burning Characteristics: ASTM E84.
- F. Provide products containing no detectable asbestos as determined according to the method specified in 40 CFR 763, Subpart E, Appendix E, Section 1, "Polarized Light Microscopy."
- G. Preinstallation Meeting: Conduct preinstallation meeting at work site. Review methods and procedures related to sprayed fire-resistive materials including, but not limited to, the following:
 - 1. Review and finalize construction schedule and verify sequencing and coordination requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to work site in original, unopened packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, shelf life if applicable, and fire-resistance ratings applicable to work.
- B. Use materials with limited shelf life within period indicated. Remove from work site and discard materials whose shelf life has expired.
- C. Store materials inside, under cover, aboveground, and kept dry until ready for use. Remove from work site and discard wet or deteriorated materials.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply sprayed fire-resistive material when ambient or substrate temperature is 40°F or lower unless temporary protection and heat is provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.
- B. Ventilation: Ventilate building spaces during and after application of sprayed fire-resistive material. Use natural means or, if they are inadequate, forced-air circulation until fire-resistive material dries thoroughly.

PART 2 - PRODUCTS

2.1 SPRAYED FIRE-RESISTIVE MATERIALS

- A. General: Provide manufacturer's standard products complying with requirements indicated for material composition and physical properties.
- B. Physical Properties: Minimum values, unless otherwise indicated, or higher values required to attain designated fire-resistance ratings, measured per standard test methods referenced with each property as follows:
 - 1. Sprayed fire resistive material, Type A (low density). Sprayed fire-resistive materials consisting of factory mixed, dry formulation of gypsum or portland cement binders, mineral fibers, fillers, aggregates, and additives mixed with water at the work site with the following requirements:
 - a. Dry Density: 15 pcf, for average and individual densities, or greater if required to attain fire-resistance rating in accordance with ASTM E605 or AWCI Technical Manual 12-A, Section 5.4.5, "Displacement Method."
 - b. Thickness: Provide the minimum average thickness required for fire-resistance design, indicated according to the following criteria, but not less than 0.375 inch per ASTM E605:
 - 1) Where the fire-resistance design lists a thickness of 1 inch or greater, the minimum allowable individual thickness of sprayed fire-resistive material shall be the design thickness minus 0.25 inch.
 - 2) Where the fire-resistance design lists a thickness of less than 1 inch but more than 0.375 inch, the minimum allowable individual thickness of sprayed fire-resistive material shall be the greater of 0.375 inch or 75 percent of the design thickness.
 - 3) No reduction in average thickness is permitted for fire-resistance designs where fire-resistance ratings were established at densities of less than 15 pcf.
 - c. Bond Strength: 150 lbf/sf minimum, per ASTM E736, under the following conditions:
 - 1) Field test sprayed fire-resistive material that is applied to flanges of wide-flange, structural-steel members on surfaces matching those that will exist for remainder of steel receiving fire-resistive material.

- 2) If surfaces of structural steel receiving sprayed fire-resistive material are primed or otherwise painted for coating materials, perform series of bond tests specified in UL's "Fire Resistance Directory." Provide bond strength indicated in the UL fire-resistance criteria, but not less than 150 lbf/sf minimum, per ASTM E736.
 - 3) Minimum thickness of sprayed fire-resistive material tested in laboratory shall be 0.75 inch.
 - d. Compressive Strength: 750.24 lbf/sf, as determined in the laboratory per ASTM E761. Minimum thickness of sprayed fire-resistive material tested shall be 0.75 inch and minimum dry density shall be as specified in the drawings, but not less than 15 pcf.
 - e. Corrosion Resistance: No evidence of corrosion per ASTM E937.
 - f. Deflection: No cracking, spalling, or delamination per ASTM E759.
 - g. Effect of Impact on Bonding: No cracking, spalling, or delamination per ASTM E760.
 - h. Air Erosion: Maximum weight loss of 0.025 g/sf in a 24-hour period, per ASTM E859. For laboratory tests, minimum thickness of sprayed fire-resistive material shall be 0.75 inch, maximum dry density shall be 15 pcf, test specimens shall not be prepurged by mechanically induced air velocities, and tests shall be terminated after 24 hours.
 - i. Fire-Test-Response Characteristics: Provide sprayed fire-resistive materials with the following surface-burning characteristics as determined by the testing of identical products per ASTM E84, by UL or another qualified testing and inspecting agency:
 - 1) Flame-Spread Index: 10 or less.
 - 2) Smoke-Developed Index: 0.
 - j. Fungal Resistance: No observed growth on specimens per ASTM G21.
2. Sprayed fire resistive material, Type B (medium density). Sprayed fire-resistive materials consisting of factory mixed, dry formulation of gypsum or portland cement binders, mineral fibers, fillers, aggregates, and additives mixed with water at the work site with the following requirements:
- a. Dry Density: Values for average and individual densities as required for fire-resistance ratings, per ASTM E605 or AWCI Technical Manual 12-A, Section 5.4.5, "Displacement Method," but shall have an average density of not less than 22 pcf.
 - b. Bond Strength: 434 lbf/sf minimum, per ASTM E736.
 - c. Compressive Strength: 7,344 lbf/sf per ASTM E761.
 - d. Corrosion Resistance: No evidence of corrosion per ASTM E937.
 - e. Deflection: No cracking, spalling, or delamination per ASTM E759.
 - f. Effect of Impact on Bonding: No cracking, spalling, or delamination per ASTM E760.
 - g. Air Erosion: Maximum weight loss of 0.025 g/sf per ASTM E859.
 - h. Combustion Characteristics: Passes ASTM E136.
 - i. Fire-Test-Response Characteristics: Provide sprayed fire-resistive materials with the following surface-burning characteristics as determined by the testing of identical products per ASTM E84, UL, or another qualified testing and inspecting agency:
 - 1) Flame-Spread Index: 10 or less.
 - 2) Smoke-Developed Index: 0.
 - j. Fungal Resistance: No observed growth on specimens per ASTM G21.

3. Sprayed fire resistive material, Type C (high density). Sprayed fire-resistive materials consisting of factory mixed, dry formulation of gypsum or portland cement binders, mineral fibers, fillers, aggregates, and additives mixed with water at the work site with the following requirements:
 - a. Bond Strength: 1000 lbf/sf minimum per ASTM E736.
 - b. Compressive Strength: 43,200 lbf/sf per ASTM E761.
 - c. Dry Density: Values for average and individual densities as required for fire-resistance ratings, per ASTM E605 or AWCI Technical Manual 12-A, Section 5.4.5, "Displacement Method," but with an average density of not less than 39 pcf.
 - d. Corrosion Resistance: No evidence of corrosion per ASTM E937.
 - e. Deflection: No cracking, spalling, or delamination per ASTM E759.
 - f. Effect of Impact on Bonding: No cracking, spalling, or delamination per ASTM E760.
 - g. Air Erosion: Maximum weight loss of 0.025 g/sf. per ASTM E859.
 - h. Combustion Characteristics: Passes ASTM E136.
 - i. Fire-Test-Response Characteristics: Provide sprayed fire-resistive materials with the following surface-burning characteristics as determined by the testing of identical products per ASTM E84, UL, or another qualified testing and inspecting agency:
 - 1) Flame-Spread Index: 10 or less.
 - 2) Smoke-Developed Index: 0.
 - j. Fungal Resistance: No observed growth on specimens per ASTM G21.

2.2 AUXILIARY FIRE-RESISTIVE MATERIALS

- A. Provide auxiliary fire-resistive materials that are compatible with sprayed fire-resistive materials and substrates and are approved by UL or another qualified testing and inspecting agency for use in fire-resistance designs indicated.

2.3 PATCHING AND REPAIR MATERIALS

- A. Provide material for patching and repairs. Material shall match existing or be compatible with existing fireproofing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for substrates and other conditions affecting performance of work. A substrate is in satisfactory condition if it complies with the following:
 1. Substrates comply with requirements in the section where the substrate and related materials and construction are specified.
 2. Substrates are free of oil, grease, rolling compounds, incompatible primers, loose mill scale, dirt, or other foreign substances capable of impairing bond of fire-resistive materials with substrates under conditions of normal use or fire exposure.

3. Objects penetrating fire-resistive material, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
 4. Substrates are not obstructed by ducts, piping, equipment, and other suspended construction that will interfere with applying fire-resistive material.
- B. Conduct tests according to fire-resistive material manufacturer's written recommendations to verify that substrates are free of oil, rolling compounds, and other substances capable of interfering with bond.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SEQUENCING AND COORDINATION

- A. Sequence and coordinate application of sprayed fire-resistive materials with related work specified in other sections to comply with the following requirements:
1. Provide temporary enclosure as required to confine spraying operations and protect the environment.
 2. Provide temporary enclosures for applications to prevent deterioration of fire-resistive material due to exposure to weather and to unfavorable ambient conditions for humidity, temperature, and ventilation.
 3. Avoid unnecessary exposure of fire-resistive material to abrasion and other damage likely to occur during construction operations subsequent to its application.
 4. Do not apply fire-resistive material to metal roof deck substrates until concrete topping, if any, has been completed. For metal roof decks without concrete topping, do not apply fire-resistive material to metal roof deck substrates until roofing has been completed; prohibit roof traffic during application and drying of fire-resistive material.
 5. Do not apply fire resistive material to metal floor deck substrates until concrete topping has been completed.
 6. Do not begin applying fire-resistive material until clips, hangers, supports, sleeves, and other items penetrating fire protection are in place.
 7. Defer installing ducts, piping, and other items that would interfere with applying fire-resistive material until application of fire protection is completed.
 8. Do not install enclosing or concealing construction until after fire-resistive material has been applied, inspected, and tested and corrections have been made to defective applications.

3.3 PREPARATION

- A. Cover other work subject to damage from fallout or overspray of fire-resistive materials during application.
- B. Clean substrates of substances that could impair bond of fire-resistive material, including dirt, oil, grease, release agents, rolling compounds, loose mill scale, and incompatible primers, paints, and encapsulants.

3.4 INSTALLATION

- A. Comply with fire-resistive material manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and spray on fire-resistive material, as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- B. Apply sprayed fire-resistive material in thicknesses and densities not less than those required to achieve fire-resistance ratings designated for each condition. Apply in greater thicknesses and densities if specified in Part 2 "Sprayed Fire-Resistive Materials" article.
- C. Apply sprayed fire-resistive material that is identical to products tested as specified in Part 1 "Quality Assurance" article and substantiated by test reports, with respect to rate of application, accelerator use, sealers, topcoats, tamping, troweling, water overspray, or other materials and procedures affecting test results.
- D. Extend fire-resistive material in full thickness over entire area of each substrate to be protected. Unless otherwise recommended in writing by sprayed fire-resistive material manufacturer, install body of fire-resistive covering in a single course.
- E. Spray apply fire-resistive materials to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by sprayed fire-resistive material manufacturer.

3.5 FIELD QUALITY CONTROL

- A. Port-Provided Testing and Inspecting Agency: The Port will hire a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.
 - 1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
- B. Testing and Inspecting Services: Testing and inspecting of completed applications of sprayed fire-resistive material will take place in successive stages, in areas of extent and using methods as follows. Do not proceed with application of sprayed fire-resistive material for the next area until test results for previously completed applications of sprayed fire-resistive material show compliance with requirements. Tested values shall equal or exceed values indicated and required for approved fire-resistance design.
 - 1. Thickness for Floor, Roof, and Wall Assemblies: For each 1000-square foot area, or partial area, on each floor, from the average of 4 measurements from a 144-square inch sample area, with sample width of not less than 6 inches per ASTM E605.
 - 2. Thickness for Structural Frame Members: From a sample of 25 percent of structural members per floor, taking 9 measurements at a single cross section for structural frame beams or girders, 7 measurements of a single cross section for joists and trusses, and 12 measurements of a single cross section for columns per ASTM E605.
 - 3. Density for Floors, Roofs, Walls, and Structural Frame Members: At frequency and from sample size indicated for determining thickness of each type of construction and structural framing member, per ASTM E605 or AWCI Technical Manual 12-A, Section 5.4.5, "Displacement Method."

4. Bond Strength for Floors, Roofs, Walls, and Structural Framing Members: For each 10,000-square foot area, or partial area, on each floor, cohesion and adhesion from one sample of size indicated for determining thickness of each type of construction and structural framing member, per ASTM E736.
 5. If testing finds applications of sprayed fire-resistive material are not in compliance with requirements, testing and inspecting agency will perform additional random testing to determine extent of noncompliance.
- C. Remove and replace applications of sprayed fire-resistive material where test results indicate that it does not comply with specified requirements for cohesion and adhesion, for density, or for both.
 - D. Apply additional sprayed fire-resistive material per manufacturer's written instructions where test results indicate that thickness does not comply with specified requirements.
 - E. Additional testing and inspecting, at Contractor's expense, may be performed to determine compliance of replaced or additional work with specified requirements.

3.6 CLEANING, PROTECTING, AND REPAIR

- A. Cleaning: Immediately after completing spraying operations in each containable area of work, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.
- B. Protect sprayed fire-resistive material, according to advice of product manufacturer and installer, from damage resulting from construction operations or other causes so fire protection will be without damage or deterioration at time of substantial completion.
- C. Coordinate application of sprayed fire-resistive material with other construction to minimize need to cut or remove fire protection. As installation of other construction proceeds, inspect sprayed fire-resistive material and patch any damaged or removed areas.
- D. Repair or replace work that has not been successfully protected.

END OF SECTION 078100

SECTION 078400 - FIRESTOPPING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes firestopping based on UL designs selected by the Contractor.
 - 1. Provide through-penetration fire blocks as defined by the Oregon Structural Specialty Code at all fire-rated and smoke-rated partitions and floor-ceiling assemblies.
 - 2. Provide where penetrations go through rated walls and floor-ceiling assemblies that require sealing in accordance with NFPA 101.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Other sections that relate directly to work of this section include, but are not limited to: concrete, masonry, gypsum wallboard systems, mechanical, electrical, lighting, power, alarms, and communication.

1.3 REFERENCES

- A. ASTM: American Society for Testing and Materials.
 - 1. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials
 - 2. ASTM E814: Standard Test Method for Fire Tests of Penetration Firestop Systems
- B. NFPA: National Fire Protection Association.
 - 1. NFPA 101: Life Safety Code
- C. UL: Underwriters Laboratories, Inc.
 - 1. UL 1479: Intermediate Metal Conduit

1.4 SEQUENCING AND SCHEDULING

- A. Submit notification at least 1 week in advance of firestopping installations. Confirm dates and times on days preceding each series of installations.
- B. Do not cover up firestopping installations that will be concealed behind other construction until the inspection agency, if required, has examined each installation.

1.5 SUBMITTALS

- A. Firestopping System Schedule: Showing locations proposed for each system, identifying each product.

- B. Product Data: For each product intended to be used. Where more than one type of product is proposed, confirm compatibility at areas of contact.
 - 1. UL drawings, certificates, and ICC-ES evaluation reports indicating firestopping material conforms to specified requirements.
- C. Shop Drawings: Complete construction details showing proposed material, reinforcement, anchorage, fastenings, and methods of installation.
- D. Qualification Data: for installation firms and employees which demonstrates their capabilities and experience. Include list of completed projects with project names, addresses, names of engineers, architects and owners, and other information specified.
- E. System Design Listings: Including illustrations from a qualified testing and inspection agency that is applicable to each firestop configuration.
 - 1. Where there is no specific third-party-tested and classified firestop system available for a particular firestop configuration, obtain from the firestop manufacturer an engineering judgment (EJ) or equivalent fire resistance rated assembly (EFRRA) for submittal.

1.6 QUALITY ASSURANCE

- A. Provide manufacturer's standard firestopping systems, with accessory materials, indicating fire-resistance ratings as established by testing identical assemblies per ASTM E814 by UL, other testing laboratory, or quality control agency having a current ICC-ES report.
- B. The Port may employ and pay a qualified inspection agency to check installed firestopping systems for compliance with requirements.
 - 1. Firestopping tests will be performed by a qualified testing and inspecting agency such as UL, Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems.
 - 2. The Port will pay the cost to repair or replace a fire system that has been chosen for testing and successfully meets UL's installation requirements.
 - 3. The Contractor shall pay for all fire systems that were destroyed in testing if UL's installation procedures were not followed.
 - 4. Through-penetration firestop systems are identical to those tested per ASTM E814 under conditions where positive furnace pressure differential of at least 0.01 inch of water is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly.
- C. Fire Resistance and Hose Stream Tests: Rate firestopping materials "F" and "T" in accordance with ASTM E814 or UL 1479. Rating periods: Same as the floor or wall assembly penetrated.
- D. Sealing characteristics: Does not require a rise in temperature to install or to activate seal.
- E. Installer Qualifications: Engage an experienced installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having the necessary experience, staff, and training to install manufacturer's products. A manufacturer's willingness to sell its firestopping products to the Contractor or to an installer engaged by the Contractor does not in itself confer qualification on the buyer.

- F. Single-Source Responsibility: Obtain through-penetration firestop systems for each kind of penetration and construction condition indicated from a single manufacturer.
- G. Provide firestopping products containing no detectable asbestos.
- H. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed in accordance with specified requirements.
- I. Pre-Installation Meeting:
 - 1. Before installing firestopping, meet at the work site with the Port, consultants, independent testing agency, firestopping manufacturer, and other concerned entities.
 - 2. Notify participants at least 3 business days before the meeting.
 - 3. Distribute meeting notes recording decisions reached.

1.7 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide firestopping systems that are produced and installed to resist the spread of fire and the passage of smoke and other gases, with ratings equal to the surface penetrated. Provide complete firestopping systems that have been tested and approved by third-party testing agency.
- B. Provide through-penetration firestop systems with F ratings indicated, as determined by ASTM E814, but not less than that equaling the fire-resistance rating of the constructions penetrated.
- C. Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined by ASTM E814, where indicated and where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas.
- D. For exposed firestopping, provide products with flame-spread values of less than 25 and smoke-developed values of less than 450, as determined by ASTM E84.

1.8 DELIVERY AND STORAGE

- A. Deliver materials in their original unopened containers. Store in a location providing protection from damage and exposure to the elements.
- B. Remove damaged or deteriorated materials from the site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as recommended by the firestopping manufacturer.

- B. Accessory Materials for Fire-Stops: Provide forming, joint-fillers, packing and other accessory materials required for installation of firestops as applicable to installation conditions encountered.
- C. Endothermic, Latex Compound Sealant: Single-component formulation. The following are acceptable products and manufacturers.
1. Fyre Shield by Tremco Inc.
 2. Flame-Safe FS500/600 Series or FS900/FST900, International Protective Coatings Corp.
 3. Cafco TPS Type C, Isolatek International.
 4. Or pre-bid approved equal.
- D. Intumescent, Latex Sealant: Single-component formulation. The following are acceptable products and manufacturers.
1. Metacaulk 950 or 1000, The RectorSeal Corporation.
 2. FS-One, Hilti Construction Chemicals, Inc.
 3. Fire Barrier CP 25WB Caulk, 3M Fire Protection Products.
 4. SpecSeal SSS100 Series Sealant, Specified Technologies, Inc.
 5. Cafco TPS Type I, Isolatek International.
 6. Or pre-bid approved equal.
- E. Intumescent Putty: Non-hardening, dielectric, water-resistant putty containing no solvents, inorganic fibers, or silicone compounds. The following are acceptable products and manufacturers.
1. Pensil 500 Intumescent Putty, Specified Technologies, Inc.
 2. Flame-Safe FSP1000 Putty, International Protective Coatings Corp.
 3. Fire Barrier Moldable Putty, 3M Fire Protection Products.
 4. SpecSeal Firestop Putty, Specified Technologies, Inc.
 5. Cafco TPS Types P and EP, Isolatek International.
 6. CP 618, Hilti Construction Chemicals, Inc.
 7. Or pre-bid approved equal.
- F. Intumescent Wrap Strips: Single-component, elastomeric sheet with or without aluminum foil on one side, (foil as tested). The following are acceptable products and manufacturers.
1. Fire Stop Intumescent Wrap Strip 2002, 3M Fire Protection Products.
 2. CS2420 Intumescent Wrap, Hilti Construction Chemicals, Inc.
 3. Fire Barrier FS-195 Wrap/Strip, 3M Fire Protection Products.
 4. SpecSeal Intumescent Wrap Strip, Specified Technologies, Inc.
 5. Or pre-bid approved equal.
- G. Intumescent, Latex Spray Mastic: Single-component formulation (for use at head of walls against metal deck). The following are acceptable products and manufacturers.
1. Metacaulk 1100, The RectorSeal Corporation.
 2. CP 672, Hilti Construction Chemicals, Inc.
 3. FireDam Spray, 3M Fire Protection Products.
 4. Or pre-bid approved equal.
- H. Intumescent Pillows: Single component, plastic encased. The following are acceptable products and manufacturers.
1. Series SSB, Specified Technologies, Inc.
 2. Fire barrier pillows, 3M Fire Protection Products.
 3. Or pre-bid approved equal.

- I. Mortar: Prepackaged dry mix composed of a blend of inorganic binders, fillers, and lightweight aggregate formulated for mixing with water at work site to form a non-shrinking, homogenous mortar. The following are acceptable products and manufacturers.
 - 1. Novasit K-10 Firestop Mortar, Bio Fireshield, Inc.
 - 2. FS 635 Mortar, Hilti Construction Chemicals, Inc.
 - 3. KBS-Mortar Seal, International Protective Coatings Corp.
 - 4. SpecSeal Firestop Mortar, Specified Technologies, Inc.
 - 5. Cafco TPS Mortar, Isolatek International.
 - 6. Or pre-bid approved equal.
- J. Silicone Sealant: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealant. The following are acceptable products and manufacturers.
 - 1. Firestop Sealant 2000 or SL 2003, 3M Fire Protection Products.
 - 2. CFS-S SIL GG Elastomeric Silicone Firestop Sealant, Hilti Construction Chemicals, Inc.
 - 3. Pensil 100 Firestop Sealant, Specified Technologies, Inc.
 - 4. Metacaulk 835 or 880, The RectorSeal Corporation.
 - 5. Fyre-Sil or Fyre-Sil S/L, Tremco Inc.
 - 6. Or pre-bid approved equal.
- K. Solvent-Release-Curing Intumescent Sealant: Single-component, synthetic-polymer-based sealant of grade indicated below. The following are acceptable products and manufacturers.
 - 1. Fire Barrier CP 25N/S or CP 25S/L Caulk, 3M Fire Protection Products.
 - 2. Or pre-bid approved equal.
- L. Fire-Rated Pathway Device.
 - 1. Requirements:
 - a. The fire-rated pathway shall contain a built-in fire sealing system sufficient to maintain the hourly fire rating of the barrier being penetrated.
 - b. The self-contained sealing system shall automatically adjust to the installed cable loading and shall permit cables to be installed, removed, or retrofitted without the need to remove or reinstall firestop materials.
 - c. The pathway shall be UL classified and/or FM Global systems-approved and tested to the requirements of ASTM E814 (UL1479).
 - 2. Acceptable Products and Manufacturers:
 - a. E-Z Path, Specified Technologies Inc.
 - b. Or pre-bid approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive firestopping prior to submitting product data. Base selections and submittals on the findings of the Contractor's examination.
- B. Examine substrates and conditions for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Verify that system components are clean, dry, and ready for installation.

- D. Verify that field dimensions are as shown on the drawings and as recommended by the manufacturer.

3.2 GENERAL

- A. Prime substrates where recommended by firestopping manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond. Do not allow spillage and migration onto exposed surfaces.
- B. Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of work. Remove tape as soon as it is possible to do so without disturbing the firestopping seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOPS INSTALLATION

- A. Comply with the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications required.
- B. Install forming/damming materials and other accessories of types required to support and position fill materials during their application. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- C. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:
 - 1. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after work is completed, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 INSTALLING FIRESTOP JOINT SYSTEMS

- A. General: Comply with the firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.
- B. Install joint fillers to support and position firestop materials during application.
- C. Install systems by proven techniques that result in firestop materials:
 - 1. Directly contacting and fully wetting joint substrates.
 - 2. Completely filling recesses provided for each joint configuration.
 - 3. Providing uniform, cross-sectional shapes and depths relative to joint width that optimize movement capability.

- D. Tool non-sag firestop materials immediately after their application and prior to the time skinning begins. Form smooth, uniform beads of configuration indicated or required to:
 - 1. Produce fire-resistance rating.
 - 2. Eliminate air pockets.
 - 3. Ensure contact and adhesion with sides of joint.
- E. The Port, or its inspecting agency, will examine completed firestopping to determine, in general, if it is being installed in compliance with requirements.
- F. The Port, or its inspecting agency, will report observations promptly and in writing to the Contractor.
- G. Do not proceed to enclose firestopping with other construction until reports of examinations are issued.
- H. Where deficiencies are found, repair or replace firestopping so that it complies with requirements.

3.5 CLEANING

- A. Clean off excess fill materials adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.
- B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of substantial completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to produce firestopping complying with specified requirements.

END OF SECTION 078400

SECTION 079200 – JOINT SEALANTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes sealant at the following locations:
 - 1. Interior joints in vertical and horizontal nontraffic surfaces.
 - 2. Applications indicated in the joint sealant schedule at the end of this section.

1.2 REFERENCES

- A. ASTM: American Society of Testing and Materials
 - 1. ASTM C794: Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
 - 2. ASTM C834: Standard Specification for Latex Sealants
 - 3. ASTM C920: Standard Specification for Elastomeric Joint Sealants

1.3 SUBMITTALS

- A. Product Data: From manufacturers for each joint sealer product required with color cards, including instructions for joint preparation and joint sealer application.
- B. Samples for Initial Selection: Manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.
- C. Product Certificates: From manufacturers of joint sealers attesting that their products comply with specification requirements and are suitable for the use indicated.
- D. Qualification Data: Complying with requirements specified in "Quality Assurance" article. Include list of completed projects with project name, addresses, names of architects and owners, plus other information specified.
- E. Compatibility and Adhesion Test Reports: From elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.
- F. Product Test Reports: For each type of joint sealers indicated, evidencing compliance with requirements specified.

1.4 QUALITY ASSURANCE

- A. Obtain elastomeric materials only from manufacturers who will, if required, send a qualified technical representative to work site, for the purpose of advising the installer of proper procedures and precautions for the use of the materials.
- B. Installer Qualifications: Engage an installer who has successfully completed within the last 3 years at least 3 joint sealer applications similar in type and size to this work.
- C. Field-Constructed Mock-Ups: Prior to installation of joint sealers, apply elastomeric sealants to the following selected building joints as indicated below for further verification of colors selected from sample submittals and to represent completed work for qualities of appearance, materials and application:
 - 1. Joints in field-constructed mock-ups of assemblies specified in other sections which are indicated to receive elastomeric joint sealants in this section.
 - 2. Retain mock-ups during construction as standard for judging completed construction.

1.5 SYSTEM PERFORMANCE

- A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to work site in original unopened containers or bundles with labels containing information about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multi-component materials.
- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.7 WORK SITE CONDITIONS

- A. Pre-Installation Meeting:
 - 1. Meet with installer, the Port, sealant manufacturer's technical representative, and other trades involved in coordination with sealant work at the work site to review the procedures and time schedule proposed for installation of sealants and coordination with other work.
 - 2. Review each major sealant application required for the work.
- B. Conditions of Other Work:
 - 1. Examine the joint surfaces, backing, and anchorage of units forming sealant rabbet, and the conditions under which the sealant work is to be performed. Correct conditions detrimental to the proper and timely completion of the work and performance of the sealants.
 - 2. Do not proceed with the sealant work until unsatisfactory conditions have been corrected.

C. Weather Conditions:

1. Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation.
2. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength.
3. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in the lower third of manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures.
4. Coordinate time schedule to avoid delays.

1.8 WARRANTY

- A. Extend period during which installer of work of this section is required to return to job to make corrections for four additional years beyond the one-year warranty period.
- B. Repair or replace sealants which fail to perform as air-tight and water-tight joints; or fail in joint adhesion, cohesion or abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability; or appear to deteriorate in another manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Colors: For exposed materials, provide color as indicated, or if not indicated, as selected by the Port from manufacturer's standard colors. For concealed materials, provide the natural color which has the best overall performance characteristics.
- B. Hardness: As recommended by manufacturer for application shown, unless otherwise indicated.
- C. Modulus of Elasticity: Provide the lowest available modulus of elasticity which is consistent with exposure to weathering, indentation, vandalism, abrasion, support of loading, and other requirements.
- D. Compatibility: Before purchase of each required material, confirm its compatibility with each other material it will be exposed to in the joint system.
- E. Size and Shape: As shown or, if not shown, as recommended by the manufacturer for the type and condition of joint, and for the indicated joint performance or movement.
- F. Grade of Sealant: For each application, provide the grade of sealant (non-sag, self-leveling, no-track, knife grade, preformed, etc.) as recommended by the manufacturer for the particular condition of installation (locations, joint shape, ambient temperature, and similar conditions), to achieve the best possible overall performance. Grades specified herein are for normal conditions for installation.

