

**PORT OF TACOMA
TACOMA, WASHINGTON
EBC BLDG 326 HVAC AND ROOF REPLACEMENT
AND BLDGS 407 AND 532 BIRD WIRE**

**PROJECT NO. 101249.01
CONTRACT NO. 070941**

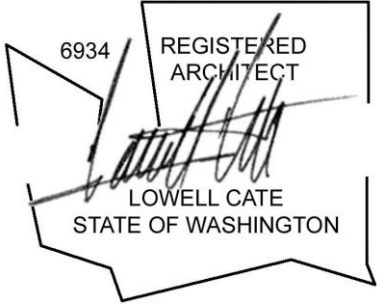
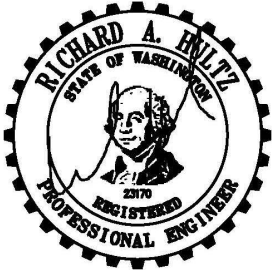

**Dakota Chamberlain, P.E.
Chief Facilities Development Officer**

**Norman Gilbert, P.E.
Project Manager**

END OF PROJECT TITLE PAGE

The undersigned Engineer of Record hereby certifies that the Technical Specifications for the following portions of this project were written by me, or under my direct supervision, and that I am duly registered under the laws of the State of Washington, and hereby affix my Professional Seal and signature.

Those Sections prepared under my direct supervision and being certified by my seal and signature below are as follows:

<u>SEAL & SIGNATURE</u>	<u>SECTION(S)</u>
	Division 01 Division 02 Division 03 Division 04 Division 05 Division 06 Division 07 Division 08 Division 09 Division 10
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END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Contract Drawings: The following drawings are a part of the Contract Documents:

Sheet No.	Drawing Title
G1.10	COVER SHEET
G2.10	GENERAL NOTES
D1.10	DEMOLITION ROOF PLAN - B326
A1.10	ROOF PLAN - B326
A1.11	BIRD DETERENT PLAN - B326
A1.20	ROOF PLAN - B407
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M3.01	MECHANICAL PLAN
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E2.01	ELECTRICAL ROOF PLAN
E5.01	ONE LINE DIAGRAM

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF LIST OF DRAWINGS

EBC BLDG 326 HVAC AND ROOF REPLACEMENT AND BLDGS 407 AND 532 BIRD WIRE

PROJECT NO. 101249.01 | CONTRACT NO. 070941

Scope of Work: The work required for this project includes:
Building 326 - removal and replacement of roofing, removal and reconstruction of roof parapet wall, removal and reinstallation of two HVAC units, replacement of three additional HVAC units, installation of bird deterrent system, and utility work in support of the project.
Building 407 and 532 - supplement or replace existing bird deterrent systems for better performance.

Bid Estimate: Estimated cost range is \$560,000 to \$620,000, plus Washington State Sales Tax (WSST).

Sealed Bid Date/Time/ Location: Bids will be received at the Front Reception Desk, Port Administration Office, One Sitcum Plaza, Tacoma, Washington until **3:00 P.M. on February 5, 2019**, at which time they will be publicly opened and read aloud.

Pre-bid Conference and Site Tour: A pre-bid conference and site visit have been set for January 22, 2019 at 10:00 AM PST. The site visit will convene at the project site. The following Personal Protective Equipment is required for the site visit: sturdy shoes, reflective vest, gloves, and safety glasses.

Attendees will be required to sign a Release and Acceptance of Responsibility and Acknowledgment of Risks Form prior to entering the site and shall provide their own Personal Protection Equipment (PPE).

Bidding Security: Each bid must be accompanied by a Certified Check or Bid Security Bond in an amount equal to five (5) percent of the bid.

Contact Information: All questions are to be put into writing to the Port at procurement@portoftacoma.com. No oral answers will be binding by the Port. Questions will not be accepted after seven (7) days prior to bid.

**Bidding
Documents:**

Plans, Specifications, Addenda, and Plan Holders List for this project are available on-line through The Port of Tacoma's Website www.portoftacoma.com. Click on "Contracts," "Procurement," and then the Procurement Number 070941. Bidders must subscribe to the Holder's List on the right hand side of the screen in order to receive automatic email notification of future addenda and to be placed on the Holder's List.

Contact procurement@portoftacoma.com with questions. Holder's Lists will be updated regularly. Additional Instructions available in 00 21 00 - Instructions to Bidders.

END OF SECTION

PART 1 - SUMMARY

1.01 DEFINITIONS

All definitions set forth in the Agreement, the General Conditions of the Contract for Construction, and in other Contract Documents are applicable to the Bidding Documents.