2.2 LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. BASF Building Systems; Sonolac.
 - b. Bostik, Inc.; Chem-Calk 600.
 - c. Tremco Incorporated; Tremflex 834.
 - d. Or equal.

2.3 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Pecora Corporation; AC-20 FTR.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.
 - c. Or equal.

2.4 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

2.5 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant manufacturer, to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean joint surfaces immediately before installation of sealant or calking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or calking compound.
- B. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (adhesion), in compliance with ASTM C794 has successfully demonstrated that sealant bond is not impaired by coating or treatment. If laboratory test has not been performed, or shows bond interference, remove coating or treatment from joint surfaces before installing sealant.
- C. Etch masonry and stonework joint surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5 percent solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.
- D. Roughen joint surfaces on vitreous coated and similar non-porous materials, where sealant manufacturer's data indicates lower bond strength than for porous surfaces. Rub with fine abrasive to produce a dull sheen.

3.2 INSTALLATION

- A. Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.
- B. Prime or seal the joint surfaces wherever shown on the drawings or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- C. Install sealant backup rod for elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.
- D. Clean joint surfaces as recommended by sealant manufacturer. Provide bond-breaker or separator between sealant and joint filler, wherever recommended by manufacturer and wherever sealant is not compatible with joint filler.
- E. Install bond breaker tape where shown on the drawings and where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

- F. Employ only proven installation techniques which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete “wetting” of joint bond surfaces equally on opposite sides.
 - 1. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces.
 - 2. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.
- G. Install sealants to depths as shown on the drawings or, if not shown, as recommended by sealant manufacturer but within the following general limitations, measured at center (thin) section of bead.
 - 1. For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50 percent of joint width, but neither more than 1/2-inch-deep nor less than 1/4 inch deep.
 - 2. For joints sealed with non-elastomeric sealants and calking compounds, fill joints to a depth in the range of 75 percent to 125 percent of joint width.
- H. Spillage:
 - 1. Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces including exposed aggregate panels and similar rough textures. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either primer/sealer or the sealant/calcing compound.
 - 2. Remove excess and spillage of compounds promptly as work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.
- I. Where exposed, install with surface profile within plus or minus 1/16 inch from dimension shown except over 8 feet above floor plus or minus 1/8 inch, with surface uniformly smooth and free of wrinkles.

3.3 CURE AND PROTECTION

- A. Cure sealants and calking compounds in compliance with manufacturer’s instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability. Do not cure in a manner which would significantly alter material’s modulus of elasticity or other characteristics.
- B. Follow manufacturer’s procedures required for curing and protection of sealants and calking compounds during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of completion.

3.4 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application JS-1: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Perimeter joints between interior wall surfaces and frames of interior doors.
 - 2. Joint Sealant: Latex.
 - 3. Joint-Sealant Color: As selected by the Port from manufacturer's full range of colors.

- B. Joint-Sealant Application JS-2: Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Location:
 - a. Acoustical joints where indicated.
 - 2. Joint Sealant: Acoustical.
 - 3. Joint-Sealant Color: White.

END OF SECTION 079200

SECTION 092216 – NON-STRUCTURAL METAL STUD FRAMING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section includes non-load-bearing steel framing members for the following applications:
 - 1. Interior framing systems (e.g., supports for partition walls, framed soffits, furring, etc.).
 - 2. Interior suspension systems (e.g., supports for ceilings, suspended soffits, etc.).

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 092900 "Gypsum Board" for gypsum wall systems supported by non-load-bearing steel framing.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

PART 2 - PRODUCTS

2.1 NON-LOAD-BEARING STEEL FRAMING, GENERAL

- A. Framing Members, General: Comply with ASTM C 754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C 645 requirements for metal, unless otherwise indicated.
 - 2. Protective Coating: ASTM A 653/A 653M, G40, hot-dip galvanized, unless otherwise indicated.

2.2 STEEL FRAMING FOR FRAMED ASSEMBLIES

- A. Steel Studs and Runners: ASTM C 645.
 - 1. Minimum Base-Metal Thickness: 20 gauge, 0.0329 inch, unless noted otherwise.
 - 2. Depth: 3-5/8 inches, or as indicated on drawings.
- B. Slip-Type Head Joints: At all new walls extending to underside of structural deck, provide one of the following:
 - 1. Single Long-Leg Runner System: ASTM C 645 top runner with 2 inch deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top runner and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
 - 2. Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- C. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
 - 1. Minimum Base-Steel Thickness: 0.0359 inch.

2.3 SUSPENSION SYSTEM COMPONENTS

- A. Tie Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.0625-inch-diameter wire, or double strand of 0.0475-inch-diameter wire.
- B. Hanger Attachments to Concrete:
 - 1. Anchors: Fabricated from corrosion-resistant materials with holes or loops for attaching wire hangers and capable of sustaining, without failure, a load equal to 5 times that imposed by construction as determined by testing according to ASTM E 488 by an independent testing agency.
 - a. Type: Postinstalled, expansion anchor.
 - 2. Powder-Actuated Fasteners: Suitable for application indicated, fabricated from corrosion-resistant materials with clips or other devices for attaching hangers of type indicated, and capable of sustaining, without failure, a load equal to 10 times that imposed by construction as determined by testing according to ASTM E 1190 by an independent testing agency.
- C. Wire Hangers: ASTM A 641/A 641M, Class 1 zinc coating, soft temper, 0.162-inch diameter.
- D. Flat Hangers: Steel sheet, 1 by 3/16 inch by length indicated.
- E. Carrying Channels: Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0538 inch and minimum 1/2-inch-wide flanges.
 - 1. Depth: 1-1/2 inches.
- F. Furring Channels (Furring Members):
 - 1. Steel Studs: ASTM C 645.
 - a. Minimum Base-Metal Thickness: 0.0312 inch.
 - b. Depth: 3-5/8 inches.

2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the work and that hangers will develop their full strength.
 - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
 - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
 - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C 754, except comply with framing sizes and spacing indicated.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C 840 that apply to framing installation.
- B. Install supplementary framing, and blocking to support fixtures, equipment services, furnishings, or similar construction.
- C. Install bracing at terminations in assemblies.
- D. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- B. Install studs so flanges within framing system point in same direction.
 - 1. Space studs as follows:
 - a. Single-Layer Application: 16 inches o.c., unless otherwise indicated.
- C. Install tracks (runners) at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts penetrating partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb, unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings, unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- D. Direct Furring:
 - 1. Screw to framing.
 - 2. Attach to concrete with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- E. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING SUSPENSION SYSTEMS

- A. Install suspension system components in sizes and spacings indicated on drawings, but not less than those required by referenced installation standards for assembly types and other assembly components indicated.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

- C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 5. Do not attach hangers to steel roof deck.
 6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
 8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Seismic Bracing: Sway-brace suspension systems with hangers used for support.
- F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
- G. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section includes the following:
 - 1. Interior gypsum board, trim and finishing.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

- A. Section 092216 "Non-Structural Metal Stud Framing" for non-structural framing and suspension systems that support gypsum board.
- B. Section 099100 "Painting" for primers applied to gypsum board surfaces.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- B. Do not install interior products until installation areas are enclosed and conditioned.

- C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PANELS, GENERAL

- A. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.2 INTERIOR GYPSUM BOARD

- A. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.
- B. Gypsum Board, Type X: ASTM C 1396/C 1396M.
 - 1. Thickness: 5/8 inch.
 - 2. Long Edges: Tapered.

2.3 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
 - 1. Interior Gypsum Wallboard: Paper.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints and damaged surface areas, use setting type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use drying type, all purpose compound.
 - 3. Fill Coat: For second coat, use drying type, all purpose compound.
 - 4. Finish Coat: For third coat, use setting type, sandable topping compound.

2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

- B. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - 1. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - 2. Fire Resistance Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- C. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- D. Acoustical Sealant: As specified in Section 079200, Joint Sealants.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with installer present, and including welded hollow metal frames and framing, for compliance with requirements and other conditions affecting performance.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- B. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- C. Locate edge and end joints over supports, Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- D. Form control and expansion joints with space between edges of adjoining gypsum panels.
- E. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.

- F. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4 to 1/2 inch wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- G. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- H. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Type X: All surfaces, unless otherwise indicated.
- B. Single Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated or required by fire resistance rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire resistance rated assembly.
 - 3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLING TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

3.5 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.

- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in other Division 9 sections.

3.6 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 099100 – PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes painting work, generally as follows:
 - 1. Interior items and surfaces that are new, or listed on Finish Schedule, or indicated on drawings by notes or symbols, or by any of these methods. In addition, paint items specified in this section to be painted which are not otherwise indicated to be painted.
 - 2. If a new item or surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. Resolve any conflicts of material colors with the Port prior to application.
 - 3. Repair of existing surfaces as specified in this section.
 - 4. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified in other sections.
- B. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Prefinished items include the following factory-finished components:
 - a. Glass and glazing.
 - b. Metal ceilings.
 - c. Rubber base.
 - 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Furred areas.
 - b. Ceiling plenums.
 - c. Duct shafts.
 - 3. Finished metal surfaces include the following:
 - a. Anodized aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - 4. Operating parts include moving parts of operating equipment and the following:
 - a. Coiling doors.
 - b. Exposed door closer arms.
 - 5. Labels: Do not paint over Underwriters Laboratories Inc. (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 for volatile organic compound (VOC) content restrictions.
- B. Division 5 for shop priming ferrous metal.
- C. Division 9 for surface preparation of gypsum board.
- D. Divisions 26 and 27 for painting of electrical work.

1.3 REFERENCES

- A. MPI: Master Painters Institute

1.4 SUBMITTALS

- A. Product Data: Describe every required paint system.
 - 1. Material List: Provide an inclusive list of surfaces and proposed coating materials, including anticipated minimum dry film thickness of each coat. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification. Include composition of pigment and vehicle, with percentages.
 - 2. Manufacturer's certification that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
- B. Drawdowns: Submit 8-inch x 10-inch drawdowns for review of color and texture only. Resubmit samples as requested until required sheen, color and texture is achieved.
- C. Samples: Provide samples of all paint materials as specified in the Color Schedule article at the end of this section.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with the requirements of Section 016116, Volatile Organic Compound (VOC) Content Restrictions.
- B. Reference Standard for Workmanship: MPI.
- C. Show product name on label of containers identical with that used in product data submitted as specified above.
- D. Field Control Samples:
 - 1. Request review of first finished room, space, or item of each color scheme required as a sample of selected colors, finish, texture and workmanship; under illumination equal to that expected at occupancy.
 - 2. For spray or roller application, paint at least 100 sq. ft. of surface.
 - 3. Consider approved samples as the project standard.
- E. The thickness of the dry paint film will be verified at various intervals and locations during the course of the painting work. At each test, several readings will be taken to determine the average mil thickness.
 - 1. An area will be considered deficient where, when compared to the dry film thickness specified by the manufacturer or calculated from the recommended spreading rate, the average of 5 readings is more than 10 percent low or a single reading is more than 30 percent low.
 - 2. Paint will be considered testable after twice the manufacturer's recommended time for recoating or 24 hours, whichever is longer.

- F. Apply and reduce materials only as specified or recommended by the manufacturer's printed instructions. Where manufacturer has made additional recommendations apparently in conflict with these specifications, allow for review and approval of additional recommendations before proceeding.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original containers, materials specified by name, manufacturer or standard with labels legible and intact.
- B. Store in suitable location as directed, in accordance with label instructions.
- C. Do not store paint-soiled rags, waste, etc., on premises, except where stored in metal containers with tight metal covers.

1.7 PROJECT CONDITIONS

- A. Comply with paint manufacturer's recommendations concerning environmental conditions under which coatings and coating systems may be applied.
 - 1. Apply paint only when surface and air temperatures are above 50°F.
 - 2. Do not apply exterior paint in rainy weather.
 - 3. Do not apply paint in direct sun or when surface is hot or under other conditions which prevent proper application and drying.
- B. Do not apply finish in areas where dust is being generated.
- C. Protect work of other trades. Correct painting related damage by cleaning, repairing or replacing and refinishing, as directed.
- D. Do not paint any moving parts of operating units, or over any equipment identification, performance rating, name or nomenclature plates or code-required labels.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS OF PAINT MATERIALS

- A. Products shall comply with MPI standards indicated and shall be listed in the "MPI Approved Products List."

2.2 MATERIALS

- A. See painting schedule at the end of this section.
- B. Provide brands and qualities of materials for use on work exactly as specified.
- C. Provide products of a single manufacturer for coating systems applied to each type of surface.

- D. Coordination: Provide finish coats which are compatible with prime paints used. Provide barrier coats over incompatible primers where required. Submit written notification of anticipated problems using specified coatings with substrates primed by others.
- E. Paint Colors:
 - 1. Colors as indicated in the Color Schedule at the end of this section.
 - 2. Paint area of each color for observation, review and revisions before batch mixing of colors, or shipping large quantities of that color to job. Allow revisions to approved colors and textures after review of initial area of each color.
 - 3. Vary top coats in shade from preceding coat without affecting finish color.
- F. Mixing and Tinting:
 - 1. Job mix or job tint only if approved. Mix only in pails in suitably sized non-ferrous or oxide-resistant metal pans.
 - 2. Strain to remove lumps and specks.
 - 3. Use tinting colors recommended by manufacturer for the specific type of finish.
 - 4. Add non-mercuric fungicidal agent to exterior finishes by manufacturer.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that spaces are broom clean, with surfaces free of foreign matter.
- B. Moisture Content:
 - 1. Surfaces: Suitably dry and adequately protected from dampness.
 - 2. Follow recommendations of paint manufacturer for allowable moisture for specific type surfaces.
- C. Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution, permanence or quality of work and which cannot be put into an acceptable condition through preparatory work as specified. Correct unsatisfactory conditions.
- D. Proceed with surface preparation and coating application only after conditions are suitable.

3.2 SURFACE PREPARATION

- A. Do not apply finishes until surfaces are dry and clean and in proper condition to receive finish.
- B. In addition to painting specified, sand and patch prime coats specified under other sections.
- C. Perform preparation and cleaning procedures in accordance with coating manufacturer's instructions for each substrate condition.
- D. Remove hardware and accessories, machined surfaces, plates, lighting fixtures and similar items in place and not to be finish-painted, or provide surface-applied protection. Reinstall removed items.

- E. Plaster and Wallboard Materials:
 - 1. Test plaster with one percent solution of phenolphthalein in alcohol for dryness and excess acid. Treat excess lime with zinc sulfate solution after observation.
 - 2. Rake cracks, scratches and abrasions. Fill with thin layers of patching plaster or joint cement as appropriate.
 - 3. Sand smooth; do not raise nap of paper on wallboard.
- F. Ferrous Metal Surfaces:
 - 1. Remove dirt and grease with mineral spirits.
 - 2. Remove dust, mill scale, and defective paint down to sound surface using scraper, sandpaper or wire brush as necessary. Clean rusted surfaces down to bare metal.
 - 3. Feather edges of sound paint by grinding.
 - 4. Where large areas of bare metal are exposed prime with anti-rust primer recommended for this exposure.
- G. Galvanized Steel and Aluminum Surfaces:
 - 1. Clean surface with solvent to remove oily residue. Dry with clean cloth.
 - 2. Prime with anti-rust 2-coat primer system recommended for this exposure.
- H. For surface preparation of other materials not specifically noted, provide appropriate primers and cleaning agents.

3.3 SURFACE PREPARATION, EXISTING SURFACES

- A. For surfaces damaged during construction, or indicated as being re-painted: Remove existing loose, blistered, scaled or crazed finish to bare base material surface. Where new work joins existing work, prepare existing surfaces extending to the nearest break in the plane. Wash surfaces with TSP and water or other solution as required.
 - 1. Prevent impaired bond or bleed through by removing accumulated films of wax, oil, grease, smoke or other foreign matter.
 - 2. After washing, rinse with potable water and let thoroughly dry.
- B. Semi-Gloss surfaces: Wash and rinse as noted above, then wipe with liquid de-glosser or other acceptable preparation compound.
- C. Existing Painted Concrete (surfaces of existing building exposed at completion of this work):
 - 1. Remove loose, flaking and blistered paint.
 - 2. Fill contraction and other cracks with elastomeric sealant, work well into the cracks to prevent further leaks. Wipe off excess material.
 - 3. Apply latex base filler or suitable prime and fill material to fill "pock marks," air bubbles and other surface irregularities, including those due to paint removal (or sand existing finish to featheredge). Wipe off excess; let dry at least 24 hours before applying specified primer.
- D. Existing Painted Ferrous Metal:
 - 1. Remove rust and loose paint to bare metal; solvent wash and prime as specified for new work.
 - 2. Sand rough edges of bare areas to feather edge at adjacent sound paint before priming.

- E. Existing Gypsum Board Walls and Ceilings:
 - 1. Bring to attention of appropriate trades, in timely manner, broken and disintegrated wallboard or areas with major damage or holes.
 - 2. Fill cracks and defects with spackle, "Swedish putty" or approved patching plaster; vinyl base spackle may be used at gypsum board. Apply texture as required to match existing adjacent surfaces.
 - 3. Prime bare, filled and patched surfaces with primer specified.

3.4 APPLICATION

- A. Paint materials may be applied to fields of walls, ceilings and painted doors with rollers or airless spray equipment. Brush-paint other work except as specifically indicated.
 - 1. Doors:
 - a. Where silk-screened signage is applied to painted doors as specified elsewhere, apply paint to doors with airless spray equipment.
 - b. Lay off other painted doors with roller of acceptable texture after application of paint.
 - 2. Apply each coat evenly, without brush marks, skipped or missed areas; and without sags, runs or other blemishes.
 - 3. Where spray application is permitted, spray each coat without streaking, lapping or pile up of paint, and lay off with roller for light stippled surface (except as noted).
- B. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted. Apply prime coat to material which is required to be painted or finished, and which has not been prime coated by others.
- C. Apply each material at not less than the manufacturer's recommended spreading rate, to provide a total dry film thickness of not less than 3.0 mils for the coating systems applied under this section.
- D. Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.
- E. Observation of Surfaces:
 - 1. Do not apply additional coats until completed coat has been reviewed and approved.
 - 2. Only observed coats of paint will be considered in determining number of coats applied.
- F. Paint surfaces behind furniture the same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only, wherever possible.
 - 1. Paint interior surfaces, where visible through registers or grilles, flat, non-specular black.
 - 2. Paint backsides of access panels, and removable or hinged covers to match exposed surfaces.
- G. Sand lightly between succeeding coats.
- H. Finish door edges, tops and bottoms to match faces.
- I. Refinish whole wall where portion of finish has been damaged or is not acceptable.

- J. Make edges of paint adjoining other materials or colors clean and sharp without overlapping. Exercise care that paint does not lap or splatter onto surfaces scheduled to receive other finishes or which are not to be painted.

3.5 CLEANING

- A. Remove spilled, splashed or spattered paint.
- B. Do not mar surface finish of item being cleaned.
- C. Leave storage space clean and in condition required for equivalent spaces in project.
- D. Produce a satisfactory finish by painting or repainting as directed, surfaces from which paint spatters cannot satisfactorily be removed.

3.6 PAINTING SCHEDULE

- A. Interior Surfaces, including Walls and Ceilings of Gypsum Wallboard:
 - 1. First Coat: PVA polyvinyl acetate primer.
 - 2. Second and Third Coats: Water-based eggshell enamel; top coat applied with fine stippling roller.
 - 3. Provide products listed in the MPI Approved Products List.
 - 4. Colors and Gloss: See color schedule.
- B. Interior Metalwork:
 - 1. In addition to priming and touch-up, apply two coats of solvent based semi-gloss enamel.
 - 2. Provide products listed in the MPI Approved Products List.
 - 3. Third Coat at Flatwork: Match adjoining finish.
 - 4. Apply to:
 - a. Exposed ductwork and wall grilles: Omit third coat at ductwork. Ductwork in mechanical rooms not painted under this section.
 - b. Exposed piping: Omit third coat.
 - c. Electrical and electronic panels, including metal faces of wall-mounted exit signs.
 - d. Ductwork and piping need not be painted where ceiling is not finished, unless otherwise noted.
 - e. Apply also to other interior metal surfaces not scheduled for other finishes; work of this article is not limited to the items listed above.
 - 5. Basic Criteria for Painting Interior Metal Items:
 - a. Where suspended ceilings are installed, paint all exposed items below and at the perimeter.
 - b. Where metal ceiling is scheduled, paint exposed items in cavity above ceiling, including sprayed fireproofing.
 - c. At other locations, painting of mechanical and electrical items is not required.
 - 6. Spray-apply to exposed door closer covers (remove from door first).
 - 7. Colors and Gloss: See color schedule.
- C. Take special care to keep the items scheduled for “No Finish” clean; finish not required.

3.7 COLOR SCHEDULE

A.	PT-1	Miller 5760W	Satin	'Port White' – Typical wall and ceiling color.
B.	PT-2	Miller 5760W	Semigloss	'Port White' – Typical door and frame color.
C.	PT-3	Miller 5742W	Semigloss	'Port Beige' – Egress doors and frames.

END OF SECTION 099100

SECTION 101400 – IDENTIFYING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes the fabrication and installation of building code, identifying and wayfinding signage as scheduled and indicated in the drawings.
- B. The Port will furnish the following:
 - 1. Production ready artwork will be provided in vector files saved in Adobe Illustrator (AI) format.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 260500, Common Work Results for Electrical.
- B. Section 271000, Structured Cabling.
- C. Section 260933, Central Dimming Controls.

1.3 COORDINATION

- A. Coordinate location and anchor point installation of the following sign types for structural, digital and electrical integration:
 - 1. Ceiling mounted sign types with cable connections: CM2 and CMB2.
 - 2. Wall mounted sign types: CBL, FM2, FM3, FM4, PB1, WM2, WM4.

1.4 SUBMITTALS

- A. Product Data:

For each type of product indicated include manufacturer's product specifications, anchor details and installation instructions for products used in sign fabrication, including paint products, lighting and electrical devices.
- B. Shop Drawings:
 - 1. Submit complete shop drawings for fabrication and installation of signs and related work including plans, elevations and details of components and attachments to other work. Indicate materials and profiles of each member, fitting, joinery, finishes, fasteners, anchorages and accessory items. Include anchor type, material and spacing for attachment to other work.
 - 2. For structural elements include details of cuts, connections, camber, holes and other pertinent data. Indicate welds by standard AWS symbols, and show size, length and type of each weld.
 - 3. Provide setting drawings, templates and directions for the installation of anchor bolts and other anchorages shall be installed in work described in other sections.

4. Show sign mounting heights, locations of supplementary supports shall be provided under other sections, and accessories.
 5. Provide message list, typestyles, graphic elements, including tactile characters and braille, and layout for each sign.
- C. Typefaces: Submit digital file of live text in Adobe Illustrator of full typographic alphabets for each typeface and weight specified indicating origin of typeface.
- D. Material & Finish Samples: Submit three (3) samples of each sign component material showing finishes, colors, surface textures and qualities of manufacture and design including graphics. Component material samples must be approved before completed product samples are fabricated. Size of samples shall be at least 6" x 6", but not larger than 8-1/2" x 11".
- E. Sign Layouts: Submit typical typographic layouts for each typical sign showing letter, word and line spacing at a minimum scale of 1 1/2" = 1'-0" for large signs, half full scale for small signs. Request digital artwork from the Port prior to preparing sign layouts.
- F. Completed Product Samples: Upon approval of all material and finish samples, submit full-size sample units of completed product for the following sign types. Do not begin fabrication on the remaining signs in each sign type until approval has been received from the Port of completed product sample. 100% Completed and approved product samples may be installed. Remaining samples will be retained by the Port unless noted otherwise.:

1. Completed Product Samples

- a. Sign Type AE2: Completed sign. Sign may be installed if approved.
- b. Sign Type AE3: Completed sign. Sign may be installed if approved.
- c. Sign Type CBL: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
- d. Sign Type CM2: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
- e. Sign Type CMB2: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
- f. Sign Type DR1: Completed sign. Sign may be installed if approved.
- g. Sign Type DRE1: Completed sign. Sign may be installed if approved.
- h. Sign Type FD6: Completed sign. Sign may be installed if approved.
- i. Sign Type FM2: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
- j. Sign Type FM3: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
- k. Sign Type FM4: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
- l. Sign Type GN1: Completed sign. Sign may be installed if approved.
- m. Sign Type ID1: Completed sign. Sign may be installed if approved.
- n. Sign Type IF1: Completed sign. Sign may be installed if approved.
- o. Sign Type IFW: Completed sign. Sign may be installed if approved.
- p. Sign Type IF2: Completed sign. Sign may be installed if approved.
- q. Sign Type K10: Completed sign. Sign may be installed if approved.
- r. Sign Type LG1: Completed letter.
- s. Sign Type MW1: Completed sign. Sign may be installed if approved.
- t. Sign Type MW2: Completed sign. Sign may be installed if approved.

- u. Sign Type PB1: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
 - v. Sign Type PGL7: Completed sign. Sign may be installed if approved.
 - w. Sign Type RN1: Completed sign. Sign may be installed if approved.
 - x. Sign Type RR1: Completed sign. Sign may be installed if approved.
 - y. Sign Type RR10: Completed sign. Designer to retain sign.
 - z. Sign Type ST2: Completed sign. Sign may be installed if approved.
 - aa. Sign Type ST4: Completed sign. Sign may be installed if approved.
 - bb. Sign Type VM2: Completed sign. Sign may be installed if approved.
 - cc. Sign Type VM4: Completed sign. Sign may be installed if approved.
 - dd. Sign Type WM2: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
 - ee. Sign Type WM4: Partial completion reviewed at shop visits during fabrication.
Completed sign may be installed if approved.
- G. Product Sample Documentation: After material & finish samples are approved, provide photo documentation of fabrication at 50% and 90% of completion for signs requiring shop visit review. Label all photos with sign type name.
- H. Qualification Data: For installer and fabricator, submit qualification data for firms and persons specified in quality assurance article to demonstrate their capabilities and experience. Include list of completed projects identifying project name, address, designer and owner.
- I. Periodic Shop Visits: Allow review of signage by Designer and Port during fabrication progress.
- J. Maintenance Data: Include cleaning recommendations. Provide information on methods and products for field paint repair and graffiti removal.
- K. Warranty: Special warranty specified in this section.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: For each sign form and graphic image process indicated furnish products from shop that employs skilled workers who custom-fabricate products similar to those required for this work and whose products have a record of successful in-service performance.
1. The completed installation shall conform to all applicable federal, state and local codes, ordinances and regulations.
 2. Obtain all necessary permits and inspections required by the governing authorities having jurisdiction over this work.
- B. Source Limitations for Signs: Obtain each sign type and graphic image process indicated from a single manufacturer.
- C. Fabrication Observation: During pre-construction meeting, discuss construction milestones for fabrication observation, review and approval. Fabricator shall supply review schedule and notify Port 15 days prior to shop visits, up to ten shop visits may be required. Photos of identified with sign type shall be part of meeting record.
- D. Periodic Shop Visits: In addition to scheduled fabrication observation, allow review of signage by Port during fabrication progress.

- E. Where specified materials or methods exceed minimum standards allowed by applicable codes, the more stringent requirement shall apply.
- F. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.6 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of signs in exterior locations shall be performed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to insure proper fitting of work. Verify recess openings by field measurements before fabrication and indicate measurements on shop drawings.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery of Materials: Deliver work to project site when adjacent finishes are complete and ready for immediate installation.
- B. Handling Materials and Equipment: Handle finished product in careful manner in order not to damage or mar surfaces of finished product or adjacent finished surfaces.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of metal and polymer finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image colors and sign lamination.
 - c. Deterioration of applied vinyl graphics.
 - d. Deterioration of lighting quality and consistency.
 - 2. Warranty periods from substantial completion:
 - a. Vinyl graphics: 6 years.
 - b. Direct printed graphics: Minimum of 5 years against fading, cracking, chipping for interior use.
 - c. LED lighting array and driver as assembly: 5 year full replacement, non-prorated warranty is required on electronic components.
 - d. LED display: Minimum of 1 year

PART 2 - PRODUCTS

2.1 MANUFACTURED UNITS

- A. Where electrical and low voltage devices are indicated, provide UL-listed components installed in compliance with applicable codes. Provide a UL listing on the completed assembly.
- B. Sign Type PB1: Sign cabinet hinge extrusion. Signcomp #KSF/55 kit, single-faced narrow-body aluminum extruded sign cabinet assembly. Face frame #2055 Signcomp hinged aluminum cabinet door.
- C. Sign Type CM2, CMB2, FM3, FM4, and WM4. Signcomp frame #3095 – front load soft signage frame.
- D. Sign Type FM2, and WM2. Signcomp frame #3092 – front load soft signage frame.
- E. Sign Type CBL: LEDCONN LuxFIT LED Light Panel: X-CS-4100-N-H or equal

2.2 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: Provide signage, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects.
 - 1. Temperature Change (Range): 100 deg F, ambient; 160 deg F material surfaces.
- B. Fabrication Tolerances: Sign panels shall show no visual distortion.
- C. Panel Alignment at Butt Joints: Sign panels shall align parallel and flat without visible variation when viewed from the normal viewing distance.
- D. Fire-Test-Response Characteristics: Applied materials, 0.036-inch thick or more, shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 - 1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 75 or less.
 - b. Smoke-Developed Index: 450 or less.