- A. "Addenda" are written or graphic instruments issued prior to the execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections. The contents of an Addendum are issued in no particular order and therefore should be carefully and completely reviewed.
- B. "Award" means the formal decision by the Port of Tacoma ("Port") notifying a Responsible Bidder with the lowest responsive Bid of the Port's acceptance of the Bid and intent to enter into a Contract with the Bidder.
- C. The "Award Requirements" include the statutory requirements as a condition precedent to Award.
- D. The "Base Bid" is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base to which work may be added or from which work may be deleted for sums stated in Alternate Bids.
- E. A "Bid" is a complete and properly signed proposal to do the Work, submitted in accordance with the Bidding Documents, for the sums therein stipulated and supported by any data called for by the Bidding Documents.
- F. The "Bid Date" is the day and hour specified in the Bidding Documents, as may be changed through an Addendum, by which Bidders are required to submit Bids to the Port.
- G. The "Bid Form" is the form(s) included with the Bidding Documents, with Specification Section 00 41 00, through which a Bidder submits a Bid.
- H. A "Bidder" is a person or entity who submits a Bid.
- I. The "Bidding Documents" include the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, any other sample bidding and contract forms, the Bid Bond, and the proposed Contract Documents, including any Addenda issued prior to the Bid Date.
- J. The "Contract Documents" proposed for the Work consist of the Agreement, the General Conditions of the Contract (as well as any Supplemental, Special, or other Conditions included in the project manual), the Drawings, the Specifications, and all Addenda issued prior to, and all modifications issued after, execution of the Contract.
- K. A "Sub-Bidder" is a person or entity of any tier who submits a bid or proposal to or through the Bidder for materials, equipment or labor for a portion of the Work.

1.02 BIDDER'S REPRESENTATIONS

By making its Bid, each Bidder represents that:

- A. **BIDDING DOCUMENTS.** The Bidder has read and understands the Bidding Documents, and its Bid is made in accordance with them.
- B. **PRE-BID MEETING.** The Bidder has attended pre-Bid meeting(s) required by the Bidding Documents. Attendance at a mandatory meeting or training session means that, in the sole opinion of the Port, a Project representative of a prospective Bidder has attended all or substantially all of such meeting or session.

- C. BASIS. Its Bid is based upon the materials, systems, services, and equipment required by the Bidding Documents, and is made without exception.
- D. EXAMINATION. The Bidder has carefully examined and understands the Bidding Documents, the Contract Documents (including, but not limited to, any liquidated damages and insurance provisions), and the Project site, including any existing buildings, it has familiarized itself with the local conditions under which the Work is to be performed, has correlated its observations with the requirements of the proposed Contract Documents, and it has satisfied itself as to the nature, location, character, quality, and quantity of the Work, the labor, materials, equipment, goods, supplies, work, services, and other items to be furnished, and all other requirements of the Contract Documents. The Bidder has also satisfied itself as to the conditions and other matters that may be encountered at the Project site or affect performance of the Work or the cost or difficulty thereof, including, but not limited to, those conditions and matters affecting transportation, access, disposal, handling and storage of materials, equipment and other items; availability and quality of labor, water, electric power, and utilities; availability and condition of roads; climatic conditions and seasons; physical conditions at the Project site and the surrounding locality; topography and ground surface conditions; and equipment and facilities needed preliminary to, and at all times during, the performance of the Work. The failure of the Bidder to fully acquaint itself with any applicable condition or matter shall not in any way relieve the Bidder from the responsibility for performing the Work in accordance with, and for the Contract Sum and within the Contract Time provided for in, the Contract Documents.
- E. PROJECT MANUAL. The Bidder has checked its copies of the project manual (if any) with the table of contents bound therein to ensure the project manual is complete.
- F. SEPARATE WORK. The Bidder has examined and coordinated all Drawings, Contract Documents, and Specifications with any other contracts to be awarded separately from, but in connection with, the Work being Bid upon, so that the Bidder is fully informed as to conditions affecting the Work under the Contract being Bid upon.
- G. LICENSE REQUIREMENTS. Bidders and Sub-Bidders shall be registered and shall hold such licenses as may be required by the laws of Washington, including a certificate of registration in compliance with RCW 18.27, for the performance of the Work specified in the Contract Documents.
- H. NO EXCEPTIONS. Bids must be based upon the materials, systems, and equipment described and required by the Bidding Documents, without exception.

1.03 BIDDING DOCUMENTS

A. COPIES

1. Bidders may obtain complete sets of the Bidding Documents from The Port of Tacoma's Website www.portoftacoma.com. Click on "Contracts" then "Procurement."
2. Complete Sets. Bidders shall use complete sets of Bidding Documents in preparing Bids and are solely responsible for obtaining updated information. The Port does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete and/or superseded sets of Bidding Documents.
3. Conditions. The Port makes copies of the Bidding Documents available only for the purpose of obtaining Bids on the Work and does not confer a license or grant permission for any other use.
4. Legible Documents. To the extent any Drawings, Specifications, or other Bidding Documents are not legible, it is the Bidder's responsibility to obtain legible documents.

B. INTERPRETATION OR CORRECTION OF BIDDING DOCUMENTS

1. **Format.** The Contract Documents are divided into parts, divisions, and sections for convenient organization and reference. Generally, there has been no attempt to divide the Specification sections into Work performed by the various building trades, any Work by separate contractors, or any Work required for separate facilities in, or phases, of the Project.
2. **Duty to Notify.** Bidders shall promptly notify the Port in writing of any ambiguity, inconsistency, or error that they may discover upon examination of the Bidding Documents or of the site and local conditions.
3. **Products and Installation.** All Bidders shall thoroughly familiarize themselves with specified products and installation procedures and submit to the Port any objections (in writing) no later than seven (7) days prior to the Bid Date. The submittal of the Bid constitutes acceptance of products and procedures specified as sufficient, adequate, and satisfactory for completion of the Contract.
4. **Written Request.** Bidders requiring clarification or interpretation of the Bidding Documents shall make a written email request to procurement@portoftacoma.com at least seven (7) days prior to the Bid Date.
5. **Request to Modify Responsibility Criteria.** No later than seven (7) days prior to the Bid Date, a potential Bidder may request in writing that the Port modify the Responsibility Criteria. The Port will evaluate the information submitted by the potential Bidder and respond before the Bid Date. If the evaluation results in a change of the Criteria, the Port will issue an Addendum identifying the new Criteria.
6. **Addenda.** The Bidder shall not rely on oral information provided at any pre-Bid meetings or during site visits. Verbal statements made by representatives of the Port are for informational purposes only. Any interpretation, correction, or change of the Bidding Documents will be made solely by written Addendum. Interpretations, corrections, or changes of the Bidding Documents made in any manner other than by written Addendum, including but not limited to, oral statements will not be binding, and Bidders shall not rely upon such statements, interpretations, corrections, or changes. The Port is not responsible for explanations or interpretations of the Bidding Documents other than in a written Addendum.
7. **Site Visits.** Any site visits are provided as a courtesy to potential Bidders to assist them in becoming familiar with the Project site conditions. However, only the Bidding Documents, including any issued Addenda, may be relied upon by Bidders.
8. **Singular References.** Reference in the singular to an article, device, or piece of equipment shall include as many of such articles, devices, or pieces as are indicated in the Contract Documents or as are required to complete the installation.
9. **Utilities and Runs.** The Bidder should assume that the exact locations of any underground or hidden utilities, underground fuel tanks, and plumbing and electrical runs may be somewhat different from any location indicated in the surveys or Contract Documents.

C. SUBSTITUTIONS

1. For substitutions during bidding, refer to Section 00 26 00 – Substitution Procedures.

D. ADDENDA

1. Distribution. All Addenda will be written and will be made available on the Port's website or any other source specified by the Port for the Project.
2. Copies. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for that purpose.
3. Verification and Acknowledgment of Receipt. Prior to submitting a Bid, each Bidder shall ascertain that it has received all Addenda issued. Each Bidder shall acknowledge its receipt and consideration of all Addenda in its Bid.