2.3 GRAPHIC COMPONENTS

- A. General:
 - 1. All graphics, including text, symbols and arrows shall be executed in such a manner that all edges and comers are true and clean.
 - 2. Type Sizes: As indicated on drawings for particular units.
 - 3. Typefaces: All work shall precisely replicate the typefaces as indicated on drawings.
 - 4. Typographic Spacing: Match letter, word and line spacing as indicated on drawings for all text configurations.
 - 5. Symbols and Arrows: Match artwork as indicated on the drawings.

B. Acrylic Sign Panels:

1. Fabricate units to configurations and sizes as indicated on reviewed shop drawings. Edges and surfaces shall be straight, true, smooth to the touch and not sharp.
2. Face for window signs: Optix NG – Non-Glare Acrylic Heavy Matte.
3. Face for second surface graphic application: Plexiglas Perfexion Non-Glare Acrylic sheet ready for second surface (backside) application of graphics. Thickness as indicated on drawings.
4. Finish: As indicated on drawings.
5. Typeface: As indicated on drawings.
6. Provide strippable protective coating or wrapping.

C. Photopolymer Sign Panels:

1. Fabricate units to configurations and sizes as indicated on reviewed shop drawings. Edges and surfaces shall be straight, smooth and true.
2. Tactile and Braille Messages: Photo-chemically etch to create message to comply with ADA Guidelines. Braille dots shall be smooth and dome shaped. The Contractor shall be responsible for all text translation from English to Braille.
3. Assembly: Laminate photopolymer sign face to substrate backing with VHB adhesive.
4. Colors: Match colors as indicated on drawings.
5. Where clear photopolymer is used, clear coat sign to prevent yellowing.
6. Exterior Sign Locations: Fabricate using exterior grade photopolymer, Jet#388EX, or equal.

D. Pressure Sensitive Vinyl Graphics:

1. Provide pressure sensitive vinyl messages installed at finished surfaces in the sizes, mounting heights, letter spacing, and alignment indicated on drawings.
2. Sign messages shall be provided pre-spaced in type sizes, colors and typeface as shown on the drawings and specified herein. All lettering shall be executed in such a manner that all edges and corners of letterforms are true, clean, photographically precise and accurately reproduce the typeface. Messages shall be smooth and free of air bubbles, open cuts, bulging and foreign matter between message and application surface.
3. Material: 3M Opaque Series 180, matte finish; ORACAL charcoal metallic 937 for glass, matte finish; Reflective Series 680, diamond grade retro-reflective white; or equal.
4. Color and Gloss: As indicated on drawings.

E. Digitally Printed Vinyl Graphics:

1. Substrate: 3M film.
2. Printing: All graphics shall be printed consistently using solvent or UV ink jet printer output.
3. Lamination: 3M overlamine.
4. Resolution: true 1200 x 1200 dpi.
5. Install Conditions: Install area will have a constant minimum temperature of not less than 60 degrees for at least seven days prior to and throughout the installation period for seven days after.
6. Installation: Graphics will be installed by certified installer per manufacturer recommendation to preserve warranty.

F. Digitally-Printed Fabric:

1. Material: 100% Polyester / Berger Textiles, Samba Twin FR.

2. Finish: Direct digital print to fabric using UV treated inks. Matte finish with smooth, even distributed printed surface intended for back illumination.
3. Weight: 195 g/m².
4. Thickness: 250 µm.
5. Stretch Length: < 1,0%.
6. Stretch Width: < 1,4%.
7. Transmission Factor: 38%.
8. Whitepoint: 94, 1, -6 L*a*b.
9. Flame Retardancy: Tested and certified as flame retardant in accordance with the National Fire Protection Association – NFPA 701: Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.
10. Assembly: Secure to Signcomp #3095 Front Load Soft Aluminum Signage Frame, free of creases and fraying, and provide pull tabs for future removal and replacement of fabric sign face.

G. Direct Printed Graphics:

1. Construction/substrate: as indicated on drawings.
2. Printing: All pictorials shall be printed on UV ink jet printer output at 6 color CMYK + Lt. Magenta + Lt. Cyan for maximum color gamut.
3. Resolution: True 1200 x 1200 dpi or better.
4. Double passes which show as double images, faint or fuzzy line and edge quality will not be accepted.

H. Dimensional Metal Letters:

1. Material: As indicated on drawings.
2. Construction: Precision cut from sheet or plate in the thickness and sizes indicated on drawings. Edges shall be square to face of letter and free from cut marks or other imperfections. Corners and kerfs shall be square, or as indicated on the drawings.
3. Finish: As indicated on drawings.

I. Tactile Lettering:

1. Fabricate letters to configurations and sizes as indicated on reviewed shop drawings. Edges and surfaces shall be straight, smooth and true.
2. Apply precision cut acrylic letters to face of door jamb with Very High Bond adhesive. Message to stand off 1/32" from face of door jamb surface.
3. Braille Message: Press fit 1/16" diameter clear acrylic beads into pre-drilled holes to create Class II Braille. Contractor shall be responsible for all text translation from English to Class II Braille.
4. Finish and color: As indicated on drawings.
5. Typeface: As indicated on drawings.

2.4 METALS

A. Steel: Provide steel in form indicated complying with ASTM requirements:

1. Tube: ASTM A 500, Grade B.
2. Shapes and Plates: ASTM A 36.
3. Sheet: ASTM A 240, Type 304.

B. Stainless Steel:

1. Sheet: ASTM A240, Type 304.

2. Extrusion: ASTM A167.
3. Wire: ASTM A5555.
4. Bar: ASTM A267.
5. Plate: ASTM A167.

C. Aluminum:

1. Sheets: ASTM B 209, 5052-H32.
2. Extruded Bar and Shapes: ASTM B221, Alloy 6063-T6.
3. Extruded Structural Pipe and Tube: ASTM B429.

2.5 MISCELLANEOUS PRODUCTS AND MATERIALS

A. Fasteners: Of same basic metal and alloy as fastened metal, unless otherwise indicated. Do not use metals which are corrosive or otherwise incompatible with metals joined.

1. Fastening devices between dissimilar materials shall be 300 Series non-magnetic stainless steel.
2. Material: Galvanically compatible with adjacent materials.
3. Finish: Where exposed to view match adjacent finish.
4. Provide fasteners of the type, size and spacing required for proper performance.

B. Welding Electrodes and Filler Metal: Type and alloy of filler metal and electrodes as recommended by producer of metal shall be welded, complying with applicable AWS specifications, and as required for color match, strength and compatibility in the fabricated items.

C. Adhesives:

1. General: Provide low or no VOC adhesives.
2. Very High Bond (VHB) Adhesive: 3M Company, product as recommended by manufacturer for type of use, materials and fabrication; or equal.
3. Foam Tape: Double faced pressure sensitive foam tape, 3M Company, product in width and thickness as recommended by manufacturer for type of use, materials and fabrication; or equal.
4. Silicone: FS TT-S-001543B, Class A, silicone sealant #1200, General Electric Company; or equal.
5. Epoxy: Epoxy shall be two-component thermosetting epoxy adhesive with 100% solids content. Acceptable products include #NP-428, Miracle Adhesives Corporation; Chemlok #304, Hughson Chemical Division of Lord Corporation; or equal.

2.6 METAL FABRICATION

A. General:

1. Use materials of size and thickness indicated or, if not indicated, as required to produce strength and durability in finished product for use intended. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.
2. For exposed work fabricate true to line and level with accurate angles and surfaces and straight sharp edges. Exposed edges shall be square unless otherwise shown. Ease corners and edges where exposed to public touch. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

3. Provide metal work composed of metals of the forms and types which comply with requirements of referenced standards and which are free from surface blemishes where exposed to view in the finished unit. Exposed-to-view surfaces exhibiting pitting, seam marks, roller marks, "oil canning", stains, discolorations or other imperfections on finished units will not be accepted.
 4. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, flat-head screws or bolts.
 5. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.
 6. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.
- B. Metal Protection:
1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum shall contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Welded Construction:
1. Select type of weld for best appearance. Use concealed and plug welds as indicated on drawings.
 2. Comply with American Welding Standards (AWS) Code for procedures, appearance and quality of welds, and methods used in correcting welding work. Select weld sizes, sequence and equipment to limit distortions to allowable tolerances. Surface "bleed" of back side welding on exposed surfaces will not be accepted.
 3. Assemble and weld structural system by methods which shall produce true alignment of axes without warp. Grind butt welds flush; dress all exposed welds, feather edges onto base material and polish as required for smooth painted surfaces.
 4. Weld corners and seams continuously, complying with AWS recommendations. All exposed welds shall be clean, consistent and uniform in appearance. Grind and finish exposed welds smooth and flush to match adjacent contours and finish. Remove loose rust, mill scale, and spatter, slag or flux deposits.
- D. Miscellaneous Trim and Hardware:
1. Provide shapes and sizes as required for profiles shown. Except as otherwise noted, fabricate units from structural shapes, plates and bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation with other work.
 2. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous shapes as required for supporting of signage.
 3. Fabricate items to sizes, shapes and dimensions required.
- E. Holes for Other Work:
1. Provide holes required for securing other work to structural system, and for the passage of other work through steel members, as shown on the final shop drawings.
 2. Provide threaded nuts welded to framing, and other specialty items as shown to receive other work.
 3. Drill holes 1/16" oversize for field alignment and fitting.

4. Cut, drill or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning.
 5. Holes required for other work to be smooth and free of sharp edges so not to cut pass through cabling.
- F. Shop Assembly:
1. Fabricate units to configurations indicated on reviewed shop drawings.
 2. Provide required text and artwork as indicated on reviewed shop drawings.
 3. Preassemble 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 reassembly and coordinated installation.
- G. Surface Preparation: After inspection and before finishing, clean metal work shall be painted. Clean metal by “wheel abrader” process or other method to achieve results defined by Steel Structures Painting Council (SSPC) for “SP-6 Commercial Blast Cleaning”.
- H. Preparation for Shipping and Handling: Provide strippable protective coating or wrapping.

2.7 COATINGS FOR METAL, ACRYLIC AND PHOTOPOLYMER

- A. Basis-of-Design Products: Provide the following over substrates indicated, or equal.
1. Aluminum: Provide manufacturer’s recommended primers, catalysts and reducers. Match colors, gloss and finish as indicated in drawings.
 - a. Matthews Acrylic Polyurethane (MAP).
 - b. DuPont Imron Ultra Low VOC products.
 - c. Or equal.
 2. Steel: Provide manufacturer’s recommended primers, catalysts and reducers. Match colors and gloss as indicated.
 - a. Matthews Acrylic Polyurethane (MAP).
 - b. DuPont Imron Ultra Low VOC products.
 - c. Or equal.
 3. Acrylic and Photopolymer: Match colors and gloss as indicated.
 - a. Matthews Tie Bond, 74-777SP or as recommended by manufacturer. Followed by Matthews Acrylic Polyurethane (MAP).
 - b. DuPont Imron Ultra Low VOC products.
 - c. Or equal.
 4. Clearcoat: Provide protective clearcoat over all finished surfaces, using clearcoat compatible with and manufactured by undercoat manufacturer or approved for use by undercoat manufacturer.
 - a. Matthews Acrylic Polyurethane (MAP), Super Satin Clear 290 228SP.
 - b. DuPont Imron Ultra Low VOC products.
 - c. Or equal.
- B. Field Repair: Provide coating and application system recommended by manufacturer for field repair by untrained applicators employed by the Port.
- C. Application:
1. Substrates shall be cleaned, and surface prepared as recommended by paint manufacturer.
 2. The number of coats and paint film thickness required is the same regardless of the application method. Do not apply succeeding coats until previous coat has cured as

- recommended by coating manufacturer. Sand between coat applications where required to produce an even, smooth surface in accordance with coating manufacturer's directions.
3. Apply additional coats when undercoats or other conditions show through final coat until the cured film is of uniform finish, color and appearance.
 4. Minimum Coating Thickness: Apply each material at not thinner than manufacturer's recommended spreading rate, as listed above. Provide a total dry film thickness of entire coating system as recommended by manufacturer, unless otherwise indicated.
 5. Apply an even film, free of cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections.
 6. Completed Work: Match approved samples for color, gloss, texture and coverage. Remove, refinish, or recoat work not in compliance with specified requirements.

D. Color Schedule: Use colors as indicated on drawings to match samples provided by the Port.

2.8 ELECTRICAL COMPONENTS

- A. Include all required mounting accessories for wiring and devices as required for complete installation.
- B. Provide all electrical components, i.e. receptacles, disconnect switches, connectors, power supplies, converters, utilizing minimum #12 AWG THWN conductors, in cable assembly protected by metal cladding or installed in metallic conduit, with all connections complete and ready for connection to building power system, 120 volt, 20 amp 60 Hz, branch circuit.
- C. Install all electrical components in accordance with manufacturer installation instructions, and applicable codes and instructions as indicated elsewhere in the specifications.
- D. Refer to individual signage drawings for type of devices.
- E. Reference section 260533 for additional electrical component information.

2.9 LED LIGHTING

- A. General: Make connections at power supply and perform electrical work at sign light fixture. All work shall be installed in accordance with requirements of Division 26. LEDs and power supply shall be accessible for maintenance. Provide adequate ventilation for power source.
- B. White Illumination (Acceptable Products):
 1. SloanLED Prism Mini, 6500K min. (for use in Top Light Bar).
 2. GE Tetra Power Max, White. Temperature 6500K min.
 3. SloanLED V-Series, White. Temperature 6500K min.
 4. Bitro LED, White. Temperature 6500K min.
 5. LEDCONN LuxFIT Panel, 4100K.
- C. Acceptable LED Manufacturers:
 1. GE Lighting Solutions Corporate Headquarters
1975 Noble Road Building 338E,
East Cleveland, OH 44112-6300

USAT: 1-888-694-3533 / F: 216-266-2158

2. SloanLED - Corporate Office
5725 Olivas Park Drive
Ventura, California 93003 USA
T: 888.747.4533 / F: 805.676.3206
3. Bitro LED
300 Lodi St.
Hackensack, NJ 07601
T: 201-641-1004
4. LEDCONN Corp.
301 Thor Place
Brea, California 92821
714.256.2111
5. Or equal.

D. Power Source:

1. High power factor, rapid start, energy efficient. UL listed Class2, electronic type LED driver shall be capable of 24-volt output with output power up to 300 watts (sign types CM2, CMB2, WM2) and up to 60 watts (sign types CBL, FM2, FM3, FM4, WM4, and PB1). Universal AC input full range and up to 305 volts AC. Built-in active power factor correction function. All power sources shall be fully encapsulated with IP67 level and suitable for damp location.
 - a. L.T.F. UniDriver Series Dimmable LED Driver – 300W DS300W-4002, 120-277V UniDriver Series
 - b. L.T.F. UniDriver Series Dimmable LED Driver – 60W DS60W-3002, 120-277V Unidriver Series

E. Dimming:

1. Signs shall be internally illuminated with dimming controls capable of 0%–100% light output.
2. Signs connected to lighting controller, shall be controlled by timer and dim in the evening and be brighter during the day. Final light output determined during testing.

F. Driver and electronics deliver illumination that is free from objectionable flicker as measured by flicker index (ANSI/IES RP-16-10)

1. Flicker index shall be less than 5 percent at frequencies below 1000Hz.

G. Testing: Upon completion of installation of sign light fixtures, demonstrate capability and compliance with requirements. Where possible, correct malfunctioning units at site, then retest to demonstrate compliance, otherwise, remove and replace with new units and proceed with re-testing.

2.10 LED DISPLAYS

A. General:

1. Complete system with headend equipment, controllers, components, transmitters and receivers for fully functioning system.
2. Fabricator to configure LED modules, controllers, and coordinate integration with Port provided content.
3. LED display on each side of sign type FM4 is one self-contained display, it will contain its own processor and be capable of displaying different independent messages at the same time.

B. LED Modules:

1. Module Sizes: Sign type FM4 - 600mm x 337.5mm x 53mm (23.62" x 13.29" x 2.09").
2. Pixel Pitch: Sign type FM4 - 1.5 mm or smaller.
3. Line Voltage: 100-240V AC, 50/60Hz.
4. LED Refresh Rate: 3820 Hz.
5. Color Temperature: 6500K adjustable (3,000K - 10,000K).
6. Frame Rate: 30Hz ~ 70Hz.
7. LED Lifetime: Minimum 100,000 hours.
8. Acoustic Noise: Fanless operation.
9. Operating Temperature: -20°C to 40°C / -4°F to 104°F.
10. Operating Humidity: 10 - 80% relative humidity.
11. Control Input Type: Cat6A cabling by Division 27
12. Service Access: Front serviceable.

C. LED Module Controller:

1. Input Interface:
 - a. 2 3GSDI inputs
 - b. HDMI 2.0 input + LOOP
 - c. 1 x DP 1.2
 - d. 4 DVI
2. Output Interface:
 - a. 16 Neutrik gigabit ethernet ports
3. Controlling Interface:
 - a. 100-M ethernet control port
 - b. USB output
 - c. USB input
 - d. Genlock signal input
 - e. Genlock synchronous signal loop output
 - f. RJ11
4. Input Voltage:
 - a. AC 100-240V, 50/60Hz
5. Rated Power Consumption:
 - a. 70W

D. Media Controller (require for sign types FM4):

1. Commercial digital signage media player utilizing LG webOS 6.0 with 16 GB internal storage and support for Ultra HD content playback.
2. Provides embedded content management, scheduling, display control, PIP/PBP functionality, failover, Wake-on-LAN, screen rotation, and compatibility with LG SuperSign and ConnectedCare platforms.

3. Connectivity includes HDMI, DisplayPort, USB, Ethernet, RS-232C, IR, and integrated Wi-Fi for content distribution and display management.
4. Power requirements: 100–240 VAC, 50/60 Hz; maximum power consumption 27 W.
5. Furnish complete with manufacturer's standard accessories and 3-year warranty
6. LG, Part No. WP601-B, no substitutions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that mounting surfaces to receive signage are properly prepared. Do not start work until conditions are satisfactory.

3.2 PREPARATION

- A. Coordinate and furnish anchorages and setting drawings, diagrams, templates, instructions and directions for installation of items having integral anchors which are shall be installed by others. Coordinate delivery of such items to construction site.
- B. Protect mounting surfaces and adjacent areas against damage and discoloration caused by work in this section.

3.3 INSTALLATION

- A. General: Fabricator to confirm, develop, and list in shop drawings, mounting method for wall mounted signs using "Typical Mounting Surfaces" detail in drawings. Locate sign units and accessories where shown or scheduled, using mounting methods of the type described and in compliance with the manufacturer's instructions. Install sign units level, plumb and at the height indicated, with sign surfaces free from distortion or other defects in appearance. Notify Port of installation conflicts.
- B. Installation Alignment: Signs will be reviewed by Port for acceptance. Criteria will include plumbness, trueness, alignments and relationships with adjacent work.
- C. Mechanical Fastener Mounting: Install signs securely to wall with fasteners and anchoring devices as indicated on drawings and as specified.
- D. VHB Adhesive Mounting: Install signs with full sheet VHB adhesive where indicated on the drawings. Trim adhesive flush to exposed edges of material being installed.
- E. Foam Tape Mounting: Use 3M, or equal, product as specified for mounting signs to smooth, non-porous surfaces as indicated on the drawings. Do not use this method for vinyl-covered or rough surfaces. Position tape at back of sign for optimum performance and shall be hidden from view.
- F. Silicone Adhesive Mounting: Use silicone adhesive as specified to attach sign units to irregular, porous or vinyl-covered surfaces as indicated on the drawings. Use foam tape where recommended by the sign manufacturer to hold the sign in place until the adhesive has fully cured. Remove visible adhesive.

- G. Field-Applied, Vinyl-Character Signs: Clean and dry substrate. Align sign characters in final position before removing release liner. Remove release liner in stages, and apply and firmly press characters into final position. Press from the middle outward to obtain good bond without blisters or fishmouths. Remove carrier film without disturbing applied vinyl film.
- H. Bracket Mounted Units: Provide fittings and hardware as appropriate for mounting signs from ceiling, columns or walls. Attach brackets and fittings securely with fasteners and anchoring devices as indicated on drawings and as required for intended use.

3.4 PROTECTION AND REPAIR

- A. Protect finishes from damage during construction period, field handling and installation by use of temporary protective coverings. Protect adjacent surfaces from damage during field fabrication and installation. Remove protective covering at time of substantial completion.
- B. Restore finishes damaged during installation and construction period so that no evidence remains of correction work. Touch up any exposed fasteners and connecting hardware to match color and finish of surrounding surface. Touch up damaged surfaces carefully, using airbrush technique where necessary. Return items which cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units as required.

3.5 ELECTRICAL CONNECTIONS

- A. Provide final hook-up of illuminated signs and electrical devices.
- B. Test operation of signs and identifying devices and adjust as needed to produce fully functioning units that comply with requirements.

3.6 CLEANING

- A. Clean all exposed surfaces just prior to substantial completion in accord with manufacturer's written cleaning instructions. Protect units from damage until final acceptance.

3.7 COORDINATION

- A. Where room or gate numbers are being updated, coordinate scheduling of the work with other trades. Signage, including door tags, shall not be replaced until all related mechanical, electrical, and technology systems and equipment have been updated. This work includes any re-programming of control systems and the addition of tags and labels to new equipment, conduit, and cabling.
- B. Where changes are made to the fire alarm system programming, all signage changes must be made within two business days of those changes to ensure that the physical signs reflect the room or gate numbers in the programming.

END OF SECTION 101400

SECTION 260500 – COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This division includes the electrical requirements of the work including, but not restricted to, the following key elements:
 - 1. Lighting control system.
 - 2. Low voltage distribution system.
- B. This section includes general electrical requirements which apply to the entire electrical division including, but not necessarily restricted to, the following:
 - 1. Procedural requirements.
 - 2. Port standards.
 - 3. Specifications for general items not specifically covered in other technical sections.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 260533, Raceway and Boxes for Electrical Systems.
- B. Section 271000, Structured Cabling.

1.3 REFERENCES

- A. All equipment and materials shall be in accordance with the applicable standards of the following organizations:
 - 1. ANSI: American National Standards Institute.
 - 2. FAA: Federal Aviation Administration.
 - 3. IBC: International Building Code.
 - 4. ICEA: Insulated Cable Engineers Association.
 - 5. IEEE: Institute of Electrical and Electronic Engineers.
 - 6. NEC: National Electrical Code.
 - 7. NEMA: National Electrical Manufacturers Association.
 - 8. NFPA: National Fire Protection Association.
 - 9. OAR: Oregon Administrative Rules.
 - 10. OR-OSHA: Oregon Occupational Safety and Health Administration.
 - 11. UL: Underwriters Laboratories.

1.4 CODES, PERMITS, AND CERTIFICATES

- A. See Division 1 for specific requirements relating to codes enforced, permits, and inspections.
- B. Provide notification 48 hours prior to covering concealed electrical work to allow for inspection.

- C. Notify the electrical inspector of jurisdiction having authority sufficiently in advance to completely inspect the work in the various stages necessary. Uncover concealed work and provide qualified staff to assist inspectors.
- D. In preparation for final inspection, all electrical equipment shall have wires installed and under terminal posts, and circuit schedule and labeling complete.
- E. Deliver certificates from inspection authorities, certifying work is complete and satisfactory, before acceptance of the work.

1.5 ELECTRICAL SAFETY PROGRAM

- A. Contractors doing work on Port property are required to have an electrical safety program that meets or exceeds all OR-OSHA requirements.
- B. Prior to commencement of electrical work, the Contractor shall meet with Port facility safety personnel and inform each other of existing known hazards, personal protective equipment requirements, safe work practice procedures, and emergency/evacuation procedures applicable to the work to be performed. This coordination shall include a meeting and documentation.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle materials to protect against corrosion or mechanical damage. Remove damaged materials from site immediately after detection.
- B. Deliver materials in manufacturer's packaging. Deliver conductors and cables in complete coils.

1.7 ELECTRICAL DRAWINGS

- A. The drawings are diagrammatic and do not show every detail of installation.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Supply all materials to complete and provide the operating system specified, unless it is specifically indicated that materials are being furnished by others, or that existing equipment shall or may be reused.
- B. All materials shall be new and meet the requirements of these specifications. Materials shall be subject to Port approval via the submittal process.
- C. All components and equipment provided and normally tested and labeled by Underwriters Laboratories (UL), or similar recognized third party approval authority, shall be so labeled.

2.2 GENERAL SUPPORT AND ANCHORING HARDWARE

- A. All anchors, nuts, washers, and bolts shall be rust resistant, plated type, unless specified otherwise. Anchors, nuts, washers, and bolts for exterior use shall be stainless steel.
- B. Brackets and miscellaneous hardware shall be rust resistant, plated type, unless specified otherwise.
- C. Bolts associated with lighting fixture installation shall be applied with anti-seize lubricant such as Never-Seez, or equal, prior to installation.
- D. Exterior channel-type support or where noted on drawings shall be hot-dipped galvanized. Interior channel-type support shall be hot-dipped galvanized or electro-galvanized plus zinc chromate finish. Kindorf, Superstrut, Unistrut, or equal.
- E. Clamps, brackets, and similar hardware utilized with the channel support system shall be of the same manufacturer and be similarly galvanized.

PART 3 - EXECUTION

3.1 LAYOUT AND COORDINATION

- A. Layout of the various equipment is very specific with the dimensioning, relative location and/or dimensions shown on the drawings. Call attention to any error, conflict, or discrepancy in the drawings or specifications. Do not proceed with any questionable items of work until clarification has been received.
- B. Work under this division shall be conducted in a cooperative manner with work of other divisions employed on the project, for proper installation of all items of equipment.
- C. Verify the physical dimensions of each item of electrical equipment to fit the available space and provide prompt notification prior to roughing-in if conflicts appear. Coordinate equipment to fit into the available spaces and coordinate access routes through the construction site.

3.2 PROTECTION

- A. Electrical work, wire and cable, materials, and other equipment specified in this division shall be protected against damage by other construction activities, weather conditions, or any other causes as a part of this work. Equipment found damaged or in other than new condition shall be rejected as defective.
- B. Keep light fixtures and electrical equipment covered or closed to exclude moisture, dust, dirt, cement, or paint and shall be free of all contamination before acceptance. Enclosures and trims shall be in new condition, free of rust, scratches or other finish defects. Properly refinish to new condition if damaged.

- C. Keep conduit and raceways closed during construction to prevent entrance of dirt, moisture, concrete or foreign objects. Raceways shall be clean and dry before installation of wire and shall be so at the time of final acceptance.
- D. Comply with the requirements of Section 017000, Execution Requirements, for investigation prior to penetration of floor slabs.

3.3 GENERAL INSTALLATION METHODS

- A. Install all material and equipment in accordance with the manufacturer's recommendations, instructions, and/or installation drawings, and in accordance with NEC and specifications.
- B. Unless otherwise noted on the drawings, conceal all wiring in finished spaces. Exposed conduit is acceptable only when and where prior specific authorization is obtained from Port. If exposed conduit is installed, it shall be parallel to structural lines.
- C. Unless otherwise noted on the drawings, all wiring devices, recessed light fixtures, etc., in finished spaces shall be flush-mounted.
- D. Provide necessary rigid conduit sleeves, openings, and chases where conduits or cables are required to pass through floors, ceilings, or walls. Seal all openings around conduits against leaks and in a manner to maintain the fire rating of the structure penetrated. Prevent unnecessary cutting in connection with the finished work. Make all repairs and seals in a manner acceptable to the Port.
- E. Cutting or notching shall be kept to a minimum and shall only be done in a Port-approved method. Structural members shall not be disturbed or cut in any way without specific written approval from the Port on a case-by-case basis. Patch and correct finished surfaces damaged by electrical work.
- F. The extent of the branch circuiting and control wirings shown shall not be changed.
- G. Provide all backing and mounting hardware required to complete the electrical systems in a safe, working condition as part of the contract work.
- H. Comply with code requirements and methods.
- I. In general, mounting heights shall be as noted on the drawings. Where no heights are indicated, request clarification. All device dimensions are to the center above finish floor unless specified otherwise. Lighting dimensions are to the bottom of suspended fixtures.

3.4 EXISTING ELECTRICAL SYSTEMS

- A. Existing electrical services shall be maintained operational at all times unless specified, scheduled, and/or approved otherwise.
- B. All switching of the existing electrical distribution systems, when required and scheduled as specified, will be performed by Port maintenance staff unless specifically approved otherwise.

- C. Notify Port inspectors prior to de-energizing or energizing any circuit.
 - 1. Work requiring de-energizing 600V or less feeder circuits to transformers, panelboards, bus ducts, and motor control centers, and critical equipment (HVAC equipment, baggage conveyor systems, passenger loading bridges, etc.) shall require a minimum of 72 hours' advance notification.
 - 2. Work requiring de-energizing 5kV and 15kV feeders shall require a minimum of 7 days' advance notification.
 - 3. Work requiring de-energizing select branch circuits shall require 24 hours' advance notification to Port inspectors. Prior to de-energizing any branch circuit, notify the Port inspectors and PDX maintenance trouble line (503-460-4683), identifying panel, circuit location, and estimated duration.
- D. The Contractor shall be responsible for ensuring the safety of Contractor's personnel when working on Port electrical systems. Those responsibilities include:
 - 1. Compliance with Oregon Administrative Rules, Chapter 437, when working on or near exposed de-energized or energized parts.
 - 2. Confirming that the equipment has, in fact, been de-energized by testing and installing grounds to the system being worked on.
 - 3. Providing the spider and locking device necessary to lock out the disconnect switch.
 - 4. Providing a circuit breaker locking device or disconnecting the branch circuit conductor from the circuit breaker and tagging the conductor.
 - 5. Providing the personnel responsible for attaching tags and locks with a mobile telephone.
- E. An example of an approved lockout tag will be provided to be used by the electrician responsible for the work being performed and for installing and removing the lock and tag. The electrician shall attach the tag to the lockout device using a tie string or wire indicating the following: The electrician's name, company, time of lockout, mobile telephone number, estimated time the circuit can be energized, and who authorized the outage.
- F. The individual responsible for signing the tag shall be required to remove the lock and, unless the circuit has been approved for an extended outage, that person shall remain on site until all related work is completed and the tags and locks are removed. No one else shall be allowed to remove them even if told to do so. Where shift work is in progress, he can remove his tag and the responsible individual on the next shift shall immediately install his tag.

3.5 EXISTING SIGNAL AND COMMUNICATION SYSTEMS

- A. Signal and communication systems and equipment shall be kept in operation wherever these serve occupied or functional portions of the building. Outages of these facilities shall be kept to a minimum and be prearranged with the Port. The Contractor shall be liable for any damages resulting from unscheduled outages or for outages not confined to the prearranged times.
- B. Telephone services where required during the construction work shall be maintained operational by the Contractor. Coordinate this work with Port IT Communications personnel in such a manner that service, as required by the building occupants, can be readily installed and maintained.
- C. The Port will perform cross-connections at termination blocks and/or patch panels within the Port's IT network and communication rooms. Provide materials and installation in accordance with Section 271000. Notify the Port one week in advance for associated cross-connection work.

- D. The Port will perform cross-connections at termination blocks and/or patch panels within the network rooms identified as being part of the common communication infrastructure. Notify the Port one week in advance for associated cross-connection work. All other cross-connections, including the MPOP (Room T1196), are the responsibility of the vendor/tenant. Vendor/tenant should contact the Port's communication services department to verify cross-connect locations. Provide materials and installation in accordance with Section 271000.

3.6 DEMOLITION

- A. Remove or relocate electrical wiring, equipment, luminaires, etc., as encountered in existing area affected by this work. Wiring which serves usable existing outlets shall be restored and routed clear of the construction or demolition. Cable and conduit to be demolished shall be removed back to the source.
- B. Protect equipment identified to be salvaged. Remove salvaged equipment prior to demolition of adjacent services. Arrange with the Port for storage and return of salvaged equipment.
- C. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations. Prior to demolition, verify that demolished services will not affect the operation of existing systems that are to remain and notify the Port.
- D. Demolition Service/System Requirements:
 - 1. Locate, identify, disconnect, and seal or cap off indicated utility services and electrical systems serving areas to be selectively demolished.
 - 2. Demolish all service back to nearest active main or point of future connection as indicated. Verify with Port extent of demolition prior to proceeding if extent is not clear.
 - 3. The Port will arrange to shut off indicated services/systems when requested by the Contractor.
 - 4. If services/systems are required to be removed, relocated, or abandoned: Before proceeding with selective demolition, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 5. Remove all accessories associated with removed utilities including supports, hangers, braces, clips, etc., in their entirety.
 - 6. Patch penetrations of walls and floors related to demolished services restoring existing fire separations, assembly ratings, and waterproofing membranes.

3.7 CUTTING AND PATCHING

- A. Include cutting, patching, and restoration of finishes necessary for the work. Surfaces damaged by the work and spaces around conduits passing through floors and walls shall be neatly patched and finished to match the adjacent construction, including painting or other finishes. Patch, clean, and remove all dirt and debris.
- B. Where equipment installations or connections require the installation of an access panel, coordinate and provide a properly sized and installed access panel, as approved by the Port. See Section 083100 for additional requirements.

3.8 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 7.

3.9 EQUIPMENT CONNECTIONS

- A. For each electrical equipment connection indicated, provide incidental wiring, devices, labor, and all materials and accessories as needed to complete splices and terminations of the equipment.
- B. Verify the location and method for connecting to each item of equipment prior to roughing-in. Check the voltage and phase of each item of equipment before connecting. Motor connections shall be made for the proper direction of rotation. Pump motors shall not be test run until liquid is in the system and proper lubrication to all bearings in the unit is checked.
- C. Conduit, wire, and circuit breaker sizes for equipment furnished under other divisions are based on the equipment ratings of one manufacturer. The electrical characteristics of the equipment furnished may differ from the ratings of the specified equipment. Coordinate the electrical requirements of the equipment to be furnished with the equipment supplier prior to purchase or installation of conduit, wire, starts, and circuit protection required for equipment connection.

3.10 NOISE CONTROL

- A. Outlet boxes at opposite sides of partitions shall not be placed back to back, nor shall straight-through boxes be employed, except where specifically permitted on the drawings by note, to minimize transmission of noise between occupied spaces.
- B. Route conduit along corridors or other “noncritical” space to minimize penetrations through sound-rated walls. All penetrations through sound-rated partitions shall be grouted solid and airtight. Conduit and its associated attachment shall not rigidly connect (i.e., bridge) independent wall structures. Flexible connections or attachments are required.
- C. Contactors, transformers, starters, and similar noise-producing devices shall not be placed on walls which are common to occupied spaces unless specifically called for on the drawings. Where such devices must be mounted on walls common to occupied spaces, they shall be shock-mounted or isolated in a manner that effectively prevents the transmission of noise to the occupied space.
- D. Ballasts, contactors, starters, transformers and like equipment which are noticeably noisier than other similar equipment used for the work will be deemed defective and shall be replaced at no additional cost to the Port.

3.11 GENERAL EQUIPMENT SUPPORT

- A. Each fastening device and support for electrical equipment, luminaires, panels, outlets, and cabinets shall be capable of supporting no less than four times the ultimate weight of the object or objects fastened to or suspended from the building structure and shall be installed to resist seismic

forces as specified in the IBC for the ground motion accelerations corresponding to the work location.

- B. Properly and independently support luminaires installed under this work from the building structure. Supports shall provide proper alignment and leveling of luminaires. Where permitted, flexible connections to exposed luminaires shall be neat and straight, without excess slack, attached to the support device.
- C. Support all junction boxes, pull boxes, or other conduit terminating housings located above the suspended ceiling from the floor above or roof structure to prevent sagging or swaying.
- D. Conduits:
 - 1. Support suspended conduits from the overhead structural system with metal ring or trapeze hangers and threaded steel rod having a safety factor of 4.
 - 2. Anchor conduit installed in poured concrete to the steel reinforcing with No. 14 black iron wire.
- E. Power-actuated fasteners are not allowed except for slack wires where there is no continuous loading in tension for items such as light fixtures. See Section 017000, Execution Requirements.

3.12 INSTALLATION ABOVE BAGGAGE CONVEYOR

- A. Where possible, do not install conduit, equipment, or other electrical items above conveyors or catwalks. If in the opinion of the Contractor a pipe or conduit must be located above a conveyor or catwalk, request permission from the Port and do not proceed unless and until permission is granted. Where such permission is granted, install the item as high as possible above the conveyor or catwalk. Prior to installing items above or within 4 feet of any conveyor or catwalk component, coordinate the location in the field with the Port's baggage handling system manager. When crossing above a conveyor or catwalk, install pressurized piping tight to the structure and ceiling deck even if the installation creates vertical bends in the piping. If installing above the conveyor, the bottom of any item shall never be less than 34 inches above the conveyor bed. See Section 260533, for installing conduit above conveyors or catwalk requirements.

3.13 TESTING

- A. Upon completion, test systems to show the equipment installed operates as designed and specified, free of faults and unintentional grounds. Submit testing plans per Section 013300, Submittal Procedures, for review prior to testing. The system tests shall be set up for as many at one time as possible to work into construction phasing. Tests shall be done in the presence of the Port, and shall be scheduled 48 hours in advance.
- B. A journeyman electrician with required tools shall be available to conduct all tests, with or without the equipment factory representative present.
- C. Systems to be tested shall include, but not be limited to the following:
 - 1. Low voltage distribution system.
 - 2. Lighting control system.

- D. A written record of performance tests shall be compiled, dated, witnessed, and submitted along with operating and maintenance data, to the Port prior to substantial completion.
- E. See other sections for possible testing requirements as they apply to those sections. Notify the Port prior to testing.

END OF SECTION 260500

SECTION 260519 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes wires, cables, and connectors.

1.2 REFERENCES

- A. ASTM: American Society For Testing And Materials:
 - 1. ASTM B8: Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
 - 2. ASTM B33: Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes.
 - 3. ASTM B172: Standard Specification for Rope-Lay-Stranded Copper Conductors Having Bunch-Stranded Members, for Electrical Conductors.
 - 4. ASTM B189: Standard Specification for Lead-Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes.
- B. ICEA: Insulated Cable Engineers Association
 - 1. ICEA 566-524: Cross-Linked Thermosetting Polyethylene Insulated Wire and Cable for Transmission and Distribution of Electrical Energy.
 - 2. ICEA S-95-658: Non-shielded 0-2 kV Cable.
 - 3. ICEA S-75-381: Portable and Power Feeder Cables for Use in Mines and Similar Applications.
- C. NEC: National Electric Code
 - 1. NEC Article 336: Power and Control Tray Cable, Type TC.
- D. NEMA: National Electrical Manufacturers Association
 - 1. NEMA WC 58: Portable and Power Feeder Cables for Use in Mines and Similar Applications.
 - 2. NEMA WC 70: Power Cables Rated 2000 V or Less for the Distribution of Electrical Energy.
- E. UL: Underwriters Laboratories:
 - 1. UL 44: Thermoset-Insulated Wires and Cable.
 - 2. UL 83: Thermoplastic-Insulated Wires and Cables.
 - 3. UL 1277: Standard for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.
 - 4. UL 1581: Reference Standard for Electrical Wires, Cables, and Flexible Cords.

1.3 SUBMITTALS

- A. Submit the following materials:
1. Lighting and receptacle circuit conductors.
 2. Single conductor 600-volt power and control conductors.
 3. Portable cord
 4. Portable cord fittings
 5. MC cable.
 6. Cable covers and protective wraps
- B. Submittals of the following materials shall consist only of a listing of the manufacturer's name and the applicable catalog numbers of the items to be utilized. Upon review of the list, further information may be requested.
1. Connectors.
 2. Branch circuit conductor splices.
 3. Splices with compression fitting and heat-shrinkable insulator.
- C. Submit cable test data per testing requirements of Part 3.

PART 2 - PRODUCTS

2.1 GENERAL

- A. With the exception of lighting and receptacle circuits, the type, size, and number of conductors shall be as specified on the drawings or schedules. Lighting and receptacle circuit conductors are unscheduled and shall be sized in accordance with the NEC to limit voltage drop to 3 percent.

2.2 COLOR CODING

- A. Power Conductors: Single-conductor power conductors shall have the following color codes for the indicated voltage:

	<u>480/277V</u>	<u>208/120V</u>	<u>240/120V</u>
Phase A	Brown	Black	Black
Phase B	Orange	Red	Red
Phase C	Yellow	Blue	--
Ground	Green	Green	Green
Neutral	Gray	White	White or Gray*
* If installed with 480/277V or 208/120V in the same raceway, box, gutter, or other enclosure, 240/120V neutral conductor color shall differ from the other system neutral conductor per NEC 200.6(D).			

- B. Multi-conductor power cable color coding shall be the manufacturer's standard.

- C. Cables sized No. 4 AWG and larger may be black with 3/4 inch vinyl colored plastic tape applied in 3 inch lengths around the cable at each end. The cables shall be colored at terminations and in pull boxes, handholes, and manholes.

2.3 LIGHTING AND RECEPTACLE CIRCUIT CONDUCTORS

- A. Lighting and receptacle circuit conductors shall be stranded except for No. 12 AWG which may be solid. Minimum conductor size shall be No. 12 AWG.
- B. Conductors shall have the following characteristics:
 - 1. Voltage: 600 volts.
 - 2. Conductor: Bare annealed copper, stranded in accordance with ASTM B8.
 - 3. Insulation:
 - 4. Dry Areas and Above Grade: THWN/THHN, 90°C dry, 75°C wet, polyvinylchloride (PVC) in accordance with UL 83.
 - 5. Dry or Wet Areas and Below Grade: XHHW, 90°C dry, 75°C wet, cross linked polyethylene in accordance with UL 44.
 - 6. Jacket: Nylon. Not applicable.
 - 7. Flame resistance: UL 83. UL 44.
 - 8. Manufacturer: Cablec, Essex, Okonite, Southwire, or equal.

2.4 POWER CONDUCTORS AND CABLE, 600 VOLT

- A. Single Conductor:
 - 1. Single conductor cable shall be stranded and used in conduits for power and control circuits. Unless otherwise specified, minimum size for power applications shall be No. 12 AWG and minimum size for control applications shall be No. 14 AWG.
 - 2. Conductors installed in cable tray shall be UL labeled, Type TC, designated for cable tray, installation in accordance with NEC Article 336.
 - 3. Conductors shall have the following characteristics:
 - a. Voltage: 600 volts.
 - b. Conductor: Coated, Class B, stranded annealed copper in accordance with ASTM B8.
 - c. Insulation:
 - d. Dry Areas and Above Grade: THWN/THHN, 90°C dry, 75°C wet, polyvinylchloride (PVC) in accordance with UL 83.
 - e. Dry/Wet Areas and Below Grade: XHHW, 90°C dry, 75°C wet, cross linked polyethylene in accordance with UL 44.
 - f. Flame resistance: IEEE 383 flame test. UL 44, UL 83.
 - g. Manufacturer: Anixter, Cablec, Essex, Okonite, Southwire, or equal.

2.5 METAL CLAD (TYPE MC) BRANCH CIRCUIT CABLE

- A. Sheath: Steel or aluminum, of the interlocking metal type, continuous, and close fitting. The sheath shall not be considered a current carrying or grounding conductor.
- B. Conductors: Stranded insulated copper, of the same ampacity as the conduit/wire system indicated for the specific location. Provide separate green insulated grounding conductors in cable assembly. Type AC, armored cable, shall not be allowed. Conductor size shall be No. 12 AWG unless approved otherwise by the Port. Conductor insulation shall comply with 600-volt power conductor requirements.
- C. Color Coding: Conductors in MC cables shall be color-coded as indicated above or identified with 3/4-inch vinyl colored plastic tape around the conductors at termination and splice points.
- D. Manufacturers: AFC Cable systems, Southwire, Okonite, or equal.

2.6 PORTABLE CORD

- A. Portable cord shall be UL listed, type SO for sizes No. 10 AWG and smaller. Cords shall contain an equipment grounding conductor. Cord characteristics shall be as follows:
 - 1. Conductors: Flexible rope stranded in accordance with ASTM B189 and B33. Conductors shall be coated except ground conductors may be uncoated.
 - 2. Insulation: Insulation shall be ethylene propylene (EPR) or water resistant synthetic rubber (EPDM) and rated for continuous operation at 90° C.
 - 3. Jacket: Heavy-duty neoprene.
 - 4. Manufacturer: Anixter, or equal.
 - 5. Compliance: Meets or exceeds electrical and physical requirements of ICEA S-95-658/NEMA WC-70.
- B. Cords with conductors larger than No. 10 AWG shall be 600 volt, UL and/or MSHA listed, Type G. Cords shall contain an equipment grounding conductor. Cord characteristics shall be as follows:
 - 1. Conductors: Flexible rope stranded in accordance with ASTM B172 and B33. Conductors shall be coated except ground conductors may be uncoated.
 - 2. Insulation: Insulation shall be ethylene propylene (EPR) or oil and water resistant synthetic rubber (EPDM) and rated for continuous operation at 90°C.
 - 3. Jacket: Extra heavy-duty thermoset CSPE.
 - 4. Manufacturer: AIWC, Americable, or equal.
 - 5. Compliance: Meets or exceeds electrical and physical requirements of ICEA S-75-381/NEMA WC-58.

2.7 SPLICING AND TERMINATING MATERIALS

- A. 600-Volt Conductor and Cable Connectors:
 - 1. Connectors shall be one-piece tool applied compression type of correct size and UL listed for the specific application. Connectors for wires No. 10 AWG and smaller shall be self-

insulating ring tongue or locking spade terminals. Connectors for No. 8 AWG and larger shall be one-hole lugs up to size No. 3/0 AWG and two-hole or four-hole lugs for size No. 4/0 and larger. Mechanical clamp or screw type connectors are not acceptable.

2. 120-Volt Branch Circuit Conductor Splices: Live spring type, Scotch-Lok, Ideal Wing Nut; self-stripping type, 3M Series 560; or equal.
3. 600-Volt Branch Circuit Conductor Splices: #10 and #12 conductors may be live spring type, Scotch-Loc, Ideal Wing Nut; self stripping type, 3M series 560; or equal.
4. Only use in-line splices and taps where specifically called for on the drawings or by written consent of the Port. Splices shall be compression type, made with a compression tool die approved for the purpose, as made by Thomas and Betts Corp., or equal. Splice shall be covered with a heat-shrinkable sleeve or boot.

- B. Portable Cable Fittings: Portable cable fittings for terminating the cable shall provide a watertight seal between the cord and the terminator and between the terminator and mounting hub. The cable terminator shall have a neoprene liner which grips the cord jacket when the back nut on the fitting is tightened. In addition, on all pendant cord applications and other applications where called for, there shall be a stainless steel wire mesh cord grip as an integral part of the cord terminator.

2.8 CABLE COVERS AND PROTECTIVE WRAPS

- A. Braided split cable wrap sleeve with continuous hook and loop (Velcro) closure.
- B. Flammability rating VW-1 and abrasion resistance.
- C. Color: Gray for visible covers used at cable drops to ceiling supported elements. Black for other locations.
- D. UL/CSA listed
- E. Techflex braided sleeving products, Flexo Wrap or equal.

PART 3 - EXECUTION

3.1 GENERAL

- A. Wire shall be continuous between each end of a conduit. Splices and terminals are not permitted within a conduit run.
- B. Each main and branch circuit shall have its own dedicated neutral conductor. Do not install shared or common neutrals.
- C. Pull wire and cable into conduit or trays without damaging or putting undue stress on the cable insulation. UL listed pulling compounds are acceptable lubricants for pulling wire and cable. Grease is not acceptable. Raceway construction shall be complete, cleaned, and protected from the weather before cable is placed.
- D. Provide a cable support whenever a cable leaves a raceway.

- E. When flat bus bar connections are made with unplated bar, scratch-brush the contact areas. Torque bolts to the bus manufacturer's recommendations.

3.2 600-VOLT CONDUCTORS AND CABLE

- A. Incoming wire in panels, No. 6 AWG and smaller, shall be bundled and laced at intervals not greater than 6 inches, and neatly spread into trees and connected to their respective terminals. Allow sufficient slack in cables for alterations in terminal connections. Lace with plastic cable ties or linen lacing twine.
- B. Where plastic panel wiring duct is provided for wire runs, lacing is not necessary when the wire is properly installed in the ducts. Provide slack in junction and pull boxes and in handholes and manholes. Amount of slack shall be equal to the largest perimeter dimension of the box.
- C. Wire crossing hinges shall be stranded and made up into groups not exceeding 12 and shall be arranged so that they will be protected from chafing when the hinged member is moved.
- D. Terminate stranded wire as described in Part 2 except where terminals will not specifically accept such terminations. In these cases, terminate the wires directly on the terminal block. Install compression lugs and connectors using manufacturer's recommended tools.
- E. Solid wire shall not be lugged. Do not use electrical spring connectors, set screws, wire nuts, and wing nut connectors on anything other than solid wires in lighting and receptacle circuits. Install lugs and connectors with a compression tool.
- F. All splices and terminations are subject to inspection prior to and after insulating. Terminations at 460-volt motors shall be made by bolt-connecting the lugged connectors. Insulate and seal connections with factory-engineered kits. Motor connection kits shall consist of heat shrinkable, polymeric insulating material over the connection area and a high dielectric-strength mastic to seal the ends against moisture and contamination. Keep bolt connection area free of mastic and fillers to facilitate rapid stripping and re-entry. Motor connection kits shall accommodate a range of cable sizes for both in-line and stub-type configurations. Connection kits shall be independent of cable manufacturer's tolerances.
- G. In-line splices and tees (where approved) shall be made with tubular compression connectors and insulated with factory-engineered kits. Kits shall consist of heat shrinkable, polymeric insulating material over the connection area and a high dielectric strength mastic to seal the ends against moisture and contamination. Keep connection area free of mastic and fillers to facilitate rapid stripping and re-entry. Wires No. 10 AWG and smaller may be spliced using self-insulating connectors as specified in Part 2.
- H. In-line splices and tees (where approved) shall be made with tubular compression connectors and insulated as specified above for motor terminations, except that wires No. 10 AWG and smaller may be spliced using self-insulating connectors as specified in Part 2.
- I. Insulate splices and tees in underground handholes or pull boxes using Scotch-cast epoxy resin splicing kits. Provide conductor and cable markers at splice and termination points and use self-insulating tubular compression connectors.

- J. Make terminations at solenoid valves, 120 volt, and other devices furnished with pigtail leads using self-insulating tubular compression connectors.

3.3 MC CABLE

- A. Only use where approved, typically routed along structural building elements to reach suspended wayfinding signage .
- B. Use EMT or RMC conduit rather than MC cable for all branch circuit homeruns to branch panelboards. Provide all enclosures and terminals to transition from MC cable to building wire, as required. Transition between MC cable and building wire shall be in an accessible junction box located as close to the load as possible.
- C. Route MC cable in parallel to structural building elements.

3.4 PORTABLE CORD

- A. Portable cord feeding permanent installations, such as signs, pumps, cranes, hoists, and portable equipment, shall have a wire mesh cord grip of flexible stainless steel wire to take tension from the cable termination. Use weatherproof strain relief fittings for all connections. Use 45 degree and 90 degree connectors where applicable to prevent unnecessary strain on cords. Flexible cords feeding submersible motors shall be of a non-wicking neoprene construction. Connect portable cords to permanent wiring with terminals. Use in-line taps and splices only where specified.

3.5 FIELD TESTING

- A. 600-volt rated conductors greater than or equal to 500 kcmil, or in parallel runs, shall be tested by the Contractor for continuity and shall be meggered after installation and prior to termination. Provide the megger, rated 1,000 volts d.c., and record and maintain the results, in tabular form, clearly identifying each conductor being tested; submit copies. Repeat testing after any cables are replaced.
 - 1. Replace cables when test value is less than 15 megohms.
 - 2. Cable test submittal shall include results, equipment used, date, and the Port inspector's signature.

3.6 EXISTING CIRCUITS

- A. Confirm the destination and purpose of each existing circuit before connecting to new equipment and new wiring. Connections shown on the one-line diagram drawing are the preferred connections.
- B. Remove existing terminations leaving as much existing cable as possible. Conserve existing cable when making splices to new cables. Existing cable length may require different routings within manhole vaults than are shown on the drawings. Do not unnecessarily cut off any existing cable length.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes a grounding system including a conduit system, equipment grounding conductor, transformer housings, a switchboard frame and neutral bus, motors, and miscellaneous grounds. Work also includes a 600V insulated main bonding jumper for service connection between the ground bus in the switchgear lineup and a ground termination point or service ground in the transformer.

1.2 REFERENCES

- A. NEC: National Electrical Code.
 - 1. NEC Article 250: Grounding and Bonding.

PART 2 - PRODUCTS

2.1 GROUND CONDUCTORS

- A. Bare or green insulated copper for interior systems.
- B. Bare copper for underground or exterior systems.

2.2 CONNECTORS

- A. Cast, set screw, or bolted allowed in dry locations only.
- B. Form poured, exothermic welds.
- C. Compression-tool applied. Burndy "Hyground Compression System," or equal.
- D. Grounding lugs where furnished as standard manufacturer's items on equipment.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Size grounding conductors in accordance with National Electrical Code (NEC) Article 250, Tables 250-66 and 250-122.
- B. Underground connections shall be exothermic applied.

- C. Grounding conductor connectors shall be made up tight and located for future servicing and to ensure low impedance.
- D. Ground the electrical system, the cold-water service, structural steel, and transformers to the building ground grid.
- E. All plug-in receptacles shall be bonded to the boxes, raceways and grounding conductor.
- F. Provide equipment grounding conductor in all conduit runs.
- G. Provide ground bond for all conduits terminated at or near cable trays, including communication and data conduits provided for cabling to the cable tray.

3.2 EQUIPMENT

- A. Provide separate green insulated equipment ground conductor for all circuits. Effectively ground all fixtures, panels, controls, motors, disconnect switches, exterior lighting standards, and non-current-carrying metallic enclosures. Use bonding jumpers, grounding bushings, lugs, buses, etc., for this purpose.
- B. Provide grounding bushings on all feeder conduit entrances to panels and equipment enclosures and bond bushings to enclosures with minimum No. 10 AWG conductor. Connect the equipment ground to the building system ground. Use the same size equipment ground conductors as phase conductors, up through No. 10 AWG.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes supporting devices for electrical equipment, associated conduit, and cable.

1.2 REFERENCES

- A. IBC: International Building Code:
 - 1. IBC Chapter 16: Structural Design.
- B. SMACNA: Sheet Metal and Air Conditioning Contractors' National Association:
 - 1. SMACNA Seismic Restraint Manual - Guidelines for Mechanical Systems, for Seismic Hazard Level (SHL).

1.3 SUBMITTALS

- A. Submit shop drawings and calculations for seismic anchorage and bracing for the vertical and lateral restraint of conduit, cable trays, bus ducts, and electrical equipment as required by IBC Chapter 16 and the SMACNA Seismic Restraint Manual – Guidelines for Mechanical Systems, for Seismic Hazard Level (SHL) A. Shop drawings and calculations shall bear the seal of a professional engineer registered in the state of Oregon.

PART 2 - PRODUCTS

2.1 PRODUCTS

- A. Hangers: Kindorf B-905-2A channel, H-119-D washer, C105 strap, minimum 1/2-inch rod with ceiling flange, or equal.
- B. Pipe Straps: Two-hole galvanized or malleable iron.
- C. Support of Open Cabling: NRTL labeled for support of Category 6 cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.
 - 1. Support brackets with cable tie slots for fastening cable ties to brackets.
 - 2. Lacing bars, spools, J-hooks, and D-rings.
 - 3. Straps and other devices.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide all electrical equipment supports.
- B. Install vertical support members for equipment, straight and parallel to building walls.
- C. Provide independent supports to structural member for electrical fixtures, materials, or equipment installed in or on ceiling, walls, or in void spaces and/or over furred or suspended ceilings.
- D. Do not use other trades' fastening devices to support electrical equipment materials or fixtures.
- E. Do not use supports and/or fastening devices to support other than one particular item.
- F. Support conduits within 18 inches of outlets, boxes, panels, cabinets, and deflections.
- G. Provide complete seismic anchorage and bracing for the vertical and lateral restraint of conduit, cable trays, bus ducts, and electrical equipment as required by IBC Chapter 16 and the SMACNA Seismic Restraint Manual - Guidelines for Mechanical Systems, for SHL A.
- H. Building Attachments:
 - 1. Where possible, support all conduit, cable tray, and equipment from structural members, beams, and joists.
 - 2. Provide structural steel angles, channels, or other members to support conduit, cable tray, and equipment where structural members do not occur as required for proper support.
 - 3. Arrange supports to prevent eccentric loading of joists and joist girders. Locate supports at joist panel points or provide web reinforcing as required.
 - 4. Do not fasten or attach to unfilled steel roof deck structure.
 - 5. Attach to concrete-filled steel floor deck structure for loads up to 400 pounds. Loads larger than 400 pounds shall be designed per code. Submit structural calculations stamped and signed by a structural engineer licensed in the State of Oregon showing that the concrete-filled floor deck has sufficient capacity to support the load at the points of anchorage.