1.04 BIDDING PROCEDURE

A. FORM AND STYLE OF BIDS

1. Form. Bids (including required attachments) shall be submitted on forms identical to the Bid Form included with the Bidding Documents. No oral, email, or telephonic responses or modifications will be considered.
2. Entries on the Bid Form. All blanks on the Bid Form shall be filled in by typewriter, printer, or manually in ink.
3. Figures. All sums shall be expressed in figures, not words. Portions of the Bid Form may require the addition or multiplication of component bids to a total or the identification of component amounts within a total. In case of discrepancy between unit prices listed and their sum(s), the unit prices listed shall govern (rather than the sum).
4. Initial Changes. Any interlineation, alteration, or erasure shall be initialed by an authorized representative of the Bidder.
5. Bid Breakdown. The Bid Form may contain, for the Port's accounting purposes only, a breakdown of some or all of the components included in the Base Bid.
 - a. For lump sum bids, the total Contract Sum shall be submitted.
 - b. For unit price bids, a price shall be submitted for each item of the Work, an extension thereof, and, if requested, the total Contract Sum.
6. No Conditions. The Bidder shall make no conditions or stipulations on the Bid Form, nor qualify its Bid in any manner.
7. Identity of Bidder. The Bidder shall include in the specified location on the Bid Form, the legal name of the Bidder and, if requested, a description of the Bidder as a sole proprietor, a partnership, a joint venture, a corporation, or another described form of legal entity. The Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. The Port verifies signature authority on the Labor and Industries website <https://fortress.wa.gov/lni/bbip/Search.aspx> under the contractor registration business owner information. If the business owner information is not current, the bidder shall show proof of authority to sign at the request of the Port. A Bid submitted by an agent shall have a current power of attorney attached certifying the agent's authority to bind the Bidder.
8. Bid Amounts Do Not Include Sales Tax. The Work to be performed constitutes a "retail sale" as this term is defined in RCW 82.04.050. Thus, the Base Bid amount shall include in the sum stated all taxes imposed by law, EXCEPT WASHINGTON STATE AND LOCAL SALES TAX. The engaged Contractor will pay retail sales tax on all consumables used during the performance of the Work and on all items that are not incorporated into the final Work; this tax shall be included in the Base Bid price and in any other prices set forth on the Bid Form. The Port will pay state and local retail sales tax on each progress payment.

and final payment to the engaged Contractor for transmittal by the Contractor to the Washington State Department of Revenue or to the applicable local government.

B. BID SECURITY

1. Purpose and Procedure. Each Bid shall be accompanied by Bid security payable to the Port in the form required by the Bidding Documents and equal to five percent (5%) of the Base Bid only (i.e., not including any Alternates or Unit Prices). The Bid security constitutes a pledge by the Bidder to the Port that the Bidder will enter into the Contract with the Port in the form provided, in a timely manner, and on the terms stated in its Bid, and will furnish in a timely manner, the payment and performance bonds, certificates of insurance, and all other documents required in the Contract Documents. Should the Bidder fail or refuse to enter into the Contract or fail to furnish such documents, the amount of the Bid security shall be forfeited to the Port as liquidated damages, not as a penalty. By submitting a Bid, each Bidder represents and agrees that the Bid security, if forfeited, is a reasonable prediction on the Bid Date of future damages to the Port.
2. Form. The Bid security shall be in the form of a certified or bank cashier's check payable to the Port or a Bid bond executed by a bonding company reasonably acceptable to the Port, licensed in the State of Washington, registered with the Washington State Insurance Commissioner, possess an A.M. Best rating of "A-," Fiscal Size Category (FSC) (6) or better, and be authorized by the U.S. Department of the Treasury. The Bid security shall be signed by the person or persons legally authorized to bind the Bidder. Bid bonds shall be submitted using the form included with the Bidding Documents.
3. Retaining Bid Security. The Port will have the right to retain the Bid security of Bidders to whom an Award is being considered until the earliest of either: (a) mutual execution of the Contract, and the Port's receipt of payment and performance bonds, (b) the specified time has elapsed so that Bids may be withdrawn, or (c) when all Bids have been rejected.
4. Return of Bid Security. Within sixty (60) days after the Bid Date, the Port will release or return Bid securities to Bidders whose Bids are not to be further considered in awarding the Contract. Bid securities of the three apparent low Bidders will be held until the Contract has been finally executed, after which all unforfeited Bid securities will be returned. Bid security may be returned in the form provided or by separate payment.

C. SUBMISSION OF BIDS

1. Procedure. The Bid, the Bid security, and other documents required to be submitted with the Bid, shall be enclosed in a sealed envelope identified with the Project name and number and the Bidder's name and address. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face of the mailing envelope.
 - a. If a Bid is mailed, it shall be addressed to the Port of Tacoma, Contracts Department, One Sitcum Plaza, Tacoma, WA 98421.
 - b. If a Bid is delivered, it shall be delivered to the Front Reception Desk, Port of Tacoma, One Sitcum Plaza, Tacoma, WA 98421.
 - c. The time stamp clock at the Front Reception Desk at One Sitcum Plaza is the Port's official clock.
2. Deposit. Bids shall be deposited at the designated location prior to the Bid Date indicated in the Advertisement or Invitation to Bid, or any extension thereof made by Addendum. Bids received after the Bid Date and time specified shall be returned without consideration at the discretion of the Port, or rejected at the time of receipt.

3. Delivery. The Bidder assumes full responsibility for timely delivery at the location designated for receipt of Bids.
4. Form. Oral, facsimile, telephonic, electronic, or email Bids are invalid and will not be considered.

D. MODIFICATION OR WITHDRAWAL OF BID

1. After the Bid Date. A Bid may not be modified, withdrawn, or canceled by the Bidder during a sixty (60) day period following the Bid Date, and each Bidder so agrees by virtue of submitting its Bid.
2. Before the Bid Date. Prior to the Bid Date, any Bid submitted may be modified or withdrawn only by notice to the party receiving Bids at the place designated for receipt of Bids. The notice shall be in writing, with the signature of the Bidder, and shall be worded so as not to reveal the amount of the original Bid. Email notice will not be accepted. It shall be the Bidder's sole responsibility to verify that the notice has been received by the Port in time to be withdrawn before the Bid opening.
3. Resubmittal. Withdrawn Bids may be resubmitted up to the time designated for the receipt of Bids, provided that they are then fully in conformance with these Instructions to Bidders.
4. Bid Security with Resubmission. Bid security shall be in an amount sufficient for the Bid as modified or resubmitted.

E. COMMUNICATIONS

1. Communications from a Bidder related to these Instructions to Bidders must be in writing to procurement@portoftacoma.com. Communications, including but not limited to, notices and requests by Sub-Bidders shall be made through the Bidder and not directly by a Sub-Bidder to the Port.

1.05 CONSIDERATION OF BIDS

- A. OPENING OF BIDS: Unless stated otherwise in the Advertisement or Invitation to Bid or an Addendum, the properly identified Bids received on time will be opened publicly and will be read aloud. An abstract of the Base Bids and any Alternate Bids will promptly (and generally within 24 hours) be made available to Bidders and other interested parties.
- B. REJECTION OF BIDS: The Port shall have the right, but not the obligation, to reject any or all Bids for any reason, or for no reason, to reject a Bid not accompanied by the required Bid security, or to reject a Bid which is in any way incomplete or irregular.
- C. BIDDING MISTAKES: The Port will not be obligated to consider notice of claimed Bid mistakes received more than 24 hours after the Bid Date. In accordance with Washington law, a low Bidder that claims error and fails to enter into the Contract is prohibited from Bidding on the Project if a subsequent call for Bids is made for the Project.
- D. ACCEPTANCE OF BID (AWARD)
 1. Intent to Accept. The Port intends, but is not bound, to Award a Contract to the Responsible Bidder with the lowest responsive Bid, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and does not exceed the funds available. The Port has the right to waive any informality or irregularity in any Bid(s) received and to accept the Bid which, in its judgment, is in its own best interests.
 2. Requirements for Award. Before the Award, the lowest responsive Bidder must be deemed Responsible by the Port and must satisfy all Award Requirements.

E. BID PROTEST PROCEDURES

1. **Procedure.** A Bidder protesting, for any reason, the Bidding Documents, a Bidding procedure, the Port's objection to a Bidder or a person or entity proposed by the Bidder, including but not limited to, a finding of non-Responsibility, the Award of the Contract or any other aspect arising from, or relating in any way to, the Bidding, shall cause a written protest to be filed with the Port within two (2) business days of the event giving rise to the protest. (Intermediate Saturdays, Sundays, and legal holidays are not counted as business days.) The written protest shall include the name of the protesting Bidder, the bid solicitation number and title under which the protest is submitted, a detailed description of the specific factual and legal grounds for the protest, copies of all supporting documents, evidence that the apparent low bidder has been given notice of the protest, and the specific relief requested. The written protest shall be sent by email to procurement@portoftacoma.com.
2. **Consideration.** Upon receipt of the written protest, the Port will consider the protest. The Port may, within three (3) business days of the Port's receipt of the protest, provide any other affected Bidder(s) the opportunity to respond in writing to the protest. If the protest is not resolved by mutual agreement of the protesting Bidder and the Port, the Contracts Director of the Port, or his or her designee, will review the issues and promptly furnish a final and binding written decision to the protesting Bidder, and any other affected Bidder(s), within six (6) business days of the Port's receipt of the protest. (If more than one (1) protest is filed, the Port's decision will be provided within six (6) business days of the Port's receipt of the last protest.) If no reply is received from the Port during the six (6) business-day period, the protest will be deemed rejected.
3. **Waiver.** Failure to comply with these protest procedures will render a protest waived.
4. **Condition Precedent.** Timely and proper compliance with, and exhaustion of, these protest procedures shall be a condition precedent to any otherwise permissible judicial consideration of a protest.