3.2 LUMINAIRES

- A. Light-Duty Ceiling Systems:
 - 1. Attach No. 12 hanger wire from each corner of the luminaire to the structure above.
 - 2. Positively and securely attach luminaire within 6 inches of each corner to the suspended ceiling framing member by mechanical means.
- B. Intermediate-Duty Ceiling Systems:
 - 1. Positively and securely attach luminaire within 6 inches of each corner to the suspended ceiling framing member by mechanical means.
 - 2. Attach No. 12 hanger wire within 3 inches of each corner of each luminaire.
 - 3. Connect two 12-gauge slack wires from the luminaire housing to the structure above for luminaires weighing less than 56 pounds.
 - 4. Support luminaries weighing 56 pounds or more directly from the structure above with approved hangers attached to each corner of the luminaire.

- C. Heavy-Duty Ceiling Systems:
1. Positively and securely attach luminaire within 6 inches of each corner to the suspended ceiling framing member by mechanical means.
 2. Connect two 12-gauge slack wires from the luminaire housing to the structure above for luminaires weighing less than 56 pounds.
 3. Support luminaires weighing 56 pounds or more directly from the structure above with approved hangers attached to each corner of the luminaire.

3.3 PULL AND JUNCTION BOXES

- A. Pull and junction boxes installed within the cavity of a suspended ceiling that is not a fire rated assembly may be attached to the suspended ceiling framing members, provided the following criteria are met:
1. Installation complies with the ceiling system manufacturer's instructions.
 2. Pull or junction box is not larger than 100 cubic inches.
 3. The pull or junction box is supported to the main runner with two fastening devices that are designed for framing member application and positively attach or lock to the member.
 4. The pull or junction box serves branch circuits and associated equipment in the area.
 5. The pull or junction box is within 6 feet of the luminaires supplied.
 6. The framing members are not rotated more than 2 degrees after installation.
- B. Pull and junction boxes installed within the cavity of a suspended ceiling may be attached to independent support wires, provided the following criteria are met:
1. Independent support wires are taut and connected at both ends, one end to the ceiling framing member and the other to the structure above.
 2. Pull or junction box is not larger than 100 cubic inches.
 3. The pull or junction box is secured to the independent support wires by two fastening devices that are designed for the application.
 4. Independent support wires in a fire-rated ceiling are distinguishable by color, tagging or other effective means.

3.4 CABLES AND RACEWAY

- A. Cables and raceway installed within the cavity of a suspended ceiling may be attached to independent support wires provided the following criteria are met:
1. Independent support wires are taut and connected at both ends, one end to the ceiling framing member and the other to the structure above.
 2. Raceways are not larger than one-inch trade size and cables and bundled cables are not larger than one-inch diameter including insulation.
 3. Not more than three raceways or cables are supported by any independent support wire and are supported within the top or bottom 12 inches.
 4. Cables for telecommunications, data processing, Class 2 power-limited signaling systems, fiber optics, and other power limited systems are securely fastened within 2 feet of each termination and at intervals not to exceed 5 feet or per the manufacturer's installation instructions.
 5. Raceways are secured at intervals required for the type of raceway installed.
 6. Cables and raceway are secured to independent support wires by fastening devices and clips designed for the purpose.

7. Independent support wires are distinguishable by color, tagging, or other effective means.
- B. Cables and raceway installed within the cavity of a suspended ceiling may be supported with trapezes constructed of steel rods and channels provided the following criteria are met:
1. The size of the rods, channel, and fastening devices are suitable for the anticipated weight.
 2. The spacing of the trapezes meets that required for the type of raceway installed.
 3. Cables and raceway are secured to a trapeze by straps designed for the purpose.
 4. Cables and raceway do not support other raceway or cables.
 5. An appropriately sized seismic bracing system is installed.

END OF SECTION 260529

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes raceways, conduits, and boxes for electrical systems wiring, including all fittings, hangers, and appurtenances.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 260526, Grounding and Bonding for Electrical Systems.
- B. Section 260553, Identification for Electrical Systems.
- C. Section 262726, Wiring Devices.

1.3 REFERENCES

- A. ANSI: American National Standards Institute:
 - 1. ANSI C80.1: Electrical Rigid Steel Conduit.
 - 2. ANSI C80.3: Steel Electrical Metallic Tubing.
 - 3. ANSI C80.4: Fittings for Rigid Metal Conduit and Electrical Metallic Tubing.
- B. ASTM: American Society for Testing Materials:
 - 1. ASTM A193: Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
 - 2. ASTM E814: Standard Test Method for Fire Tests of Penetration Firestop Systems.
- C. JIC: Joint Industrial Council:
 - 1. JIC EMP-1: Electrical.
- D. NEC: National Electrical Code.
- E. NEMA: National Electrical Manufacturers Association:
 - 1. NEMA RN 1: Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - 2. NEMA TC2: Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 - 3. NEMA Product and Installation Standards.
- F. NFPA: National Fire Protection Association:
 - 1. NFPA 70: National Electrical Code.
- G. TIA: Telecommunications Industry Association/Electronic Industries Association:
 - 1. TIA 569-A: Commercial Building Standard for Telecommunications Pathways and Spaces.

- H. UL: Underwriters Laboratories:
 - 1. UL 360: Standard for Liquid-Tight Flexible Metal Conduit.
 - 2. UL 651: Rigid Nonmetallic Electrical Conduit.
 - 3. UL 651A: High-Density Polyethylene Conduit.
 - 4. UL 1479: Intermediate Metal Conduit.

1.4 DEFINITIONS

- A. “Where subject to physical damage,” is defined as a surface installation within an 8-foot zone above a finished floor, in areas subject to vehicular traffic, including manually operated fork lifts.

1.5 SUBMITTALS

- A. Submittals for the following materials shall consist only of a listing of the manufacturer’s name and the applicable catalog numbers of the items to be utilized. Upon review of this list, further information may be requested:
 - 1. Conduit.
 - 2. Conduit fittings.
 - 3. Supports.
- B. Submittals for the following materials shall be complete with detailed information and cut sheets:
 - 1. Wireway and wire gutters.
- C. Provide as-constructed drawing information identifying final conduit routing and box locations upon completion of the work.

1.6 QUALITY ASSURANCE

- A. Products shall be new and certified by an approved testing laboratory.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials shall be of current standard design and shall conform to the established standards of an approved testing laboratory. Like items shall be of the same manufacturer and type.

2.2 METALLIC CONDUITS

- A. Galvanized Rigid Steel Conduit (GRSC):
 - 1. Heavy wall construction, manufactured in conformance with ANSI C80.1 and listed as UL 6 approved.

- B. Electrical Metallic Tubing (EMT):
 - 1. Thin wall electrogalvanized steel, manufactured in conformance with ANSI C80.3 and listed as UL 797 approved.
- C. PVC Coated Rigid Steel Conduit and Fittings:
 - 1. ANSI C80.1 hot-dipped galvanized rigid steel conduit with an external 0.040" minimum PVC protective coating per NEMA Standard RN 1. Both ends of conduit shall be threaded with thread protectors, factory-installed. Fittings shall be threaded type ANSI C80.4, hot-dipped galvanized, with a 0.055" minimum PVC protective coating. PVC coating on fittings shall match the coating on the PVC coated conduit.
- D. Flexible Metal Conduit:
 - 1. Manufactured from hot dipped galvanized steel manufactured in conformance with UL standards. Flexible metal conduit shall be a minimum of 1/2-inch standard trade size.
- E. Liquid-Tight, Flexible Metal Conduit:
 - 1. Conduit shall have a ground wire.
 - 2. Aluminum or galvanized flexible metal conduit shall have a polyvinylchloride chemical resistant jacket in conformance with the requirements of UL 360. Acceptable manufacturers are Sealtight, or equal.

2.3 RIGID NON-METALLIC CONDUITS

- A. Polyvinylchloride (PVC) Conduit:
 - 1. PVC conduit shall be Type II, in conformance with NEMA TC2 and the following:
 - a. Schedule 40, high impact.
 - b. Suitable for use with 90°C rated wire.
 - c. Conform to UL Standard 651 and carry appropriate UL listing for above and below ground use.

2.4 METALLIC BOXES

- A. Flush and Concealed Outlet Boxes:
 - 1. Galvanized stamped steel with screw ears for device ring mounting, knock-out plugs, mounting holes, and fixture studs if required. Acceptable manufacturers are RACO, or equal.
- B. Surface Outlet Boxes (Interior Locations):
 - 1. Boxes for use on ceilings shall be galvanized stamped steel with screw ears for device ring mounting, knock-out plugs, mounting holes, and fixture studs if required. Acceptable manufacturers are RACO, or equal.
 - 2. Boxes for use on walls below 8 feet or where noted on drawings shall be cast steel or aluminum with threaded hubs.
- C. Large Boxes:
 - 1. When required, boxes exceeding 4 11/16 inches square shall be welded steel construction with screw cover and painted, steel gauge matching physical size. Acceptable manufacturers are Hoffman, Circle AW, or equal.

- D. Floor Boxes:
1. Boxes in concrete floors shall be adjustable flush power floor boxes with aluminum duplex service tops. Acceptable manufacturers are Hubbell 825 29/SA 3925, or equal.
 2. Boxes on flush ducts shall have service fittings as required. Equip outlets with receptacles as specified in Section 262726. Acceptable manufacturers are Hubbell SC-3900 series, or equal.

2.5 BOXES AND FITTINGS

- A. Sheet Metal Boxes and Fittings:
1. Boxes and fittings installed in areas where electrical metallic tubing is specified shall be standard UL-approved sheet steel type.
- B. Cast Ferrous Alloy Boxes (Outside Locations):
1. Hot-dipped galvanized cast ferrous alloy unless otherwise specified.
 2. Conduit entrances shall be integrally cast threaded hubs or bosses and shall provide for full 5-threaded contact on tightening. Drilling and treading shall be done before galvanizing.
 3. Device covers shall be suitable for boxes, with full-body neoprene gaskets to fit the devices and boxes used.
 4. Cover plates shall be hot-dipped galvanized cast ferrous alloy unless the particular device requires a cover that is not manufactured in this material.
 5. Type 304 stainless steel screws shall be provided for covers.
 6. Where two or more devices are located together, outlet and device boxes shall be gang type.
 7. Device boxes shall be FD boxes as manufactured by Crouse-Hinds, Appleton, or equal.
- C. Floor Boxes:
1. Hot-dipped galvanized cast boxes with a NEMA 4 rating.
 2. Boxes shall have a recessed ring neoprene gasket, and checker plate covers.
 3. Cover fasteners shall be 316 stainless steel machine screws of not less than 1/4-inch diameter. The cover screws shall be flathead socket-type recessed screws, countersunk below the level of the cover.
- D. Steel Sheet Boxes (Outside Locations):
1. Boxes larger than Type FD shall be fabricated from steel plating and shall be hot-dipped galvanized. The thickness of the steel plating shall conform to the requirements of JIC. Before finish galvanizing, furnish and install a grounding pad drilled for two-bolted grounding lugs or with a grounding stud welded to the inside of the box.
 2. Provide 316 stainless steel hardware.
 3. Boxes shall, as a minimum, meet NEMA 12 and JIC requirements and shall be NEMA 4 where exposed to weather or water.
 4. Galvanized sheet steel boxes may be used in protected areas where electrical metallic tubing is specified. Boxes shall be a minimum of 4 inches square.
- E. Boxes and Fittings for Hazardous Locations:
1. In locations specified as Class I, Divisions 1 or 2, hazardous, boxes and fittings shall be NFPA No. 70, explosion-proof, in addition to the requirements specified above.

2. Seals for conduit systems shall be hot-dipped galvanized cast ferrous alloy, and each seal shall be of suitable configuration for the individual circumstance. Sealing compound shall be hard type, Chico A, or equal, and shall be UL listed for explosion-proof sealing fittings.

F. Boxes and Fittings in Corrosive Locations:

1. Surface boxes and fittings located in areas specified as corrosive shall be NEMA 4X. Conduit entering plastic boxes and exposed metal on plastic boxes which are not isolated from the interior of the box shall be bonded together with a suitable grounding conductor.
2. Seals for entry in corrosive locations shall be oblong conduit bodies filled with soft non-setting compound.

G. Terminal Cabinets:

1. Meet NEMA 12 and JIC requirements as a minimum, be made from sheet steel, and have hinged doors. Cabinets exposed to weather or moisture shall meet NEMA 4X requirements.
2. Except for those located in electrical equipment rooms, cabinets shall be finished inside and out with a powdered thermosetting resin system resistant to abrasion, moisture, acids, alkalis, high temperatures, and flame.
3. Exterior color shall be gray. Interior color shall be white.
4. Before finish is applied, a copper grounding pad for a two-bolt grounding lug or grounding stud shall be provided inside the cabinet.
5. Provide 316 stainless steel hardware.
6. Terminal cabinets shall have terminal blocks of size and capacity for the required loads and shall be rated 30 amperes, 600V AC minimum. Contacts shall be No. 8 minimum strap screw of a type suitable for ring tongue or locking spade terminals. Similar cabinet with a mounting panel shall be provided for mounting miscellaneous field equipment.

H. Hubs:

1. Hubs for connection of conduit to junction, device, or terminal boxes shall be made of cast ferrous alloy, electroplated with zinc and shall have insulating bushings.
2. Hubs shall contain a neoprene O-ring and shall provide a watertight connection.

2.6 CONDUIT FITTINGS

A. GRSC:

1. Fittings, including couplings, shall be threaded unless otherwise approved by the Port.
2. Threadless Couplings and Connectors:
 - a. GRSC couplings and box connectors may be steel threadless, compression ring, or set screw type for use with conduits 1 inch and smaller installed in poured concrete locations where limited working space makes threaded fittings impractical.
 - b. Threadless fittings are not acceptable for use with GRSC conduits except as allowed above. They may, however, be used with EMT type conduits.
3. Myers hubs or equal shall be used with NEMA 2, 3, 3R, 4 and 12 enclosures.
4. Threaded Locknuts:
 - a. Sealing type may be used with NEMA 2, 3, 3R, 4 and 12 enclosures at bottom penetrations.
 - b. Extra-heavy electrogalvanized steel for sizes up to 2 inches. Locknuts larger than 2 inches shall be electrogalvanized malleable iron.

5. Threaded Bushings:
 - a. 1 1/4 inch and larger, insulated, grounding type as required in Section 260526.
 - b. Electrogalvanized malleable iron with insulating collar.
 - c. Locking type and provided with a feed-through compression lug for securing the ground cables.
 6. Unions shall be electrogalvanized ferrous alloy type. Acceptable manufacturers are Appleton, UNF or UNY; Crouse-Hinds, UNF or UNY; or equal.
 7. Conduit bodies shall be ferrous alloy type (malleable iron), with clamp type fastening covers.
 8. Gaskets shall be neoprene.
- B. EMT:
1. EMT couplings and connectors shall be watertight compression type or set screw type with steel bodies, zinc or cadmium coated. Die cast fittings will not be permitted.
 2. Connectors shall be steel compression ring or set screw type for conduit termination, with insulated throat, suitable for the application.
 3. Couplings shall be steel compression ring or set screw type.
- C. Flexible Metal Conduit:
1. Fittings shall be 2-screw steel body type, zinc, or cadmium coated. Die cast fittings will not be permitted.
- D. Liquid-Tight, Flexible Metal Conduit:
1. Fittings for liquid-tight conduit shall have a cadmium-plated malleable iron body and gland nut with cast-in lug, brass grounding ferrule, threaded to engage conduit spiral and o-ring seals around the conduit and box connection and insulated throat. Use 45-degree and 90-degree fittings where necessary.
 2. Fittings shall be threaded and compression type for polyvinyl jacketed flex.
- E. Weatherproof Connectors:
1. Provide threaded connectors.
- F. Expansion Couplings:
1. Provide O.Z. type EX couplings with jumper. Gedney, or equal.
- G. Seal-Offs:
1. Provide seal-offs with filler fiber, compound, and removable cover.

2.7 METALLIC RACEWAYS

- A. Surface Metal Raceway (SMR):
1. Provide raceway with snap-on cover, sized as shown on the drawings. Acceptable manufacturers are Wiremold, Walker, or equal.

2.8 RACEWAY SUPPORTS

- A. Conduit Supports:
1. Hot-dipped galvanized (exterior) or electrogalvanized (interior) steel framing channel to support groups of conduit.

2. Use one-hole galvanized malleable iron pipe straps with galvanized clamp backs and nesting backs where required.
 3. Use one-hole galvanized steel pipe straps on studs for interior applications.
 4. Supports for PVC coated rigid steel shall be PVC coated straps, struts, or hangers.
- B. Ceiling Hangers:
1. Adjustable galvanized carbon steel rod hangers in conformance with ASTM A193. Rods shall be minimum 1/2 inch in diameter, threaded continuously.
 2. Use stainless steel hanger rods where rods will be located in corrosive areas and exposed to the effects of weather or moisture.
- C. Structural Attachments (Racks):
1. Hot-dipped galvanized steel framing channel.
 2. Treat field cuts with zinc-enriched paint.

2.9 WIREWAYS

- A. Wireway and auxiliary gutters shall meet JIC, EMP-1 standards, shall be sectional flanged oil-tight type with hinged covers, and shall be 8 inches in cross section unless otherwise specified.
- B. Troughs shall be painted steel, square in cross section, with screw covers. Use gasketed, weatherproof type for exterior applications.
- C. Fittings, tees, elbows, and couplings shall be as needed for configurations shown on the drawings.

2.10 MISCELLANEOUS PRODUCTS

- A. Provide watertight seals at penetrations through exterior walls or walls exposed to moisture. Acceptable manufacturers are type CSMC by O.Z. Gedney Co., Link Seal by Thunderline Corp., or equal.
- B. Provide waterproof firestops and seals in specified locations. Acceptable manufacturers are Flamemastic 71A, Vimasco No. 1-A, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
1. Existing boxes and raceways, exposed under this contract, shall be properly supported per NEC before cover approval.
 2. All conduit and wireway installations shall comply with NEMA, "Standards of Installation."
 3. Cutting or notching shall be kept to a minimum, using only approved methods. Structural members shall not be disturbed or cut in any way without specific written approval from the Port, on a case-by-case basis. Patch and correct finished surfaces damaged by electrical

work. Fire barriers shall be returned to their original condition using materials of equal or higher fire rating and specifically designed for that use.

4. Unless otherwise noted on the drawings, all conduit work in finished spaces shall be concealed. Exposed conduit is acceptable only when and where prior specific authorization for use is obtained from the Port.
5. Conceal all conduits in finished spaces and elsewhere so far as practicable. Concealed conduits shall run in a direct line with long sweep bends and offsets. Where conduit runs between junction boxes and/or devices, route conduit vertically below ceiling level. Where horizontal runs are required, route above ceiling level for future flexibility.
6. Route exposed conduit parallel or at right angles to structural building lines and neatly offset into boxes. Conduits attached directly to building surfaces shall closely follow the surfaces. Conduit fittings may be used to “saddle” under beams.
7. Where possible, do not install conduit above baggage conveyor or catwalk. Where conduit must cross above conveyor or catwalk, locate conduit perpendicular to the conveyor or catwalk and install tight to the structure and ceiling deck even if installation creates vertical bends in the conduit. When crossing above conveyor, the conduit bottom shall never be less than 34 inches above the conveyor bed.
8. Route conduit in existing racks whenever possible.
9. Cut conduits square, ream smooth, and draw fittings up tight with at least five threads fully engaged.
10. Conduits, whether exposed or concealed, shall be securely supported and fastened within 18 inches of each outlet, elbow, fitting, panel, etc. Support suspended conduits with metal ring or trapeze hangers on threaded, steel rods having a safety factor of four.
11. During construction, keep conduit and raceways closed with suitable plugs or caps to prevent entrance of dirt, moisture, concrete, or foreign objects. Raceways shall be clean and dry before installation of wire and at the time of acceptance.
12. Pack spaces around conduits with oakum and seal to prevent entrance of moisture where conduits are installed in sleeves or block-outs which penetrate moisture barriers.
13. Install intumescent material around ducts, conduits, etc. to prevent spread of smoke or fire where installed in sleeves or block-outs which penetrate rated fire barriers. The penetration sealing system shall be capable of passing a 3-hour test per ASTM E814 (UL 1479) and shall consist of a material capable of expanding when exposed to temperatures of 250-350°F. An alternate method utilizing intumescent materials in caulk and/or putty form may be used.
14. Provide GRSC on underground conduit runs at 60-degree and larger bends, and where conduits exit concrete.
15. Underground stub-ups shall use wrapped or PVC coated rigid steel galvanized 90-degree elbows with a minimum radius not less than that permitted by code, or as noted on the drawings. Conduit risers from these elbows shall be wrapped or PVC coated rigid steel galvanized conduit. Extend GRSC 18 inches beyond penetrations.
16. Existing raceways exposed under this contract shall be properly supported per NEC before cover approval.

B. Conduit Runs Between Pull Boxes:

1. Limit the number of directional changes of the conduit to a maximum total of 270 degrees in any run between pull boxes.
2. Limit the number of directional changes of the conduit to a maximum of 180 degrees in any run between pull boxes for communications conduits, unless otherwise approved by the Port.
3. Limit conduit runs to 400 feet, less 100 feet for each 90 degrees of change in direction.

4. Avoid bends and offsets whenever possible. However, when bends and offsets are necessary they shall be factory bends or bends made with a hickey or conduit bending machine. Heating, welding, or brazing the conduit for bends is not acceptable.
- C. Junction and Pull Boxes:
1. Where required for pulling cable and as necessary to meet NFPA No. 70, provide cast junction boxes or pull boxes. Pull boxes used for multiple conduit runs shall not combine circuits fed from different MCC's, switchboards, or switchgear.
- D. Conduit Terminations:
1. Conduit entering sheet steel boxes or cabinets shall be secured by locknuts on both the interior and exterior of the device and shall have an insulating grounding or bonding bushing constructed over the conduit end.
 2. Conduit entering top or sides of NEMA 3R, 4, and 12 boxes shall be terminated with a rain-tight hub having an insulated liner.
 3. Surface-mounted cast boxes and plastic enclosures shall have threaded hubs.
 4. Joints shall be made with standard couplings or specified unions.
 5. Metal parts of plastic or coated control stations and coated boxes shall be bonded to the conduit system.
 6. Running threads shall not be used in lieu of nipples, nor shall excessive thread be used on any conduit.
 7. The ends of conduit shall be cut square, reamed, and threaded with straight threads.
 8. Male threads on rigid steel conduit shall be coated with electrically conductive, zinc rich paint.
 9. Steel conduit shall be made up-tight, with thread compound.
- E. Conduit Support:
1. Exposed metallic conduit shall be run on supports spaced not more than 6 feet apart unless noted otherwise on the drawings, and shall be constructed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceiling.
 2. Exposed PVC conduit shall be run on supports spaced not more than 3 feet apart for conduits up to 1 inch, 5 feet apart for conduits 1 1/4 inches to 2 inches, and 6 feet apart for conduits 2 1/2 inches and larger.
 3. No conduit shall approach closer than 6 inches to any object which operates above the rated temperature of the cable insulation it contains.
 4. Conduit, except PVC, supported directly from the concrete structure shall be spaced at least 1/4 inch using one-hole, hot-dipped galvanized, malleable iron straps with nesting backs or, if three or more conduits are located in parallel run, they may be spaced from the wall approximately 5/8 inch to 1 inch by means of framing channel.
 5. Runs of individual conduit suspended from the ceiling shall be supported with galvanized carbon steel rod hangers. Where three or more conduits are suspended from the ceiling, steel racks shall be constructed.
 6. PVC conduit supported directly from the concrete structure shall be spaced out at least 1/4 inch using PVC conduit wall hangers.
 7. Conduit rack and tray supports shall be secured to concrete walls and ceilings by means of cast-in-place anchors, die-cast rust-proof expansion shields, or cast flush anchors. Wooden plugs, plastic inserts or gunpowder-driven inserts are not acceptable as a base to secure conduit supports.

- F. Conduit Penetrations:
1. Conduit routed through floors, walls, or other concrete structures shall pass through cast-in-place openings wherever possible. In cases where cast-in-place openings are not possible, use appropriately sized holes which will not impair the structure's integrity. After completion, grout and caulk surface to be watertight and refinish to match existing surroundings.
 2. Install watertight seals wherever conduits penetrate concrete wall panels or walls to the outdoors.
 3. Install firestops and seals at penetrations through building floors, walls, or where required by fire codes.
 4. Provide waterproof firestops and seals in specified locations.
- G. Raceway Separation:
1. Whenever possible, separate signal raceways from AC power or control raceways a minimum of 12 inches.
- H. Conduit Seals for Hazardous Areas:
1. Each conduit passing from a hazardous or corrosive area into a non-hazardous or non-corrosive area shall be provided with a seal fitting which may be located on either side of the boundary. The seal shall be located at the boundary in accordance with NEC requirements.
- I. Expansion Joints and Expansion Couplings:
1. At expansion joint crossings and where noted on the drawings, verify maximum design deflection. Use expansion coupling fittings. At crossings of expansion joints with 1 1/2-inch conduit and smaller, flex conduit may be used where acceptable.
- J. Liquid-Tight, Flexible Metal Conduit:
1. Use liquid-tight in accordance with JIC standards and the following:
 - a. Where specified or indicated on the drawings.
 - b. Where flexibility is required for electrical raceways on equipment.
 - c. For motor mounts.
 2. The maximum length of conduit shall be 24 inches for conduits 1 1/2 inches or smaller and 36 inches for conduits 2 inches or larger. The terminating fittings and sealing shall be as specified.
- K. Non-Metallic Conduit:
1. Elbows, offsets, or 60-degree and larger bends in direct buried or concrete embedded conduit runs shall be galvanized rigid steel. The final length of conduit runs which rise up through concrete slabs or curbs shall be galvanized rigid steel, provided with grounding bushing.
 2. Make connections with waterproof solvent cement.
 3. PVC conduit entering fiberglass boxes or cabinets shall be secured by threaded bushings on the interior of the device and shall be terminated with a threaded male terminal adapter having a neoprene O-ring. Joints shall be made with standard couplings.
- L. Galvanized Rigid Steel Conduit (GRSC):
1. GRSC embedded in concrete below grade or in damp locations shall be made watertight by painting the entire male thread with metal primer paint before assembly.

3.2 INSTALLATION OF RACEWAYS FOR COMMUNICATIONS

- A. Comply with TIA-569-A for pull-box sizing and length of conduit and number of bends between pull points.
- B. Communications conduit bends shall be large-radius field bends or manufactured conduit sweeps and long-radius elbows. Do not install cast type fittings or sharp bends.
- C. Installation in Equipment Rooms:
 - 1. Protect existing telephone terminals and equipment which will remain in service during construction from mechanical injury and dust entry.
 - 2. Position conduit ends adjacent to a corner on backboard where a single piece of plywood is installed or in the corner of room where multiple sheets of plywood are installed around perimeter walls of room.
 - 3. Install cable runway to route cables if conduits cannot be located in these positions.
 - 4. Secure conduits to backboard when entering room from overhead.
 - 5. Extend conduits 6 inches above finished floor or 12 inches down from ceiling, terminating in insulating bushings.
 - 6. Install metal conduits with grounding bushings and connect with grounding conductor to grounding system.

3.3 INSTALLATION OF RACEWAYS AND BOXES FOR FIRE ALARM

- A. Fire alarm conduit and boxes installed in concealed locations or located in stairwells, storage rooms, electrical rooms, mechanical rooms, and utility rooms shall be factory-painted red.
- B. Exposed fire alarm conduits in finished spaces shall be painted to match adjacent wall and ceiling finishes.

3.4 BOXES

- A. Installation:
 - 1. Mount boxes and outlets at center line, at heights shown on the drawings.
 - 2. Install outlet boxes, sized by code, large enough to accommodate all wires, fittings, and devices.
 - 3. Install multi-gang boxes as required to accept devices with no more than one device per gang.
 - 4. Equip all metallic boxes with grounding provisions.
 - 5. Flush wall switch, and receptacle outlets used with conduit systems shall be a minimum of 4 inches square, 1 1/2 inches or more deep, with a one- or two-gang plaster ring mounted vertically. Where three or more devices are at one location, use a one-piece multiple gang tile box or a gang box with a suitable device ring.
 - 6. Wall bracket and ceiling, surface-mounted lighting fixture outlets shall be a minimum of 4 inches square and 1 1/2 inches deep with a 3/8-inch fixture stud where required. Wall bracket outlets shall have a single-gang opening where required to accommodate fixture canopy. Provide larger boxes or extension rings where the quantity of wires installed requires more cubic capacity.