1.06 POST BID INFORMATION

A. THE LOWEST RESPONSIVE BIDDER SHALL:

1. **Responsibility Detail Form.** Within 24 hours of the Low Responsive Bidder Selection Notification, the apparent low Bidder shall submit to the Port the Responsibility Detail Form and Project Example Sheets (Section 00 45 13) executed by an authorized company officer. As requested from the Port, the low responsive Bidder shall provide written confirmation that the person signing the Bid on behalf of the Bidder was duly authorized at the time of bid, a detailed breakdown of the Bid in a form acceptable to the Port, and other information required by the Port.
2. Within ten (10) days after the Port's Notice of Award of the Contract, the apparent low Bidder shall also submit to the Port:
 - a. Additional information regarding the use of the Bidder's own forces and the use of subcontractors and suppliers;
 - b. The names of the persons or entities (including a designation of the Work to be performed with the Bidder's own forces, and the names of those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work (i.e., either a listed Sub-Bidder or a Sub-Bidder performing Work valued at least ten percent (10%) of the Base Bid), consistent with the listing required with the Bid; and

- c. The proprietary names and the suppliers of the principal items or systems of materials and equipment proposed for the Work.
 - 3. Failure to provide any of the above information in a timely manner will constitute an event of breach permitting forfeiture of the Bid security.
 - 4. Bidder Responsibility. The Bidder will be required to establish, to the satisfaction of the Port, the reliability and responsibility of itself and the persons or entities proposed to furnish and perform the Work described in the Bidding Documents. If requested, the Bidder shall meet with the Port to discuss the Bid, including any pricing, the Bid components, and any assumptions made by the Bidder.
 - 5. Objection. Prior to an Award of the Contract, the Port will notify the Bidder in writing if the Port, after due investigation, has reasonable objection to the Bidder or a person or entity proposed by the Bidder. Upon receiving such objection, the Bidder may, at Bidder's option: (1) withdraw their Bid, (2) submit an acceptable substitute person or entity with no change in the Contract Time and no adjustment in the Base Bid or any Alternate Bid, even if there is a cost to the Bidder occasioned by such substitution, or (3) file a protest in accordance with the Bidding Documents.
 - 6. Change. Persons and entities proposed by the Bidder to whom the Port has made no reasonable objection must be used on the Work for which they were proposed and shall not be changed, except with the written consent of the Port.
 - 7. Right to Terminate. The Bidder's representations concerning its qualifications will be construed as a covenant under the Contract. If a Bidder makes a material misrepresentation on a Qualification Statement, the Port has the right to terminate the Contract for cause and may then pursue any remedies that exist under the Contract or that are otherwise available.
- B. INFORMATION FROM OTHER BIDDERS: All other Bidders designated by the Port as under consideration for Award of a Contract shall also provide a properly executed Qualification Statement, if so requested by the Port.

1.07 PERFORMANCE BOND, LABOR AND MATERIAL PAYMENT BOND, AND INSURANCE

- A. BOND REQUIREMENTS: Within ten (10) days after the Port's Notice of Award of the Contract, the successful Bidder shall obtain and furnish statutory bonds pursuant to RCW 39.08 covering the faithful performance of the Contract and the payment of all obligations arising thereunder in the form and amount prescribed in the Contract Documents. The cost of such bonds shall be included in the Base Bid.
- B. TIME OF DELIVERY AND FORM OF BONDS: The successful Bidder shall deliver an original copy of the required bonds to the Port, 1 Sitcum Plaza, Tacoma, WA 98421, within the time specified in the Contract Documents.
- C. INSURANCE: The successful Bidder shall deliver a certificate of insurance from the Bidder's insurance company that meets or exceeds all requirements of the Contract Documents.
- D. GOVERNMENTAL REQUIREMENTS: Notwithstanding anything in the Bidding or Contract Documents to the contrary, the Bidder shall provide all bonding, insurance, and permit documentation as required by governmental authorities having jurisdiction for any portions of the Project.

1.08 FORM OF AGREEMENT

- A. FORM TO BE USED: The Contract for the Work will be written on the form(s) contained in the Bidding Documents, including any General, Supplemental, or Special Conditions, and the other Contract Documents included with the project manual.
- B. CONFLICTS: In case of conflict between the provisions of these Instructions and any other Bidding Document, these Instructions shall govern. In case of conflict between the provisions of the Bidding Documents and the Contract Documents, the Contract Documents shall govern.
- C. CONTRACT DELIVERY. Within ten (10) days after Notice of Award, the Bidder shall submit a signed Contract to the Port in the form tendered to the Bidder and without modification.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes administrative and procedural requirements for substitutions.

1.02 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- B. The contract documents include performance specifications for products and equipment which meet project requirements. In those cases where a representative item or manufacturer is named in the specification, it is provided for the sole purpose of identifying a product meeting the required functional performance, and where the words "or equal" are used, a substitution request as further described, is not required.
- C. Where non-competitive or sole source products or manufacturers are explicitly specified with the words "or approved equal," or "Engineer approved equal," or "as approved by the Engineer" are used, they shall be taken to mean "or approved equal." In these cases a substitution request as further described in this section, is required.

1.03 SUBMITTALS

- A. Substitution Request Form: Use copy of form located at the end of this section.
- B. Pre-Bid Substitution Requests: Submit one PDF of the substitution request form along with all supporting documentation for consideration of each request. Identify product, fabrication, or installation method to be replaced. Include Drawing numbers and titles. Substitution requests prior to bid date may originate directly from a prime bidder, or from a prospective supplier or subcontractor.
 - 1. Documentation: Show compliance with requirements for substitutions with the following, as applicable:
 - a. Statement indicating why specified product, fabrication, or installation cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work that will be necessary to accommodate proposed substitution.
 - c. Product Data, including drawings and descriptions of products, fabrication, and installation procedures.
 - d. Samples, where applicable or requested.
 - e. Certificates and qualification data, where applicable or requested.
 - f. Research reports evidencing compliance with building code in effect for project.
 - 2. Engineer's Action: Engineer will review substitution requests if received electronically to procurement@portoftacoma.com at least 7 days prior to the bid opening date set forth in these documents. Substitution requests received after this time will not be reviewed.
 - a. Forms of Acceptance: Substitution requests will be formally accepted via written addendum prior to the bid opening date. Bidders shall not rely upon approvals made in any other manner.
 - b. Use product originally specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

- c. The Port's decision of approval or disapproval of a proposed substitution shall be final.
- C. Post-Award Substitution Requests must be submitted by the Contractor and not a subcontractor or supplier.
- 1. Documentation: Show compliance with requirements for substitutions with the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include, but are not limited to, attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects with project names and addresses. Also provide names and addresses of the A/E and Owners.
 - h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for project
 - j. Comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
 - 2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within 7 calendar days of receipt of a request for substitution. Engineer will notify Contractor through Port of acceptance or rejection of proposed substitution within 15 calendar days of receipt of request, or 7 calendar days of receipt of additional information or documentation, whichever is later.
 - a. Forms of Acceptance: Change Order or Minor Change in Work.

- b. Use product originally specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.
- 3. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than 14 days prior to date required for preparation and review of related submittals.
 - a. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied:
 - 1) Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - 2) Requested substitution will not adversely affect Contractor's construction schedule.
 - 3) Requested substitution has received necessary approvals of authorities having jurisdiction.
 - 4) Requested substitution is compatible with other portions of the Work
 - 5) Requested substitution has been coordinated with other portions of the Work
 - 6) Requested substitution provides specified warranty.
 - 7) If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- 4. Substitutions for Convenience: Engineer will consider Contractor's requests for substitution if received within 30 days after the Notice of Award.
 - a. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied:
 - 1) Requested substitution offers Port a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Port must assume. Port's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Port, and similar considerations.
 - 2) Requested substitution does not require extensive revisions to the Contract Documents.
 - 3) Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - 4) Requested substitution will not adversely affect Contractor's construction schedule.
 - 5) Requested substitution has received necessary approvals of authorities having jurisdiction.
 - 6) Requested substitution is compatible with other portions of the Work.
 - 7) Requested substitution has been coordinated with other portions of the Work.
 - 8) Requested substitution provides specified warranty.

- 9) If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

D. Substitutions will not be considered when:

1. Indicated or implied on shop drawings or product data submittals without formal request submitted in accordance with this Section.
2. Acceptance will require substantial revision of Contract Documents or other items of the Work.
3. Submittal for substitution request does not include point-by-point comparison of proposed substitution with specified product.