7. Boxes for communication systems shall be a minimum of 4 11/16 inches square and 3 1/2 inches deep. Provide communication outlet boxes with a one-gang plaster ring mounted vertically.
8. Boxes for special systems shall be suitable for the equipment installed. Coordinate size and type with the system supplier.
9. Install pull boxes where shown on the drawings or required by code. Use galvanized boxes of the size required by code with removable covers installed so that covers will be accessible after work is completed.
10. Install boxes flush with finished surfaces or not more than 1/8-inch back, and install boxes level and plumb. Long screws with spacers or shims for mounting devices are not acceptable. Do not expose combustible materials to wiring at outlets.
11. Extend covers for flush mounted boxes in finished spaces a minimum of 1/4-inch beyond the box edge to provide a finished appearance. Finish edge of cover to match cover face.
12. Mount cast boxes or plaster trims for weatherproof outlets horizontally.

3.5 CONDUIT TYPE REQUIREMENTS

- A. Galvanized Rigid Steel Conduit (GRSC). Uses permitted:
 1. Direct-buried.
 2. Embedded or encased in concrete.
 3. Exiting concrete (extend GRSC 18 inches beyond penetration).
 4. Exposed in buildings from floor level to a height of 8 feet, except as noted below.
 5. Exposed to weather, corrosive, or hazardous conditions, including interior exposures.
- B. Electrical Metallic Tubing (EMT). Uses permitted:
 1. In dry, protected locations.
 2. Exposed at a height more than 8 feet above floor level, or more than 18 inches above floor level in HVAC equipment rooms, utility tunnels, communication equipment rooms, electrical rooms, or unoccupied spaces, unless otherwise noted on the drawings.
- C. Flexible Metal Conduit:
 1. Use where flexibility is necessary, as at motors, transformers, recessed light fixtures, etc. Flexible conduit terminations at motors, transformers, etc., shall be limited to 18 inches. Use flexible conduit for other purposes only after obtaining Port approval.
- D. Polyvinylchloride Conduit (PVC), Schedule 40. Uses permitted:
 1. Embedded or encased in concrete (use GRSC where conduits exit concrete work).
 2. Direct-buried 18 inches or more below grade.
- E. Polyvinylchloride Conduit (PVC), Schedule 80. Uses permitted:
 1. Direct-buried 18 inches or more below grade.
 2. Embedded or encased in concrete (use GRSC where conduits exit concrete work and extend GRSC 18 inches beyond penetration).
 3. Exposed to corrosive conditions inside building.
- F. Metal Raceway:
 1. Use in dry, protected locations for equipment requiring multi-connection wiring or where subject to physical damage.

3.6 RACEWAY AND CONDUIT SIZES

- A. Size raceways and conduits as indicated on the drawings. Where no size is indicated, size as follows:
 - 1. Larger conduits shall be sized to code. Size for the quantity of conductors installed, based upon NEC tables.
 - 2. Conduit installed underground or in concrete shall be 1 inch or larger.
 - 3. Conduits shall be 3/4-inch minimum size with larger sizes as indicated on the drawings. Conduits with tenant lease space buildouts may use conduits smaller than 3/4-inch.
 - 4. Communications conduit runs may be combined as follows:
 - a. Two outlets: 1 1/4-inch size.
 - b. Three outlets: 1 1/2-inch size.

3.7 FITTINGS

- A. Assemble metallic raceways and conduits in one continuous piece and secure to boxes, panels, etc. with appropriate fittings to maintain electrical continuity. All conduit joints shall be cut square and reamed smooth with all fittings drawn up tight.

3.8 PULL LINES

- A. Install nylon pull lines in all empty conduits where routing includes 25 feet or more in length or includes 180 degrees or more in bends.
- B. Where conduits requiring pull lines are stubbed out and capped, coil a minimum of 36 inches of pull line and tape at termination of conduit for easy future access. Label pull lines as to conduit starting or termination point or intended future use.

END OF SECTION 260533

SECTION 260545 – SEISMIC RESTRAINTS FOR ELECTRICAL RACEWAYS AND EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This Section describes seismic bracing, channel type elements, and bolting accessories:
 - 1. Related work specified elsewhere.
- B. Division 26, Electrical.
- C. Section 260529, Hangers and Supports for Electrical Systems.

1.2 REFERENCES

- A. The following are the referenced standards:
 - 1. SMACNA Sheet Metal and Air Conditioning Contractor's National Association.
 - 2. AISC American Institute of Steel Construction.
 - 3. ASTM American Society for Testing and Materials.
 - 4. AWS American Welding Society.
 - 5. IBC International Building Code.
 - 6. ICC International Code Council.
 - 7. OSHPD Office of Statewide Health Planning and Development.
 - 8. OSSC Oregon Structural Specialty Code.

1.3 QUALITY ASSURANCE

- A. General Requirements:
 - 1. Provide seismic restraints for equipment, both supported and suspended, conduits, and cable tray systems.
 - 2. Bracing of conduits and cable trays in accordance with the provisions set forth in the SMACNA seismic restraint manual.
 - 3. Review and approve structural requirements for restraints, including their attachment to the building structure by a registered structural engineer in the same state as the project.
 - 4. Attachments to supported or suspended equipment must be coordinated with the equipment manufacturer.
- B. Bracing of Conduits:
 - 1. Provide seismic bracing of conduit as detailed below:
 - 2. Exception: Conduits suspended by individual hangers 12-inches or less in length, as measured from the top of the conduit to the bottom of the support where the hanger is attached, need not be braced.
 - a. Brace electrical conduits 2-1/2 inch nominal diameter or larger.
 - b. Brace conduits located in electrical rooms, boiler rooms, mechanical equipment rooms, and refrigeration mechanical rooms that are 1-1/4-inch nominal diameter and larger.

- C. Suspended Equipment and Raceways:
1. Cable Method: The seismic restraint shall consist of a combination of stranded steel aircraft cable with an added nut and neoprene and steel washer.
 2. Cable attachment details, cable size, and the neoprene and steel washers shall be sized by the manufacturer and are to be indicated in the shop drawings.
 3. Provide detailed shop drawings for approval in sufficient time to allow structural attachment work to be incorporated into the normal work sequence.
- D. Seismic restraints, including anchors to building structure, designed by a registered professional engineer licensed in the state of Oregon. Design includes:
1. Number, size, capacity, and location of anchors for above-floor- or above-roof-mounted equipment. For curb-mounted equipment, provide design of attachment of both the unit to the curb and the curb to the structure. For units weighing greater than 2500 pounds, or curbs more than 10 feet long, provide substantiating calculations the curb can accept the prescribed seismic forces.
 2. Number, size, capacity, and location of seismic restraint devices and anchors for vibration-isolation and suspended equipment. Provide calculations, test data, or California OSHPD approval number verifying the horizontal and vertical ratings of the seismic restraint devices.
 3. Number, size, capacity, and location of braces and anchors for suspended raceways, bus ducts, and cable trays on as-built plan drawings.
 - a. Select a single seismic restraint system pre-designed to meet the requirements of the latest edition of the OSSC.
 - b. Details or designs from separate seismic restraint guidelines are not acceptable for use for a single suspended system element. Installation not addressed by the selected system shall be designed, detailed, and submitted along with the as-built plan drawings.
 - c. Maximum seismic loads shall be indicated on drawings at each brace location. Drawings shall bear the stamp and signature of the registered professional engineer licensed in the state of Oregon who designed the layout of the braces.
 - 1) Seismic brace attachments to bottom of floor deck or slab shall not exceed 500 lb (strength/LRFD level) vertical upward reaction, nor 1000 lb vertical downward reaction, per load spacing as defined in Section 260529. At 3" deck with 4½" concrete topping above, and 7" solid concrete slabs, these allowable loads may be doubled.
 - 2) Vertical upward reactions greater than above may be achieved by bridging the connection to engage multiple adjacent flutes. Flutes shall be defined as noted above.
 - 3) Seismic load criteria above may be considered independently from gravity hanger criteria.
- E. Supports, Hangers, and Anchors: Comply with the requirements of Section 26 05 29, Hangers and Supports for Electrical Systems, except anchor (expansion) bolts used for connection Level 3 have expansion anchor capacities equal to 50 percent of the ICC research report values.
- F. The seismic restraint and anchorage of permanent equipment and associated systems shall be in accordance with ASCE 7-16 and the 2019 Oregon Structural Specialty Code, with the following exception:
1. Comply with ASCE but limited to component weight less than 25 lbs.

1.4 SUBMITTALS

- A. Product Data: Submit product data for products specified herein.
- B. Shop Drawings:
 - 1. Submit shop drawings complying with the requirements of the Quality Assurance article of this Section.
 - 2. Stamp shop drawings by a professional engineer licensed in the state of Oregon.
 - 3. Approve submittals prior to rack fabrication and installation.
- C. Calculations:
 - 1. Submit seismic calculations indicating restraint loadings resulting from the design seismic forces presented in the Quality Assurance article of this Section.
 - 2. Include proper anchorage details and when applicable and include consideration of the types of concrete.
 - 3. Certify by a professional engineer licensed in the state of Oregon.
 - 4. Calculations shall include consideration of localized stress effects on the supporting structure resulting from connections.
- D. Certifications:
 - 1. Submit certification of seismic restraint's and building structural member's capability to safely accept loads resulting from seismic forces calculated in the previous paragraph.
 - 2. Tests in three planes clearly showing ultimate strength and appropriate safety factors performed by independent laboratories and certified by a professional engineer licensed in the state of Oregon or calculations by a professional engineer licensed in the state of Oregon are acceptable.

PART 2 - PRODUCTS

2.1 SEISMIC BRACING

- A. Steel fabrication, in accordance with AISC M011 Manual.
- B. Welding in accordance with AWS D1.1.
- C. Design and sizes as required.
- D. Fastenings, bracing, and assembly selected by a professional engineer licensed in the state of Oregon.
- E. Show that the maximum stress in any structural steel member will not exceed 18,000 psi.

2.2 CHANNEL TYPE ELEMENTS

- A. 12 gauge formed steel, 1-5/8-inch square prime painted or chromate dip finish. Use spring-in nuts with grooves.

2.3 BOLTING ACCESSORIES

- A. Machine bolts with semi-finished nuts.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide support assemblies to meet the seismic zone indicated. Equipment shall be braced and anchored to conform to the requirements listed under the Quality Assurance article of this Section.
- B. Seismically brace raceways, cable trays, and suspended bus duct to conform to the requirements listed under the Quality Assurance article of this Section.
- C. Provide pipeline seismic flexible connectors where piping crosses building earthquake joints. Arrange raceways and connectors for the amount of motion required. Maintain continuity of the grounding system for each of the joints.
- D. Do not use powder-actuated inserts.
- E. Seismic Restraints:
 - 1. Attach to structural members of the building, which are capable of withstanding the design load of the seismic restraint.
 - 2. Ensure load capacity of the structural members is greater than or equal to the capacity of the seismic restraint.

END OF SECTION 260545

SECTION 260553 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Clearly and properly identify the complete electrical system to indicate the loads served or the function of each item of equipment connected under this work.
- B. Provide conduit and cable identification as shown in the attached labeling detail.

1.2 REFERENCES

- A. ANSI: American National Standards Institute:
 - 1. ANSI Z535.4: Product Safety Signs and Labels.
- B. NEC: National Electric Code:
 - 1. NEC Article 110: Requirements for Electrical Installation.
- C. OSHA: Occupational Safety and Health Administration.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 260573, Electrical System Analysis.

PART 2 - PRODUCTS

2.1 LABELS

- A. Pre-Printed: Permanent material pre-printed with black on white, with adhesive backing. Brady, 3M, or equal.
- B. Laminated Plastic: 3-ply laminated plastic, color as indicated, with 1/2-inch high white letters for low voltage and 1-inch high white letters for high voltage. Lamicoid, or equal.
- C. Plastic Tape: Black or red with white letters, adhesive backing, field-printed with proper tool. Dymo-tape, or equal.
- D. Marker Tape: Clear adhesive-backed tape with black letters, for device plates. Kroy, or equal.
- E. Wire Markers: White with black numbers, adhesive-backed tape on dispenser roll. Brady, 3M, or equal.
- F. Marker Pen: Black permanent marker suitable for writing on metallic surfaces.

- G. Clearance Warning Tape: 2-inch wide self-adhesive vinyl type, black/yellow stripes. Seton, Brady, or equal.

PART 3 - EXECUTION

3.1 LOW VOLTAGE SWITCHGEAR

- A. Label all low voltage switchboards and protective devices with laminated plastic labels indicating the function or the load served.
- B. Provide laminated plastic labels for all bussed spaces indicating the maximum ampere rating or size of future breaker or switch that may be installed in the space reserved.

3.2 BRANCH CIRCUIT PANELBOARDS

- 1. Panel schedules shall use the actual loads and room designations per the as-built conditions and updated within 30 days of work area completion. When room designations are modified, populate the room number reference table in the Port's panel schedule template with old and new room designations. Provide a printed copy of the schedule at the panelboard and submit an electronic copy to the Port via email at electricalupdates@portofportland.com. Discard old copies of panel schedules in existing panelboards.

3.3 MOTOR CONTROL CENTERS

- A. Label all motor control centers with laminated plastic labels.
- B. Label all starters and breakers with factory-provided labels or laminated plastic labels indicating the function or the load served and location.
- C. Provide pre-printed labels for all spaces.

3.4 TRANSFORMERS AND UPS

- A. Label all transformers and UPS with laminated plastic labels indicating equipment number, source, and load.

3.5 EQUIPMENT

- A. Label all disconnect switches, individual circuit breakers, security and communications panels, relays, contactors, time switches, and indicating equipment with laminated plastic labels indicating equipment number, source, and circuit number.
- B. Where the controlling device is remote-mounted from the serving panel, include the serving panel designation and circuit number with additional plastic tape labels.

3.6 DEVICES

- A. All receptacle plates shall be marked in black permanent marker tape on the face of the plate, with the receptacles panel and branch circuit designation. The identification shall be made with clear self-adhesive tape with black 10-point letters. Apply the tape at the top of the device plate.
- B. Receptacles specified or noted on the drawings to be engraved, shall have the circuit information engraved in 3/16-inch letters on the front face of the plates. The alphabetic and numeric marking shall be made on the inside of the plate.
- C. Receptacles connected to a GFCI-protected circuit downstream from the protecting device shall be labeled "GFCI Protected."

3.7 CONDUIT AND CABLE

- A. Label all conduit runs and open cable wiring routed in cable tray or accessible ceiling spaces. Attach labels at the end of the conduit run and at least one per room. Place at entrances of all distribution panels, MCC, panelboards, etc.
- B. Label all conduit runs and open cable wiring routed in cable tray or accessible ceiling spaces. Space labels a maximum of 50 feet apart and at least one per room. Place at entrances of all "J" boxes, distribution panels, MCC, panelboards, etc.
- C. Use laminated plastic labels as shown in the attached labeling detail.
- D. Complete installation of labels prior to ceiling installation.

3.8 OUTLET, PULL, AND JUNCTION BOXES

- A. Paint fire alarm and security access system outlets, pull, and junction boxes in accordance with the directions of their specific sections.
- B. Label all pull boxes and junction boxes for fire alarm, security, surveillance, and communications systems with plastic tape, red with white letters. Where boxes are recessed in finished areas, mount label on inside of cover.
- C. Label power junction boxes neatly by hand, indicating source and circuit number.

3.9 CONDUITS EXITING UNDERGROUND VAULTS

- A. At each conduit entry and exit through an interior vault wall, provide an engraved brass label and fill the letters with contrasting enamel paint. The label shall identify each conduit and where it terminates. For example, the top northern conduit would be labeled "#1 to CVLTx," where CVLTx is the end-point for that conduit run. The next lower conduit would be labeled sequentially as "#2 to CVLTx," etc.
- B. Provide corresponding labels at both ends of each conduit run including conduits that extend through interior walls of vaults, structures, or buildings.

- C. Place the labels on the wall adjacent to each conduit. Secure the labels into the concrete with stainless steel screws and wall anchors that allow the label to be replaced if necessary.

3.10 SYSTEMS

- A. Complex control circuits may utilize any combination of colors with each conductor identified throughout, using wrap-around numbers or letters. Use the number or letters shown where the drawings or operation and maintenance data indicate wiring identification.
- B. Label the fire alarm and communication equipment zones, controls, indicators, etc., with pre-printed labels or indicators appropriate for the equipment installed, as supplied or recommended by the equipment manufacturer.
- C. Label each end of pull wires left in empty conduits with tags or tape indicating location of other end of wire.

3.11 CLEARANCE WARNING TAPE

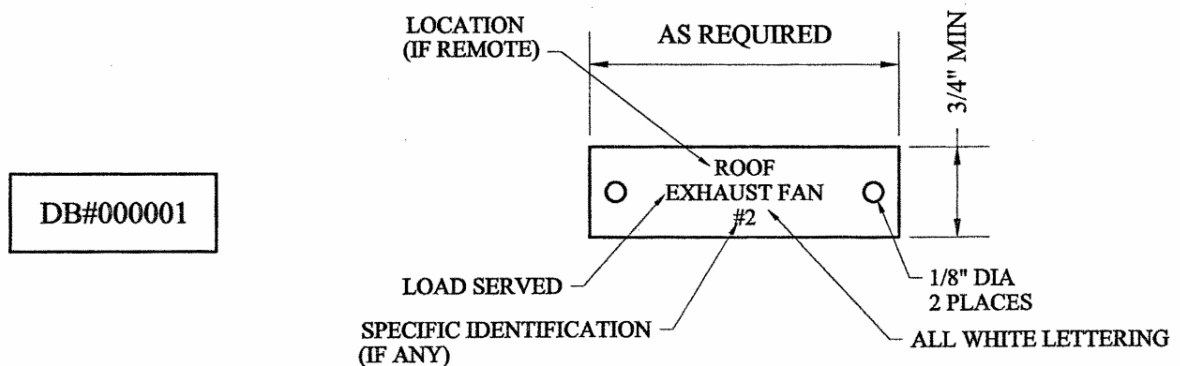
- A. Affix to floor clearance warning tape to define area in front and around electrical switchgear, panels, and motor control centers. Type layout shall conform to the requirements of NEC 110 and OSHA.
- B. Remove debris and clean area prior to installing tape.

3.12 ARC FLASH WARNING LABELS

- A. Provide pre-printed arc flash and shock hazard warning labels for switchgear, transformers, panel boards, industrial control panels, motor controllers (including those furnished with mechanical equipment), motor control centers, safety switches, automatic transfer switches, UPS, and other equipment as required by NEC and OSHA. See Section 260573 for additional requirements.
- B. Warning labels shall comply with ANSI Z535.4. Color in top part of sign shall be ANSI “safety orange.” All lettering on label shall be black.
- C. Labels shall be self-adhesive. Outdoor labels shall be suitable for high-UV environment.
- D. Label dimension shall be 4 inches by 6 inches wide.

The diagram illustrates the assembly of a cable identification label. On the left, a cross-section shows a **NYLON TIE WRAP CONNECTOR** securing a **LABEL** inside a **CONDUIT**. The label is positioned $\frac{1}{4}$ " from the top and bottom edges of the conduit. The main part of the diagram shows a **PLIABLE LAMINATED PLASTIC IDENTIFICATION LABEL** with a length of **4"**. The label contains the text: **OWNER-SYSTEM**, **CIRCUIT-IDENTITY**, and **ROOM STARTED-ROOM ENDED**. It is secured by two **1/8" DIA 4 PLACES** screws. The label is placed $\frac{1}{2}$ " from the left edge and $\frac{1}{4}$ " from the bottom edge. A **CABLE DESCRIPTION** with **1/8" WHITE LETTERING** is shown on the right side of the label.

SCALE: N.T.S.



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1. Use laminated labels at all interior and protected locations. Use professionally engraved, white enamel filled brass labels in all areas exposed to the weather and/or sunlight, and in environment air handling spaces.
2. Color code for labels shall be as follows:

Port	Blue
FAA	Yellow
Airlines	Green
Telco	Red
Other Tenants	Black
Emergency and Fire Alarm	White with Red Letters

- END OF SECTION 260553

SECTION 260933 – CENTRAL DIMMING CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes:
 - 1. Connectors and Splices.
 - 2. Daylight Responsive Controls.
 - 3. Ceiling Mount Occupancy and Vacancy Sensors.
 - 4. Button and Fader Stations.
 - 5. General Network.
 - 6. Foundry Relay and Mini-Panel / Room Controller.

1.2 RELATED SECTIONS

- A. Section 260500, Common Work Results for Electrical.
- B. Section 260519, Low Voltage Electrical Power Conductors and Cables.
- C. Section 260533, Raceway and Boxes for Electrical Systems.
- D. Section 260553, Identification for Electrical Systems.
- E. Section 271000, Structured Cabling.

1.3 QUALITY ASSURANCE

- A. Dimming control system shall be installed by primary electrical contractor or an electrical contractor experienced in the installation of dimming control systems.
- B. Label and listed by Underwriters Laboratories, Inc. and Canadian Standards Association and shall be warranted for a period of one year after acceptance by the Port.
- C. Supplier to furnish evidence of an experienced service organization which stocks system parts and is capable of providing repair service within one business day of notification.

1.4 SUBMITTALS

- A. Shop Drawings: Wiring diagrams for the various components of the System specified including:
 - 1. Composite wiring and/or schematic diagram of each control circuit as proposed to be installed.
 - 2. Show location of all devices, including at minimum sensors, load controllers, and switches/dimmers for each area on reflected ceiling plans.
 - 3. Table data showing finalized DMX address assignments of each luminaire.

4. Table data showing finalized DMX equipment IP address assignments for each network device.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
1. Catalog sheets and specifications.
 2. Ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
 3. Storage and handling requirements and recommendations.
 4. Installation instructions.
- C. Closeout Submittals:
1. Project Record Documents: Record actual installed locations.
 2. Include testing reports.
 3. Provide enhanced start-up documentation that details the start-up procedure being performed including a process to follow, details on tests performed and an area that documents any test results.
 - a. Project Record Documents: Record actual installed locations.
 4. Include testing reports.
 - a. Include measured values of light levels as defined in spec Section 265000 Lighting 3.4.A for project requirements.
 - 1) The following light levels to be recorded on Functional Testing templates.
 - a) Basis of Design Commissioning Measurements.
 - b) Emergency Egress Commissioning Measurements.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Handling: Handle units carefully to prevent damage, denting and scoring. Do not install damaged units or components - replace with new.
- B. Storage: Store units in clean dry place. Protect from weather, dirt, and physical damage.

PART 2 - PRODUCTS

2.1 COMMUNICATIONS CABLES

- A. DMX 512 cable
1. (2) shielded, twisted pairs.
 2. AWG: 24 (7x32 stranded).
 3. Impedance: 100-120Ω.
 4. Poly Jacket.
 5. Jacket color: gray
 6. Manufacturer: Belden 9729 or equal as noted in control manufacturer's documentation.
- B. Category Modular Patch Cords: Refer to spec Section 271000 Structured Cabling 2.10.A for project requirements.

2.2 CONNECTORS AND SPLICES

- A. DMX 512 Communications Cable in Junction Box:
 - 1. Splices of (1) twisted pair and ground for each cable to be made in Waygo 221-413 or equal for cable transitions. Refer to DMX-512 Communications Cable Testing for acceptable topology.
- B. Category Modular Patch Cord Jacks: Refer to spec Section 271000, Structured Cabling for project requirements.

2.3 MANUFACTURERS

- A. Provide materials, equipment, appurtenances, and workmanship for the work of this section conforming to the highest commercial standards, as specified and indicated on the drawings.
- B. One primary manufacturer shall be responsible for all components and shall provide a complete system that meets the project requirements. To match current system installed under the TCORE project:
 - 1. Electronic Theatre Controls only no substitutions
PO Box 620979
Middleton, WI 53562
Phone: 608/831-4116
Fax: 608/836-1736

2.4 LABELING

- A. Equipment shall be labeled according to the requirements of Section 260553, Identification for Electrical Systems.
- B. Remote equipment shall be labeled, like controllers, ethernet gateways, or splitters:
 - 1. Control equipment shall be clearly labeled to match zones as included on contract documents.

2.5 DMX ETHERNET GATEWAY – DIN RAIL GATEWAYS

- A. General:
 - 1. The lighting control gateway shall be a microprocessor-based unit specifically designed to provide DMX-512 control of lighting systems and transport of RDM configuration and status messages. The gateway shall permit DMX-512 data to be encoded, routed over an Ethernet network and decoded back to DMX-512. The unit shall be a Response Mk2 DIN rail DMX Gateway as provided by ETC, Inc.
 - 2. Gateways shall communicate over Ethernet directly with at least ETC, Inc.'s entertainment and architectural lighting control products and other Ethernet interfaces.
 - 3. Connections shall be made between gateways, consoles, architectural systems, and PCs over standard Ethernet distribution systems using 10/100BaseT.
 - 4. The gateway shall support multiple protocols including:
 - a. ANSI E1.17 Architecture for Control Networks (ACN).
 - b. ANSI E1.31 Streaming ACN (sACN).

- c. ANSI E1.11 USITT DMX512-A.
 - d. ANSI E1.20 Remote Device Management (RDM).
 - 5. The gateway shall be tested to UL standards and labeled ETL Listed.
 - 6. The gateway shall be RoHS Compliant (lead-free).
 - 7. The gateway shall be CE compliant.
 - 8. The gateway shall have a graphic OLED display and four buttons for identification (soft-labeling), configuration, status reporting and troubleshooting.
 - a. Labeling shall be user configurable using ANSI E1.17 Architecture for Control Network (ACN), or a purpose built software configuration tool.
 - b. The OLED display shall show DMX port configuration indication as well as indicate the presence of valid signal.
 - c. Gateways that do not indicate port configuration (input/output) and valid data shall not be acceptable.
 - 9. Each gateway shall have power and data activity LEDs on the front of the gateway.
- B. DMX Ports:
- 1. DMX Ports shall comply with the requirements of ANSI E1.11 USITT DMX512-A standards.
 - 2. Each DMX port shall be software or locally-configurable for either input or output functionality.
 - 3. DMX input shall be optically-isolated from the gateway electronics.
 - 4. DMX Port shall provide at least 500V isolation to ground and the rest of the electronics.
 - 5. Each port shall incorporate one DMX512-A Connection.
 - 6. Network gateways that do not indicate input/ output port configuration or presence of valid data shall not be accepted.
- C. Processor:
- 1. Each gateway shall have sufficient processing power to manage up to 63,999 universes (32,767,488 addresses).
 - 2. Maximum delay time from input to output shall not be greater than one packet time (approximately 22 mSec.).
 - 3. A minimum DMX update rate of 40Hz shall be sustained under all conditions unless specifically configured for a slower rate for the sake of compatibility with 3rd party DMX devices.
- D. Mechanical:
- 1. The DIN Rail mounted gateways shall be included in a metal enclosure.
 - 2. Three variants of gateways shall be available:
 - a. One Port.
 - b. Two Port.
 - c. Four Port.
 - 3. Two wiring connections shall be required for connection to the lighting system:
 - a. Ethernet connection that supports standard Cat5E / 6A patch cables.
 - b. DMX input or output connection using is terminal strip or IDC-style connector.
 - 4. Optional accessories for rack-mount and pipe applications shall be available from the manufacturer. These accessories shall support installation by an end-user.

E. Power:

1. Power for the gateway shall be provided over the Category 6 (or better) cable, utilizing IEEE 802.3af compliant Power over Ethernet (PoE). Power consumption using shall not be greater than 7 watts.
2. An optional low-voltage DC power input shall be available utilizing an isolated in-line power supply capable of an operating range of 12-24VDC. The Power supply shall be provided by the gateway manufacturer.
3. The gateway electronics shall be electrically isolated from the power supplied over the Category 6 (or better) cable.

F. Configuration:

1. The Gateway must support local or remote configuration.
2. Each gateway on the network shall be individually configurable using freely available software configuration tools. The primary configuration tool shall be Net3 Concert configuration software running on a network connected PC. The PC shall only be required for configuration and shall not be required for normal operation of the system.
3. Each port of the DMX gateway shall control up to 512 DMX addresses, within the confines of 63,999 universes.
4. The specific DMX data input or output by the gateway shall be freely configurable by the user.
5. Duplicate outputs of DMX lines (DMX splitter) and discrete outputs shall be fully supported.
6. Multiple DMX universes may be configured with any length up to 512 total addresses. Any range of DMX input addresses shall support selection and routing to the specified sACN output.
7. Multiple sACN sources may be combined with a priority may be assigned to each source sending data to the gateway
8. All relevant routing information shall be stored in non-volatile memory at each gateway. The system shall recover from a power outage without requiring the PC to be online. Gateways that do not support non-volatile storage of data routing shall not be accepted.

G. Network:

1. Communications physical layer shall comply with IEEE 802.3i for 10BASE-T, 802.3u for 100BASE-TX and 802.3af for Power over Ethernet specifications.
2. All network cabling shall be Category 6 (or better), conforming to TIA-568A/B, and shall be installed by a qualified network installer.
3. Data transport shall utilize the TCP/IP suite of protocols to transfer the DMX data.
4. ANSI E1.17 Architecture for Control Networks (ACN) and streaming ACN (sACN) shall be supported. Gateways that do not support ANSI E1.17 shall not be acceptable.
5. Each DMX gateway shall control up to 512 DMX addresses, per DMX port within the confines of up to 63,999 universes (32,767,488 addresses) using Streaming ACN (sACN).
6. Any range of DMX addresses may be selected for each universe.
7. Multiple sources shall be supported by prioritized Highest Takes Precedence (HTP with priority). Each source shall support assignment of priority to allow override of default HTP behavior.
8. Each DMX port shall support its own universe and start address.
9. Gateways shall have built in DMX merger capability on a universe or channel-by-channel basis.

10. Gateways shall support have built in priority on a per-universe or channel-by-channel basis. Gateways that do not support prioritized merging of multiple network sources at independent priorities shall not be accepted.

H. Environmental:

1. The ambient operating temperature shall be 0° to 40°C (32° to 104°F).
2. The storage temperature shall be -40° to 70°C (-40° to 158°F).
3. The operating humidity shall be 5% - 95% non-condensing.

I. UL Assembly

1. The gateway and related/associated components (gateway, switch, din rail, etc.) will be provided mounted in a common metal electrical enclosure as an assembly from the manufacturer, ETC, with a UL listing.

2.6 GENERAL NETWORK

A. General:

1. The Electronic Theatre Controls Net3 network shall provide data distribution over TCP/IP Ethernet networks. Data shall be layer 3 routable. Systems using proprietary formats or formats other than 10/100/100Mbit wired Ethernet or non-layer 3 routable networks shall not be accepted.
2. Connections shall be made between consoles, face panels, architectural processors, dimmers, Net3 Gateways, and computers over standard Ethernet distribution systems using 100BaseT, 100BaseFL, or greater wiring. All installations shall conform to established Ethernet wiring practice, and installation shall be performed by contractors qualified to do this type of work. All wiring shall be tested at Category 6 or higher for full bandwidth operation to the appropriate IEEE standard.
3. The DMX Lighting Control system must be supplied by a single manufacturer and must have seamless integration over Ethernet between the Entertainment and Architectural lighting control.

B. Capacities:

1. The network shall support DMX routing, patching, and prioritization for up to 63,399 universes (32,767,488 DMX addresses). Each address may be input or output from any port on any DMX gateway in the system. DMX input, routing and output shall be specifically supported on the system from multiple sources and locations up to the maximum number of gateways supported by the Ethernet topology.
2. The network shall support multiple network hosts including consoles, gateways, dimming racks, computers, file servers, printers, and architectural control processors with discrete command lines and control. The lighting network shall support multiple venues within a system and discrete systems on the same network.

C. System Configuration and Monitoring:

1. Network device configuration shall be via Net3 Gateway Configuration Editor (GCE) software and/or ANSI E1.17 Architecture for Control Networks (ACN).
2. Patch addresses shall support viewing and manipulation via ANSI E1.17 ACN:
 - a. The system shall permit complete user flexibility allowing the system operator to patch each DMX input address to any ANSI E1.31 streaming ACN address, and DMX output to span streaming ACN universes.

- b. The lighting system shall support assignment of DMX offsets, truncation of DMX universes, and provide choice of DMX port prioritization.
 - c. The lighting system shall support the DD start code extension to ANSI E1.31 which provides priority per address such that multiple control sources can share universes with discrete control per address.
 - d. Lighting systems that do not support the above mentioned address patching capabilities shall not be suitable.
3. The system shall allow assignable labels for all network devices to allow easy identification by system users.
 4. Each network device shall have a discrete and unique IP address provided automatically by the software. The user may edit this IP address. Systems that do not support automated IP allocation with IP collision avoidance, and systems that do not allow complete reconfiguration of the above mentioned features over ANSI E1.17 ACN shall not be acceptable.
 5. All configuration data for each network device shall be held at the device and system operation shall not require continuous on-line operation of the network configuration software.
 6. Lighting console operators shall be able to backup the network configurations in the lighting control console. In the event of a network device failure, the operator shall be able to apply the configuration of the failed device to a replacement device of the same type without manually reentering settings. Systems that do not support configuration backup as described above shall not be accepted.
 7. Architectural and Entertainment systems connected to the same network shall be capable of arbitrating control over E1.31 Streaming ACN (sACN) level data. The system shall be capable of alternating control of individual address data between architectural and entertainment systems without intervention by the user. The user shall dictate the conditions under which system shall automatically take control. The network shall allow user override of the selected defaults. Systems which require direct user intervention to allocate control of dimmers between architectural and entertainment lighting systems shall not be accepted.
 8. The Net3 network shall allow multiple DMX input sources to be prioritized on the same universe as network native sources using E1.31 Streaming ACN prioritization. Multiple DMX inputs may be assigned to the same streaming ACN address (this provides multi-source control for a particular address). Likewise, the system shall support E1.31 prioritization of multiple simultaneous network sources. Systems that cannot prioritize multiple DMX inputs and multiple native network sources on a network shall not be deemed suitable.
 9. The lighting network shall allow each DMX input address to be assigned a priority on the network allowing each DMX control level coming into the system to participate in full arbitration. Addresses with the highest priority shall have control, with lower priority addresses being ignored. Addresses assigned the same numeric priority, between 1 and 200, shall respond in highest level takes precedence (HTP) manner. The network shall require a valid DMX signal present at the input to initiate prioritization. Systems that do not allow for prioritized HTP for DMX inputs to the network shall not be allowed.

D. Operational Features:

1. Each DMX gateway shall control up to 512 DMX addresses per port, within the confines of up to 63,999 DMX universes (32,747,488 address). The specific DMX data input or output by the gateway shall be configurable by the user.

2. Duplicate outputs of DMX data (DMX splitter) and discrete outputs shall be fully supported.
 3. Merging of multiple DMX input sources on a single gateway without gateway with DMX output on the same gateway shall be supported without connection to the network. The gateway shall support assignment of priority to each input source independently
 4. File transmission, synchronization and access to software shall be supported.
- E. Network Security:
1. Firewall Technologies & VLAN Configuration methods shall be utilized to separate the lighting control network and ensure the integrity of lighting control network.
 2. Coordinate with Port IT for VLAN network configuration.

2.7 FOUNDRY RELAY AND MINI-PANEL / ROOM CONTROLLER

- A. Product: Unison Foundry Controllers by ETC, Inc.:
1. Model UFR2: Dual-Zone DMX Relay Controller. DMX controlled fully-rated 20 A relays. Switch lighting loads on and off.
 2. Model UFR2-LV: Dual Zone DMX Relay with 0 to 10 V Dimming Controller. DMX controlled fully-rated 20 A relays. Fully-isolated 0 to 10 V dimming for direct control of compatible LED drivers and fluorescent dimming ballasts.
 3. Model UFD 600 W Series Dimmers. DMX controlled line dimming for various load types:
 - a. Phase Adaptive Dimmer: Loads: Electronic Low Voltage (ELV), incandescent, and fluorescent.
 4. Standards Compliance: cULus Listed. Rated for plenum use.
 5. Functional:
 - a. Supports USITT DMX512-A (ANSI E1.11).
 - b. Supports RDM (ANSI E1.20).
 - c. Control for individual fixtures, zone power.
 6. Mechanical:
 - a. Mounts to an electrical junction box.
 - b. Constructed of injection-molded ABS plastic.
 - c. Button interface and LED indicators for configuration.
 - d. Dimensions (HxWxD): 2.0 x 3.5 x 3.0 inches (51 x 89 x 77 mm).
 - e. Weight: 0.75 lbs (0.34 kg).
 7. Accessory: Black box with voltage barrier. Size: 4 inches (02 mm).
 8. Electrical:
 - a. Power Input: 120 to 277 VAC, 50/60 Hz.
 - b. Power Input: 120 or 277 VAC, 50/60 Hz.
 - c. Fully Rated Relay: Normally Open (NO) 20 A.
 - d. Supports lighting and plug loads.
 - e. Control 0 to 10 VDC: Rated to 100 mA sink per output:
 - 1) Connections: 0 to 10 VDC. Fully isolated from ground to 2500 V RMS.
 - f. Phase-adaptive dimming variant, default reverse phase, auto-switches to forward phase depending on load type.
 - g. Forward phase dimming variant for magnetic loads, dims in forward phase only.
 - h. 600 W load capacity.
 9. DMX Input Port:
 - a. Withstands fault voltages of up to 250 VAC.
 - b. Integrated DMX/RDM termination.

10. Thermal: Operating range limits:
 - a. Temperature: 32 to 122 degrees F (0 to 50 degrees C).
 - b. Humidity Non-Condensing: 5 to 95 percent.

- B. Product: Unison Foundry DMX Mini Control Panels by ETC, Inc. DMX controlled lighting. Fully rated 20 A relays and optional 0 to 10 V control per zone. Demand Response input for energy saving integration and UL 924 emergency lighting control bypass with power loss sense. Flush or surface mount. Locatable in air plenums tucked out of sight.
 1. Model UFMP4: 4-zone DMX Mini Panel:
 - a. Relays: 4. For switching for lighting and plug loads.
 - b. Dimming Outputs 0 to 10 V: 4. for LED drivers and fluorescent ballasts.
 2. Model UFMP8: 8-zone DMX Mini Panel:
 - a. Relays: 8. For switching for lighting and plug loads.
 - b. Dimming Outputs 0 to 10 V: 8. for LED drivers and fluorescent ballasts.
 3. Standards Compliance: cULus and UL 924 Listed. Rated for plenum installation:
 - a. Suitable for plug load control.
 4. Functional:
 - a. Emergency Lighting Control: Per UL 924 via contact closure and power loss sense feed terminal.
 - b. Demand Response Input: Provided by a power company can enforce a maximum level per circuit while active.
 - c. Supports USITT DMX512-A; ANSI E1.11.
 - d. Supports RDM; ANSI E1.20.
 5. Mechanical:
 - a. Finish: Fine-textured, black powder coat.
 - b. Mounting: Wall, Flush-mount. Rated for installation in plenum air space.
 - c. Mounting: Wall, Surface-mount. Rated for installation in plenum air space.
 - d. Voltage Divider: Allows for separation of normal and emergency circuits in a single controller were allowed by local codes.
 6. Electrical:
 - a. Power Input: 100 to 277 VAC, 50/60 Hz per circuit with support for pass thru to multiple circuits.
 - b. Single Phase Sense Feed Input: 100 to 277 VAC.
 - c. Supports 120 VAC and 277 VAC circuits within the same panel.
 - d. Fully-Rated Bi-State Latching Relay per Output: 20 A.
 - e. Control Rated: 0 to 10 VDC for up to 100 mA sink per output:
 - 1) Outputs 0 to 10 V: Fully isolated from ground to 2500 V RMS.
 - f. Demand Response input supports Normally Open (NO) operation.
 - g. UL 924 contact closure input supports normally open (NO) or normally closed (NC) operation.
 - h. Onboard status indicators for controller power, DMX signal, Demand Response input, and UL 924 emergency lighting control.
 - i. Slide Switch Configuration For:
 - 1) UL 924 operation; NO/NC.
 - 2) UL 924 inclusion per circuit; On/Off.
 7. Relays: Mechanically held.
 8. DMX Input Port:
 - a. Integrated DMX/RDM termination.
 9. Thermal: Operating range limits:
 - a. Temperature: 32 to 122 degrees F (0 to 50 degrees C).

- b. Humidity Non-Condensing: 5 to 95 percent.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. DMX-512 Data Cable:
 - 1. Install cables in conduit. Install conduit in accordance with Section 260533, Raceways and Boxes for Electrical Systems.
 - 2. Verify cable lengths prior to installation. Cable lengths will not exceed a total length 1640 feet for a single control circuit.
 - 3. Install pull string in all spare conduits.
 - 4. A maximum 30 DMX devices will be connected to a single DMX line:
 - a. New installations should be designed to 25 or less devices to allow for future provisioning.
 - 5. Multi-drop bus topology with nodes strung together in a daisy chain only.
 - 6. Each DMX line to be terminated with 120 Ω resistor between the data + and data – connections on the DMX OUT at the end of the line.
- B. Do not install cover plates or other finished components until completion of work, plastering, painting and general clean-up.
- C. Mount lighting controls and wall jacks at heights and locations indicated in the contract drawings, to comply with ADA, or as directed by the Port.
- D. Ground non-current-carrying parts of all electrical equipment in accordance with UL and NEC provisions.
- E. Run separate neutrals for all zones and branch load circuits where new circuits are required..
- F. Take full responsibility for the supports required for the lighting control components. Ascertain the structural reliability of supports provided under other sections of the specification. Reinforce the walls as required to support wall-mounted dimming and relay panels.

3.2 TESTING

- A. Upon completion, test systems to show that equipment installed operates as designed and specified. Submit testing plans for review prior to testing. Plan system tests for as many at one time as possible to work into construction phasing. The Port may witness tests at its option and if so, schedule tests 48 hours in advance.
- B. A written record of performance tests shall be compiled, dated, witnessed, and submitted along with operating and maintenance data, prior to substantial completion.
- C. Test reports shall certify that wiring is complete, passes all test criteria, is fully operational, and that the work has been completed as specified.
- D. Provide all forms, instrumentation and test equipment, loads, and other consumables required.

- E. DMX-512 Communications Cable Testing / Photocell Base Controller Cable / LinkPower / LinkConnect / Unison Cable
 - 1. Following the final inspection tests and certification by the Contractor, post-certification may be performed through an independent field verification program or testing service. The Port, at its discretion, may require the Contractor to return to the site, at no additional cost to the Port, to assist with the determination of any certification discrepancies. If such a determination finds the materials, installation procedures, or final testing procedures to be out of compliance with this contract, the Contractor shall remedy the cause and re-test, at no additional cost to the Port.
 - 2. Pre-installation and during installation visually inspect, and by running it through your hand, inspect the cable for nicks, scrapes and lumps.
 - 3. Test each conductor for continuity after installation, record and submit results. Replace any cables that fail.
- F. Category Modular Patch Cord: Refer to spec Section 271000, Structured Cabling for project requirements.

3.3 RECORD DRAWINGS

- A. The installation and record drawings called for under submittals consists of reproducible drawings with all outlets, devices, cabinets, conduits and wiring shown. Submit prints of drawings for approval prior to starting installation. Upon request, the Port will furnish reproducible floor plans as required for the contractor's use in developing the Installation and record drawings.
- B. The contractor submitted drawings, when approved, will then form the basis for installation.
- C. At the completion of the work all deviations from the installation drawings incorporated on the reproducibles to indicate record conditions. Submit drawings as record drawings for the system.

3.4 COMMISSIONING

- A. Contractor shall take responsibility for a complete and operational control system that is calibrated to the satisfaction of the Port.
- B. Pre-wire Site Visit: Manufacturer shall provide at least two visits with three week notice to the site by a factory certified engineer to meet with the Contractor, Design Team, and Commissioning Agent to discuss logistical construction considerations including wiring and mounting of system devices, construction schedule and documentation. One visit to occur before wiring and second pre-wire site visit after 60% of wire is pulled and still accessible to ensure coordination between the contractor and manufacturer on wiring installation requirements.
- C. Factory Rep Inspection: When control systems are completely installed and tested, and final adjustments have been made to the satisfaction of the Contractor, systems shall be inspected by a factory-trained technician with minimum experience of two years in the electrical/electronic field representing the manufacturer, in the presence of the Port. The Port will schedule the inspection. Provide labor and tools as necessary for the final inspection and adjustments, whether the inspection is scheduled within or outside of normal working hours, at no additional cost to the Port. If subsequent inspections are required due to significant failure of the contractor to meet the requirements of the specifications, or to prepare adequately for the inspection, Contractor shall

reimburse the Port for time and expenses, including travel costs, to make any subsequent inspections. Manufacturer's factory-trained technician shall be present at any subsequent inspections. Promptly correct any deficiencies found during final inspection.

- D. Control Assignment Verification: The contractor shall verify that all zones, circuits, addresses and panel assignments of the lighting system meet the specifications, and contract documents. Factory trained representative shall verify connection and location of controls, verify system operation control by control, zone by zone. Representative shall also verify proper integration of manufacturer's interfacing equipment.
- E. Initial Calibration: Controls shall be pre-calibrated and programmed at the factory by the manufacturer, in the field by the manufacturer's technician, by the Contractor, or in combination, to the initial levels and settings indicated in the contract documents, or by any subsequent instructions provided during the shop drawing phase. If such settings are missing or unclear, the Contractor shall request clarification of the Port before proceeding with installation. These "initial" base design parameters and settings shall be completed prior to scheduling the prefunctional testing. Contractor and manufacturer's technician shall coordinate with Port Marketing and Services Group to develop 7-10 pre-set scenes which include the Western Expansion, Concourse E, and Concourse B and assist in program scheduling. Addressing of existing luminaire(s) to be patched in sequential order for ease of programming and use.
- F. Prefunctional Testing: Manufacturer's technician, Design Team, and The Port to accompany the Contractor on a project walkthrough to evaluate measured light levels, sequence of operations per spec Section 260993, Sequence of Operations for Lighting Controls, and user control settings. A list of adjustments to be provided and tested to manufacturer's technician for programming prior to scheduling final calibration.
- G. Final Calibration/Commissioning: Prior to functional testing, all final adjustments and calibrations shall be performed, by the contractor, to the Port's satisfaction, with the presence of the Port, Lighting Designer, and Manufacturer's Technician. Manufacturer's Factory Representative for the controls systems shall be engaged by the Contractor to participate in up to 40 hours of assistance with final calibration of the units. This shall involve at least 2 visits, pre-arranged by the Contractor at least three weeks in advance so that the Port and their representatives can be present for the calibration. If the equipment cannot be calibrated in a timely manner due to incomplete or incorrect work on the part of the Contractor, the Contractor is responsible for additional visits and the associated additional fees of the Manufacturer and the Port representatives. Factory-trained representative shall obtain sign-off from the Port on programmed system functions before leaving the site. Training shall not be combined with final calibration visits. See below for training requirements:
 - 1. As a part of the prefunctional testing, once all final adjustments and calibrations have been made to the port's satisfaction, the Contractor will provide a grid survey using the design teams photometric map and will record the light levels as reference in XXXXXX.
 - a. The Contractor shall provide the completed document to the Cx team for review prior to Functional performance testing, which will include a sampling strategy, confirming the accuracy of the provided measurements Additionally the contractor will demonstrate the various sequences of the system during the functional testing.
 - b. As a part of the commissioning process the Contractor will also complete all prefunctional testing documentation utilizing the Cx Team's commissioning software 'Facility Grid'.

- H. Adjustments to calibrations and settings shall not be modified from those that have been established to meet prerequisites, energy analyses or mandatory provisions of Energy Codes, LEED criteria or credits, or similar base requirements of the project.
- I. After final adjustments and calibration, the contractor shall provide documentation of the final settings for all lighting controls providing performance verification certifying the equipment has been thoroughly tested as required to support the documentation standards of the relevant energy code and LEED. Documentation shall be provided to the Port within five business days after calibration and shall be included in the O&M manual.
- J. Post commissioning: As part of the work, the manufacturer and contractor shall return to the site within a period of eighteen to twenty-four months, as arranged, and verify or return the settings for all control components to those established in the final Commissioning Report or during an authorized and documented follow-up visit, or incorporating any changes requested by the Port that do not violate the energy code, building codes or LEED status. Manufacturer shall also identify and implement lighting control adjustments to save additional energy while maintaining the quality and performance of the lighting environment. Repair or replace any control equipment that is inoperable or otherwise defective or unable to hold its calibration.
- K. Monitoring and verification of all installations shall be part of Contractor's scope.
- L. Operations and Maintenance Manual: Provide the manual according to the requirements of Section 013300, Submittal Procedures. In addition to the requirements of that section, provide a review and demonstration of the equipment on site in a meeting scheduled in coordination with the Port. Agenda for that meeting shall include, at a minimum:
 - 1. Maintenance training plan.
 - 2. Demonstration of all components of the system for maintenance and operations.
 - 3. Operation and calibration instructions for all components included in the installation.
 - 4. Manual shall include as-built drawings from the preset lighting control systems manufacturer as a paper record of the final settings.
 - 5. Final calibration settings and levels selected by the Port.
- M. Keys: Provide the Port with four sets of keys for every lockable enclosure or cabinet during transfer of Operation and Maintenance Manual.
- N. Training: At the Port's convenience, the factory local representative shall provide supplemental expertise and training concerning the installation, characteristics, operations and maintenance of the preset lighting control systems. Such training shall take place only after all systems have been inspected and finally calibrated, as required above, and after the operation and maintenance manual with documented calibration settings, has been provided to the Port and approved. Refer to Div 01 for additional requirements.
- O. Calibration of Lighting Controls:
 - 1. Network Devices – Network Devices shall be configured by the factory and Contractor to the specified settings and network addresses as issued by Port IT, prior to move-in.
 - a. On-Site Commissioning:
 - 1) Contractor shall verify all network settings match the settings provided by Port IT coordination for DMX VLAN access for each device.

- 2) All network device(s) shall be completely commissioned by the manufacturer's factory authorized technician, who will verify all settings and locations.

3.5 MODIFICATION TO EXISTING PROGRAMMING

- A. Room or Gate Number Changes: Where existing room or gate numbers are shown on the drawings to be updated, provide updates to all networked lighting control system programming to reflect the new room or gate numbers. This includes, but is not limited to all aspects of the programming such as the device databases, device and alarm descriptors, control programs, reports, user interface graphics, etc.
- B. Notify the Port upon completion of this work so that other Port-managed systems, such as computer aided dispatch, can be updated.

END OF SECTION 260933

SECTION 262400 – SWITCHBOARDS AND PANELBOARDS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes materials and installation for switchboards and panelboards.

1.2 REFERENCES

- A. NEC: National Electrical Code.

1.3 SUBMITTALS

- A. Coordination Study:

1. Submit a coordination study for the electrical overcurrent devices to assure proper equipment and personnel protection.
2. Present an organized time-current analysis of each protective device in series from the individual device back to the source. Reflect the operation of each device during normal and abnormal current conditions.
3. The study shall be prepared by qualified engineers of the switchgear manufacturer, Electro-Test, Electrical Systems Analysis, Inc., or pre-bid approved equal. Provide all pertinent information required by the preparers to complete the study.
4. Include a system one-line diagram and protective coordination curves:
 - a. The coordination curves shall determine the required settings of protective devices to assure selective coordination. The curves shall graphically illustrate on log paper that adequate time separation exists between series devices. Plot the specific time-current characteristics of each protective device so that all upstream devices are clearly depicted on one sheet.
 - b. Show the following specific information on the coordination curves:
 - 1) Device identification.
 - 2) Voltage and current ratio for curves.
 - 3) 3-phase and 1-phase ANSI damage points for each transformer.
 - 4) No-damage, melting, and clearing curves for fuses.
 - 5) Cable damage curve.
 - 6) Transformer inrush points.
 - 7) Maximum short circuit cut-off point.
 - c. Develop a table that summarizes the settings selected for the protective devices. Include the following:
 - 1) Device identification.
 - 2) Circuit breaker sensor rating, long-time, short-time, instantaneous settings, and time bands.
 - 3) Fuse rating and type.
 - 4) Ground fault pickup and time delay.

- B. Product Data: Submit product data for each type of switchboard, panelboard, overcurrent protective device, accessory and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings and finishes.
- C. Closeout Submittals:
 - 1. Operation and maintenance data.
 - 2. Warranty information.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturers must meet OSSC section 1705.12 which requires seismic certification of Designated Seismic System to be in accordance with section 13.2 of ASCE/SEI 7-10. Special inspection is required for all Designated Systems in accordance with OSSC 1705.11.4.
- B. Acceptable manufacturers for switchboard, panelboard, and all associated products are:
 - 1. General Electric Co.: Electrical Distribution & Control Division.
 - 2. Siemens Energy & Automation, Inc.
 - 3. Square D/Group Schneider.
 - 4. Eaton Cutler-Hammer.
 - 5. ABB Proline: Furnished by ISG Panel Shop
 - 6. Pre-bid approved equal.

2.2 BRANCH PANELBOARDS

- A. 480/277V branch panels:
 - 1. Circuit breakers shall be molded case, thermal magnetic or solid state type as required to provide coordination. Breakers shall have short circuit capacity rating to withstand the maximum short circuit duty which can be expected at the breaker location in the electrical system. Breakers mounted in branch panelboards shall be of the bolt-in type. Minimum short circuit rating for any circuit breaker: 14,000 AIC for 277V and 480V breakers.
 - 2. Branch circuit panels shall be bolt-in circuit breaker type with copper bussing.
- B. Panels shall be fitted with flush lift latches and locks keyed alike. Deliver all panel keys at completion of the project.
- C. Branch circuit breakers shall be identified with individual circuit numbers adjacent to each breaker and with a typewritten card to identify the load controlled by that breaker.
- D. Where required, panels shall have main circuit breakers, sized as scheduled, mounted behind door at top of panel (back feeding of branch breaker is not acceptable).
- E. Wiring gutters shall be a minimum of 4 inches wide except where feeder conductors enter, where a minimum of 6 inches clearance shall be provided. Feeder conductors shall enter directly in line with lug terminals wherever practicable. Provide separate feeder lugs and studs for each feeder conductor.

- F. Panels shall have door-in-door construction. Flush panels shall have flush doors with concealed hinges and mounting clamps. Surface panels shall have metal face trims with no sharp edges or corners. Factory finished surface panel tubs shall match face trim.
- G. Panels shall have a grounding bus with termination capacity for the grounding conductor sized for the branch circuit equipment grounding conductors as shown or noted. Isolated ground bus shall be insulated from the panel cabinet.
- H. Provide mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install the equipment as shown on the drawings, parallel and square with the building lines. Provide code clearances as required.
- B. Install a spare 3/4-inch conduit from flush panels for every three single-pole breakers or spaces provided. Terminate conduits above accessible ceiling or as directed.
- C. Neatly lace and secure the conductors of the feeder circuits individually at maximum 2 foot intervals. The cable lugs shall not support the weight of the cables.
- D. Equipment Tests:
 - 1. Perform tests on the ground fault protection system in accordance with the manufacturer's instructions. Record results and submit with final warranty.
 - 2. Adjust breaker settings per recommendation of coordination study and test all ground fault settings as required by NEC.

3.2 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring and components; provide warning signs as specified in Division 26 Section "Identification for Electrical Systems."
- B. Enclosure Nameplates: Label each enclosure with engraved metal or laminated-plastic nameplate as specified in Division 26 Section "Identification for Electrical Systems."

3.3 CLEANING

- A. On completion of installation, inspect interior and exterior of switchboards and panelboards. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to clean. Repair exposed surfaces to match original finish.

END OF SECTION 262400

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes wiring devices, plates, and blank plates for outlet boxes.
- B. Occupancy sensors.

1.2 SUBMITTALS

- A. Submit product data, shop drawings, and samples.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Wiring devices shall be specification grade, with special devices as noted on the drawings. Should the drawings indicate a device other than those listed herein without reference to catalog number, such device shall be of the same grade and manufacturer as specified below. Furnish a matching cap for all special purpose devices that do not have the common 120V NEMA 5-15R or 5-20R configuration.
- B. All lighting switches and duplex receptacles installed shall be by the same manufacturer and shall be identical in appearance, unless noted otherwise.

2.2 WALL SWITCHES

- A. Acceptable Manufacturers: Arrow-Hart, Bryant, Eagle, General Electric, Hubbell, Leviton, Pass & Seymour, Sylvania, or equal.
- B. Line Voltage Switches: 20 ampere, 277V, quiet type, grey exposed finish, back and side wired, Hubbell 1221 series.
- C. Lighted Handle Switches: 20 ampere, 120V or 277V, red handle with neon pilot light, Hubbell 1221 PL series.

2.3 RECEPTACLES

- A. Acceptable Manufacturers: Arrow-Hart, Bryant, Eagle, General Electric, Hubbell, Leviton, Pass & Seymour, Sylvania, or equal.

- B. General Application Duplex: 3-wire, 2-pole grounding, NEMA 5-20R, grey nylon exposed finish, back and side wired, Hubbell 5362 series.
- C. UPS System Duplex: 3-wire, 2-pole grounding, NEMA 5-20R, black nylon exposed finish, back and side wired, Hubbell 5362 series.
- D. Emergency System Duplex: NEMA 5-20R, lighted red nylon exposed finish, back and side wired, Hubbell HBL8300ILR series.
- E. Ground Fault Interrupting Duplex: Feed through, NEMA 5-20R, grey nylon exposed finish, Hubbell GFRST20xx series.
- F. Ground Fault Interrupting Blank Face Remote Unit: Feed through, NEMA 5-20R, grey nylon exposed finish, Hubbell GFBFST20xx series.
- G. Special Purpose Receptacles: As noted on the drawings. Provide with NEMA configurations.
- H. Optional Standby System Duplex: NEMA 5-20R, lighted red nylon exposed finish, back and side wired, Hubbell HBL8300ILR series.
- I. Optional Standby System Ground Fault Interrupting Duplex: NEMA 5-20R, red nylon exposed finish, back and side wired, Commercial Hospital Grade, Hubbell GFR83R series.

2.4 PLATES

- A. Acceptable Manufacturers: Arrow-Hart, Appleton, Bryant, Eagle, General Electric, Hubbell, Leviton, Pass & Seymour, Sylvania, or equal.
- B. Flush Finish Plates: .040-inch thick, type 302 stainless steel, brush finish. Provide engraving as indicated on the drawings.
- C. Surface Galvanized or Cadmium Plated Steel: 1/2-inch raised industrial type with openings appropriate for device installed.
- D. Receptacle Weatherproof: Gasketed cast aluminum, double lift, cover mounted horizontally with hinges up, 3-1/4-inch internal depth, lockable. UL listed for wet locations with cord plug inserted. Red Dot Code Keeper Extra-Duty While-in-Use Cover series, or equal.
- E. Switch Weatherproof: Gasketed cast aluminum switch operator. Appleton FSK series.
- F. Tamperproof: Flush cast aluminum locking cover plate, cylinder type lock, master keyed, Pass & Seymour 4600 series.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Devices and finish plates shall be installed plumb with building lines. Wall-mounted receptacles shall be installed vertically at the centerline height shown on the drawings.
- B. Install finish plates and devices after final painting is complete. Scratched or splattered finish plates and devices will not be accepted.
- C. Special plugs, such as cord caps furnished with the receptacles, shall be furnished in their cartons.

3.2 COORDINATION

- A. The drawings indicate the approximate location of all devices. Refer to architectural elevations, sections, and details for exact locations.
- B. Work with the equipment installer to coordinate the locations and methods of connection to devices mounted in or near cabinets, counters, benches and similar equipment.

3.3 OCCUPANCY SENSORS

- A. Locate sensors to provide maximum coverage of the room, to operate as someone enters the room, and to avoid false operation due to persons outside the room passing an open door.
- B. Provide additional sensing heads as necessary to achieve complete coverage of each room.
- C. Set sensitivity as required to provide small movement coverage throughout the room without extending coverage beyond the room.
- D. Test system performance with the sensor timing set to the minimum time delay available. Once complete coverage of a given room has been demonstrated, set the delay to 15 minutes.

3.4 FIELD TESTING

- A. Receptacles shall be tested for line-to-neutral, line-to-ground and neutral-to-ground faults. Correct any defective wiring.

END OF SECTION 262726

SECTION 270553 - IDENTIFICATION FOR TELECOMMUNICATION SYSTEMS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes labeling requirements for a complete telecommunications system, including the following:
 - 1. Horizontal link/cable.
 - 2. Telecommunication outlets.
 - 3. Telecommunications hardware.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 260500, Common Work Results for Electrical Systems.
- B. Section 260553, Identification for Electrical Systems.
- C. Section 271000, Structured Cabling.

PART 2 - PRODUCTS

2.1 LABELS

- A. Pre-Printed: Permanent material pre-printed with black on white, with adhesive backing. Brady, 3M, or equal. No Dymo-tape or hand-written labels will be allowed. For use at the following locations:
 - 1. Telecommunication outlet faceplates.
 - 2. Individual horizontal cables.
 - 3. Rack-unit (RU) identification of network room equipment racks.
- B. Laminated Plastic: 3-ply laminated plastic, professionally engraved. Use white enamel filled brass labels in all areas exposed to weather and/or sunlight, and in environmental air handling spaces. Font shall be Arial capital letters. Attach labels using appropriate adhesive glue and/or nylon tie wrap connectors. Required sizes and colors are as follows:
 - 1. Network Room Equipment Racks: 1-inch high and 5-inches long with a white background and 1/2-inch high black letters.

PART 3 - EXECUTION

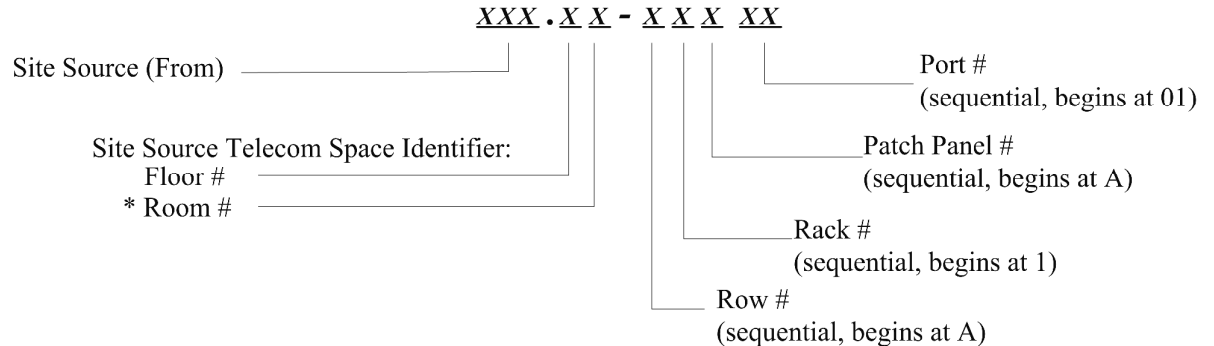
3.1 LABEL INSTALLATION

- A. Horizontal Link/Cable:
1. Label each horizontal link/cable at the rear of both the outlet and patch panel locations using the appropriate cable name as indicated.
 2. At the outlet location, label the cable at 2 inches from the termination point. This will be visible by removing the outlet cover.
 3. At the patch panel location, label the cable on a visible part of the cable within 4 inches of the termination point.
- B. Telecommunication Outlet Faceplates:
1. Label each faceplate appropriately as indicated. Affix the label to the labeling area at the top of the faceplate.
 2. The port ID area of the faceplate shall reflect the equipment row, network rack number, patch panel ID and patch panel port number.

3.2 LABEL NAMING CONVENTION

- A. Horizontal Link/Cable:

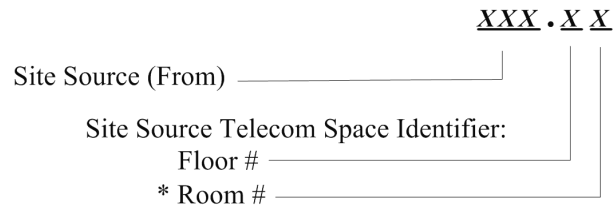
Example: **TRM.3X-A5B01**



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- B. Telecommunication Outlet Faceplate Label:
- For the labeling area at the top of the faceplate:

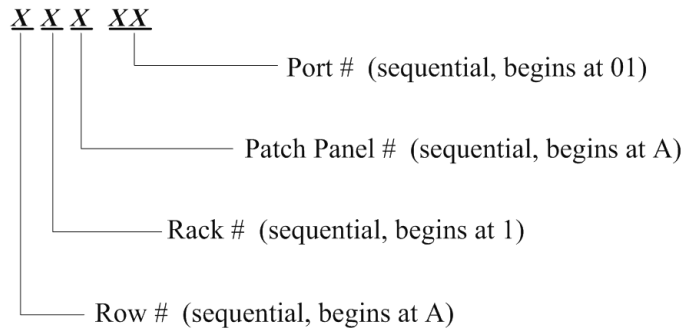
Example: **TRM.3X**



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- For the port ID area of the faceplate:

Examples: 4-port faceplate, **A5B01**, **A5B02**, **A5B03**, **A5B04** (each a minimum of 5 digits)



3.3 SITE IDENTIFIERS

- A. PDX

<u>Site Name</u>	<u>Abbreviation</u>
Concourse C	CCC
Concourse D	CCD

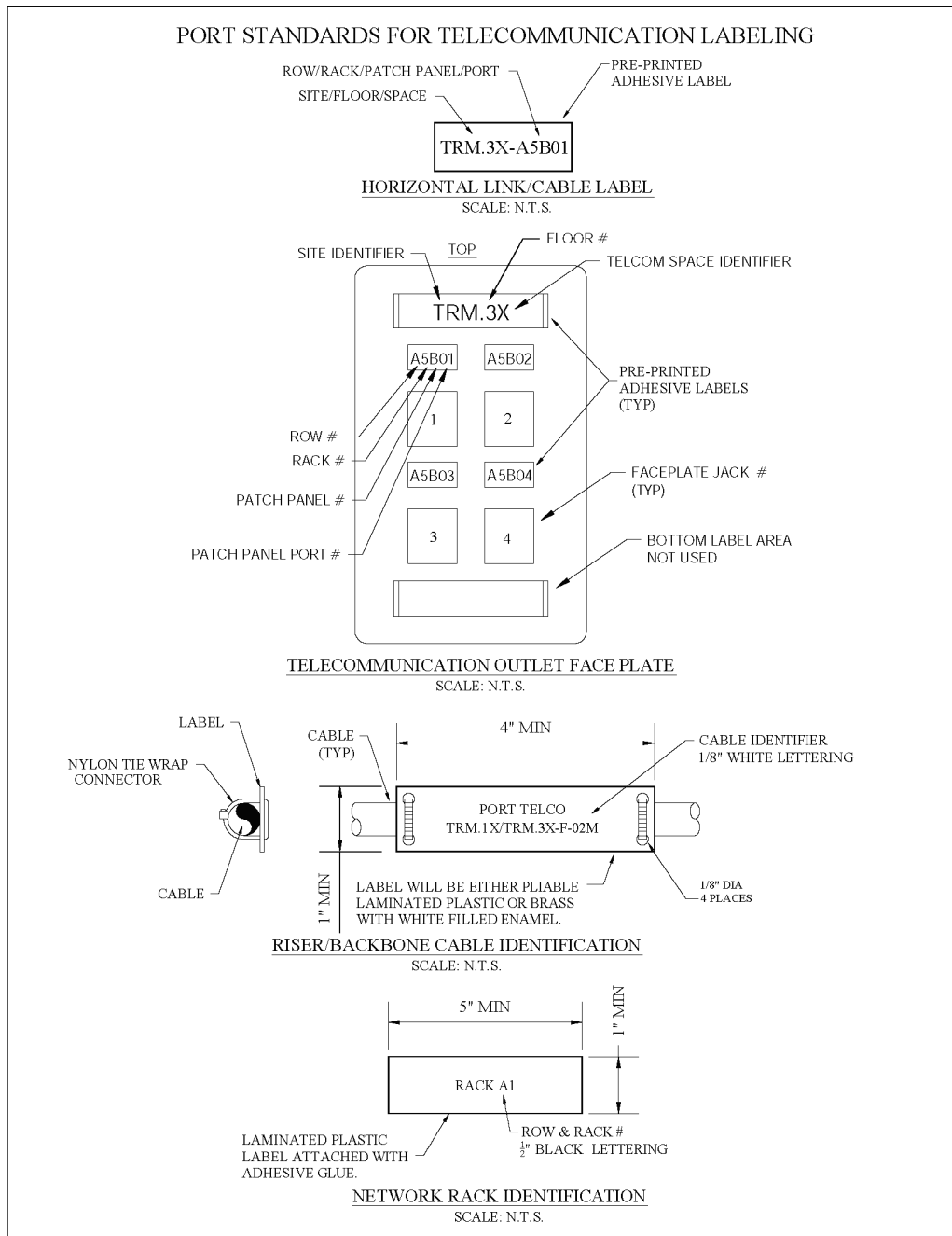
3.4 TELECOM SPACE IDENTIFIERS

- A. PDX

<u>Site Name</u>	<u>Floor No.</u>	<u>Room No.</u> *	<u>Telecom Space Identifier</u> *
CCC	Tunnel	C-0x	0X
	1	C1xxx	1X
	2	C2xxx	2X
	3	C3xxx	3X
CCD	Tunnel	D-0x	0X
	1	D1xxx	1X
	2	D2xxx	2X

<u>Site Name</u>	<u>Floor No.</u>	<u>Room No. *</u>	<u>Telecom Space Identifier *</u>
	3	D3xxx	3X

- * There are multiple room numbers with associated telecom space identifiers not shown for security reasons. Information will be provided as required for specific construction activity.



END OF SECTION 270553

SECTION 271000 – STRUCTURED CABLING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section describes copper infrastructure for the communication and data network system.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 260526, Grounding and Bonding for Electrical Systems.
- B. Section 260533, Raceway and Boxes for Electrical Systems.
- C. Section 270553, Identification for Telecommunication Systems.

1.3 REFERENCES

- A. Install equipment and materials in accordance with the applicable standards of the following organizations:
 - 1. ANSI: American National Standards Institute.
 - 2. ANSI/TIA: American National Standards Institute and Telecommunications Industry Association:
 - a. ANSI/TIA-568-C.1: Commercial Building Telecommunications Cabling Standard.
 - b. ANSI/TIA-568-C.2: Balanced Twisted-Pair Telecommunications Cabling and Components Standard.
 - c. ANSI/TIA-607-C: Generic Telecommunications Bonding and Grounding for Customer Premises.
 - 3. BICSI: Building Industry Consulting Service International.
 - 4. EIA: Electronic Industries Alliance:
 - a. EIA-310: Cabinets, Racks, Panels, and Associated Equipment.
 - 5. IBC: International Building Code.
 - 6. IFC: International Fire Code.
 - 7. NEC: National Electrical Code.
 - 8. NEMA: National Electrical Manufacturers Association.
 - 9. UL: Underwriters Laboratories.

1.4 SUBMITTALS

- A. Submit product data for the following:
 - 1. Cable.
 - 2. Cable management.
 - 3. Patch panels.
 - 4. Modular patch cords.
 - 5. Jacks.

6. Modular plugs.
 7. Outlets
- B. Submit the quantity and lengths of modular patch cords to be provided by the Contractor in accordance with project requirements.
- C. Shop Drawings: Prepare and submit coordination drawings detailing raceways and system components and materials in relation to other building systems and components. Drawings shall include, but not be limited to, the following:
1. Floor plans detailing raceway and cabling installations.
 2. Enlarged network and equipment room plans showing room layouts including coordination drawings detailing all equipment to be installed by other trades within the enlarged area.
 3. Wall-mounted facilities on terminal backboards.
 4. Equipment rack and cabinet elevations for all termination locations.
 5. Detail drawings shall include clearances for servicing equipment, including space for equipment disassembly required for periodic maintenance.
 6. Cable and equipment labeling schemes and sample labels as coordinated with the Port and in accordance Section 270553.
 7. See the drawings for completed telecommunications, backbone cabling, and horizontal cable matrix schedules. Complete these schedules upon field verification of installation locations of patch panels, racks, cabinets, etc., and submit to the Port for approval prior to commencement of work.
- D. Submit Contractor qualifications, upon request, including:
1. Contractor's current certification for the manufacturer's certified installer program.
 2. Manufacturer's Category 6A certifications for each technician performing installation on the project.
 3. Manufacturer's certificate of completion on the following course for each technician performing installation on the project:
 - a. Atlas-X1 Shielded Installation Training provided by Leviton Network Solutions.
- E. Submit certified equipment calibration records performed by the equipment manufacturer stating that the equipment that will be used in the testing of copper cables installed as part of the work was calibrated within the past 6 months.
- F. Product Data Manuals: Upon completion of the project, submit final product data manuals that include:
1. A complete as-installed equipment list of all components installed with manufacturers' names and model numbers.
 2. A complete set of product data sheets for all products installed. Product data sheets shall be clearly marked, identifying the specific items installed.
- G. Review of product data does not relieve the Contractor from responsibility for deviations from the drawings or specifications, unless the Contractor has, in writing, called attention to such deviations at the time of submission and obtained written approval from the Port.

- H. As-Constructed Documents: Maintain real-time as-constructed documentation for the installed structured cabling system:
 - 1. Update and revise contract documents to record actual locations (as-installed) of all equipment, pull boxes, devices, raceways, cabling, outlets, and cable infrastructure components.
 - 2. As-constructed drawings shall include:
 - a. Complete site plans, floor plans, and enlarged plans and site plans indicating placement and routing of as-installed raceways, junction boxes, racks, cabinets, cables, and communications outlet locations and types with labels and cabling facilities installed. Cabling shall include callouts detailing Port cable designation.
 - b. Complete structured cabling riser diagrams showing as-installed originations, destinations, and type of pathways for all cabling. Include cabling numbers, terminal block numbers and layouts, and other designations.
 - c. Equipment rack/cabinet and wallboard elevation drawings for each network room and cable termination location.
- I. Test Reports: The Contractor shall be responsible for recording all test data. Submit copies of all test results to the Port for review and approval no later than one week after completion of the testing:
 - 1. Prior to commencement of cable testing, submit a sample test report, with the assigned cable designation clearly indicated, of each test type to the Port for approval.
 - 2. Submit final test report schedules which confirm that the cabling infrastructure has been tested, labeled, and documented.
 - 3. Submit the test reports and schedules with the testing software program on CD-ROM or DVD.
- J. Submit operation and maintenance manuals. Content of each manual or chapter shall include, but not be limited to, the following:
 - 1. Description of system.
 - 2. Manufacturers' brochures. Include manufacturers' descriptive literature covering devices and equipment used in the system, together with illustrations, exploded views, and renewal parts lists. Edit the manufacturers' standard brochures so that the information applying to the actual installed equipment is clearly defined.
- K. Submit manufacturers' equipment guarantees or warranties for applicable systems and components.

1.5 QUALITY ASSURANCE

- A. The work shall be performed by Oregon Limited Energy Journeyman licensed technician(s).
- B. The structured cabling system shall be installed by a value-added reseller for the manufacturers specified and their respective products. Each of the Contractor's installing technicians shall have completed the manufacturer's training for the installation of shielded cabling systems (Atlas-X1 Shielded Installation Training) and be a certified member in good standing of the manufacturer installer program before, during, and through completion of the system installation.

1.6 WARRANTY

- A. Provide the following:
 - 1. Limited Lifetime Berk-Tek/Leviton materials warranty on parts and labor to repair/replace defective telecommunications copper station cabling materials and associated products.
- B. Passive components and products (cables, connectors, patch panels, and/or other associated components) shall come from the manufacturers listed above to offer an extended warranty on the structured cabling system being installed. The Contractor or the Contractor's installer shall be certified by Berk-Tek/Leviton to provide the materials warranty and shall meet all necessary requirements to make the Port eligible for the extended warranties. Upon completion, submit a certificate from the sponsoring manufacturer stating that the installed system is covered by the manufacturer's extended warranty for the minimum period applicable.
- C. The Port shall be named the owner of the warranty and guaranteed full and complete rights under the warranty.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Communications products installed as part of this work shall be listed by a recognized testing laboratory or approved in writing by the inspection authority as required by governing codes and ordinances.
- B. Materials shall be new and of the best quality. The materials shall be manufactured in accordance with NEMA, ANSI, UL, or other applicable standards.
- C. Equipment and materials of the same general type shall be of the same manufacturer throughout the work to provide uniform appearance, operation, and maintenance.
- D. Cable jacket shall be plenum-rated and marked with the CMP designation where appropriate and as required by code for installation in plenum-rated areas.
- E. The structured cabling system components for the horizontal cabling shall consist entirely of products from CS6700 CAT6A Shielded System by Berk-Tek/Leviton, no substitutions.

2.2 HORIZONTAL CABLE – INTERIOR

- A. Horizontal cables shall be four-pair, shielded, twisted pair (F-UTP), #23 AWG solid copper conductors, paired, flame-retardant PVC jacket.
- B. Cable shall be pliant with no memory.
- C. Manufacturer: Berk-Tek LANmark-10G FTP Plenum cable (Part No. 10189548), no substitutions.
- D. Cable jacket shall be violet in color.

2.3 CABLE MANAGEMENT COMPONENTS

- A. Vertical Cable Management: Chatsworth Evolution G3 combination vertical cable manager or pre-bid approved equal, clear in color, sized as indicated below:
 - 1. In existing network rooms: 6" W x 20.2" D x 7' H, Part No. TS1037525.
- B. Filler Patch Panels:
 - 1. Top Patch Panel in a Rack: 1RU blank angled plate with transitional cover. Leviton 49254-BC1, no substitutions.
 - 2. Subsequent Patch Panels in a Rack: 1RU blank angled plate. Leviton 49254-BA1, no substitutions.

2.4 HORIZONTAL CABLE PATCH PANELS

- A. Design patch panels for installation on standard NEMA 19-inch equipment racks.
- B. Patch panels shall be certified by the manufacturer to ensure optimal channel performance of the structured cable system. Leviton Atlas-X1 Angled Shielded QuickPort 24 Port Patch Panel+ (Part No. 4S256-S24), no substitutions.

2.5 CATEGORY 6A MODULAR PATCH CORDS

- A. Provide Leviton CAT6A high-flex copper patch cords, Part No. H6A10-xxS, no substitutions.
 - 1. For field devices installed such as, but not limited to, video surveillance cameras, gate information displays, and lighting control panels:
 - a. Provide one patch cord (installed by the Contractor) at the device end, length as required.
 - 2. For the total number of horizontal cables installed (including for field devices):
 - a. Provide one patch cord, 7 feet in length, for 60 percent of total horizontal cables installed.
 - b. Provide one patch cord, 10 feet in length, for 60 percent of total horizontal cables installed.
- B. Modular patch cords shall be certified by the manufacturer to ensure optimum channel performance for the structured cabling system. Leviton, no substitutions.
- C. Modular patch cords shall be grey in color.

2.6 JACKS

- A. Shielded jacks shall be purple, Leviton Atlas-X1 CAT6A Shielded QuickPort Connector Part No. 6ASJK-RP6, no substitutions.
- B. Unshielded jacks shall be purple, Leviton Atlas-X1 CAT6A UTP QuickPort Connector Part No. 6AUJK-RP6, no substitutions.

2.7 MODULUAR PLUGS

- A. Modular plugs shall be shielded CAT6A, tool-free, Part No. Leviton CAT6APLG-S6A, no substitutions.

2.8 OUTLETS

- A. Two Port: Leviton, Part No. 4S089-2IP, no substitutions.

PART 3 - EXECUTION

3.1 GENERAL

- A. Provide services, labor, material, and components necessary for a complete and finished installation.
- B. Install equipment, patch panels, and termination blocks between 1 foot 6 inches AFF and 6 feet 6 inches AFF on equipment racks or backboards as appropriate.
- C. Install firestops and seals at penetrations through building floors, walls, or where required by fire codes.
- D. Field test cables prior to installation. Replace damaged cables.
- E. Inspect cable for sheath defects or other irregularities as it is pulled out. Upon detection of defects, stop pulling and repair or replace the cable section.
- F. Install cables continuously with no splices.
- G. Provide bonding for all equipment within telecom rooms in accordance with manufacturer's requirements.
- H. Provide anchoring of equipment in accordance with the manufacturer's recommendations. Provide engineered/stamped seismic calculation where required by code.
- I. Provide vertical and horizontal cable management troughs as appropriate for the installation and as indicated on the drawings.

3.2 GROUNDING

- A. Comply with grounding specifications of EIA/TIA-607-C: Generic Telecommunications Bonding and Grounding for Customer Premises.

3.3 EQUIPMENT SUPPORT

- A. Each fastening device and support for communications equipment shall be capable of supporting not less than four times the ultimate weight of the object or objects fastened to or suspended from the building structure and shall be installed to resist seismic forces as specified in the IBC for the ground motion accelerations corresponding to the project location.
- B. Powder-actuated or similar shot-in fastening devices will not be permitted for any communications work except when approved by the Port.

3.4 ALIGNMENT

- A. Install racks and equipment level and plumb, parallel with structural building lines. Communications enclosures shall fit neatly without gaps, openings, or distortion. Properly and neatly close unused openings with approved devices.
- B. Fit outlets with neat, appropriate trims, plates, or covers, without overhanging edges, protruding corners, or raw edges, to leave a finished appearance.

3.5 CUTTING AND PATCHING

- A. Include cutting, patching, and restoration of finishes. Surfaces damaged by this work shall be neatly patched and finished to match the adjacent construction, including paint or other finishes. Clean up and remove dirt and debris.
- B. Where equipment installations or connections require the installation of an access panel, provide a properly sized and installed access panel similar to those used for mechanical equipment access.
- C. Conduit fill shall not exceed NEC fill requirements.

3.6 PROTECTION OF WORK

- A. Protect communications work and equipment installed against damage by other trades, weather conditions, or any other causes. Equipment found damaged or in other than new condition will be rejected as defective.
- B. Communications equipment shall be kept covered or closed to exclude dust, dirt and splashes of plaster, cement, or paint, and shall be free of all such contamination on exterior and interior before acceptance. Enclosures and trims shall be in new condition, free of rust, scratches, and other finish defects. Properly refinish to new condition if damaged.

3.7 MAINTENANCE OF SERVICE

- A. Communication systems and equipment shall be maintained to functioning portions of the building throughout construction, during normal working hours of the building occupants. Outages to

occupied areas shall be kept to a minimum and require pre-approval from the Port. The Contractor will be liable for any damages resulting from unscheduled outages or for outages not confined to the prearranged times.

3.8 HORIZONTAL CABLE

- A. Install cables in cable tray or conduit. Install conduit in accordance with Section 260533.
- B. Dress cables neatly in cable trays and tie down at corners and changes in cable tray elevation using hook and loop fastener, strap or wrap. Install cables in center spine cable tray so that the cable tray is balanced.
- C. Verify cable lengths prior to installation. Provide notification of cables exceeding 290 feet, do not install cables that exceed 290 feet without prior Port approval.
- D. Install pull string in all conduits.

3.9 TERMINATIONS

- A. Terminate horizontal cables on modular jacks inserted in patch panels, faceplates, or surface mount boxes.
- B. Terminate backbone cables on 110 field termination blocks as specified and as shown on the drawings. Wrap each binder group with the appropriate color to indicate proper binder group identity. When installing in center hung cable tray, install on the higher side of the tray to keep the cable tray balanced.
- C. All four pairs of each horizontal cable shall be terminated in T568B pinout standard order on the jack.
- D. Lay out cables on the patch panel as indicated on the cable matrix drawings.

3.10 TESTING

- A. Upon completion, test systems to show that equipment installed operates as designed and specified. Submit testing plans for review prior to testing. Plan system tests for as many at one time as possible to work into construction phasing. The Port may witness tests at its option and if so, schedule tests 48 hours in advance.
- B. A written record of performance tests shall be compiled, dated, witnessed, and submitted along with operating and maintenance data, prior to substantial completion.
- C. Test reports shall certify that wiring is complete, passes all test criteria, is fully operational, and that the work has been completed as specified.
- D. Provide all forms, instrumentation and test equipment, loads, and other consumables required.

- E. Copper CAT6A Horizontal Cable Testing:
1. Test after jacks are inserted and faceplates correctly mounted and labeled.
 2. Following the final inspection tests and certification by the Contractor, post-certification may be performed through an independent field verification program or testing service. The Port, at its discretion, may require the Contractor to return to the site, at no additional cost to the Port, to assist with the determination of any certification discrepancies. If such a determination finds the materials, installation procedures, or final testing procedures to be out of compliance with this contract, the Contractor shall remedy the cause and re-test, at no additional cost to the Port.
 3. Test copper cables with test equipment designed to substantiate compliance with ANSI/TIA568-C.2. If the test equipment permits, program into the tester "Port of Portland" as the name of "Owner" and the correct cable number under "Circuit ID" appearing on each cable report page. Retain test results and submit.
 4. Perform channel tests on horizontal cables and provide test results on the following electrical signal characteristics:
 - a. Wire Map.
 - b. Length.
 - c. Resistance.
 - d. Propagation Delay.
 - e. Delay Skew.
 - f. Insertion Loss.
 - g. Return Loss.
 - h. Near-End Crosstalk (NEXT).
 - i. Powersum Near-end Crosstalk (PSNEXT).
 - j. Attenuation to Crosstalk Ratio Near-End (ACRN).
 - k. Powersum Attenuation to Crosstalk Ratio Near-End (PSACRN).
 - l. Attenuation to Crosstalk Ratio Far-End (ACRF).
 - m. Powersum Attenuation to Crosstalk Ratio Far-End (PSACRF).
 5. Test cables to meet ANSI/TIA-568-C.2 standards on the permanent link, equipment outlet to patch panel. The cable installation and products will be deemed acceptable if the Contractor provides documentation substantiating compliance with the electrical signal characteristics of the ANSI/TIA-568-C.2 specifications for horizontal cables.
 6. Approved CAT6A tester is Fluke Versiv with DSX5000 module, or equal.
 7. Correct or replace copper cables and related hardware that fail the acceptance test. Re-test, as outlined in the testing procedures, cables requiring corrective action to meet compliance.
 8. Submit cable test equipment reports on a compact disc using the latest version of the test equipment manufacturer's software, as well as a printed paper copy, for approval. Provide a copy of the test equipment manufacturer's most current release of the test equipment software to allow reading of the test data.

END OF SECTION 271000

FOR PORT USE ONLY

2026D004	TERMINAL AND CONCOURSES WAYFINDING SIGNAGE	<i>7/31/2026</i>
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Location: PDX	PM: BRANNAJ	CCM: MOEG	Type: Const.
Proj. No.: 103101	PE: OSTLUJ	SW: DOHERC	