1.04 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

**PROJECT TITLE: EBC BLDG 326 HVAC AND ROOF
REPLACEMENT AND BLDGS 407 AND 532 BIRD WIRE**

PROJECT NO.: 101249.01

SUBMITTED BY: _____

CONTRACT NO.: 070941

PRIME/SUB/SUPPLIER: _____

DATE: _____

Specification Title: _____ Section No.: _____

Description: _____ Paragraph: _____

Page No.: _____

Proposed Substitution: _____

Trade Name: _____ Model No.: _____

Manufacturer: _____

Address: _____ Phone No.: _____

Installer: _____

Address: _____ Phone No.: _____

Differences between proposed substitution and specified product: _____

___ Point-by-Point comparative data attached - REQUIRED

Reason for not providing specified item: _____

Similar Installation:

Project: _____ A/E: _____

Address: _____

Owner: _____ Date Installed: _____

Proposed substitution affects other parts of Work: ___ No ___ Yes; explain _____

Supporting Data Attached:

___ Drawings ___ Product Data ___ Samples ___ Tests ___ Reports ___ Other: _____

Applicable to Substitution Requests During Construction:

Proposed to Port for accepting substitution: \$ _____

Proposed substitution changes Contract Time: ___ No ___ Yes [Add] [Deduct] _____ # days.

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.
 - Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
 - Proposed substitution does not affect dimensions and functional clearances.
 - Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
 - Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.
-

Submitted By: _____
Signed By: _____ Firm: _____
Address: _____

Telephone: _____ Email: _____
Attachments: _____

A/E's REVIEW AND RECOMMENDATION

- ☐ Approved Substitution
- ☐ Approved Substitution as Noted
- ☐ Reject Substitution - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

ENGINEER'S REVIEW AND ACTION

- ☐ Substitution Approved - Make submittals in accordance with this Specification Section. If during construction, prepare Change Order.
- ☐ Substitution Approved as Noted - Make submittals in accordance with this Specification Section. If during construction, prepare Change Order.
- ☐ Substitution Rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

END OF SECTION

PART 1 - GENERAL

1.01 EXISTING CONDITIONS

- A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders online at www.portoftacoma.com, but will not be part of the Contract Documents, as follows:
 - 1. Reference Plans
 - a. Entitled 401 Alexander Building 9407 Roof Replacement and Building Upgrades, dated July 17, 2015
 - b. Entitled 401 Alexander Avenue Building 9532 - Roof Repairs, dated June 27, 2013

1.02 AVAILABILITY

- A. Reference Documents are available online through the Port of Tacoma's Website www.portoftacoma.com. Click on "Contracts," "Procurement," and then the Procurement Number.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section provides the notification required for disclosure of asbestos, lead-containing or other hazardous materials.

1.02 HAZARDOUS MATERIALS NOTICE

- A. Contractor is notified that certain portions of the Work area are known to contain lead or asbestos-containing materials (ACM), as detailed in a Hazardous Materials Assessment, EBC Building 326 HVAC & Roof Replacement Hazardous Building Materials Investigation, dated August 3, 2018. A copy of the assessment is included in Appendix B.

1.03 NOTIFICATION AND SUSPENSION

- A. In the event the Contractor detects the presence of potentially contaminated materials not previously identified in this specification, the Contractor shall immediately notify the Port. Following such notification by the Contractor, the Port shall in turn notify the various governmental and regulatory agencies concerned with the presence of potentially contaminated materials, if warranted. Depending upon the type of contaminated materials identified, the Port may suspend work in the vicinity of the discovery under the provisions of General Conditions.
- B. Following completion of any further testing necessary to determine the nature of the materials involved, the Port will determine how the material shall be managed. Although the actual procedures used in resuming the work shall depend upon the nature and extent of the potentially contaminated material, the following alternate methods of operation are foreseen as possible:
 - 1. Contractor to resume work as before the suspension.
 - 2. Contractor to move its operations to another portion of the work until measures to eliminate any hazardous conditions can be developed and approved by the appropriate regulatory agencies.
 - 3. The Port to direct the Contractor to dispose or treat the material in an approved manner.
 - 4. The Port to terminate or modify the Contract.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

BIDDER'S NAME: _____

PROJECT TITLE: EBC BLDG 326 HVAC AND ROOF REPLACEMENT AND BLDGS 407 AND 532 BIRD WIRE

The undersigned Bidder declares that it has read the Contract Documents, understands the conditions under which the work will be performed, has examined the Project site, and has determined for itself all situations affecting the Work herein Bid upon. Bidder proposes and agrees, if this Bid is accepted, to provide at Bidder's own expense, all labor, machinery, tools, materials, etc., including all Work incidental to, or described or implied as incidental to such items, according to the Contract Documents of the Port of Tacoma, and that the Bidder will complete the Work within the time stated, and that Bidder will accept in full the lump sum or unit price(s) set forth below:

ITEM NO.	DESCRIPTION OF ITEM	QTY	UOM	UNIT PRICE	EXTENDED PRICE (QTY x PRICE)
1	Mobilization and Demobilization	1	LS		
2	Building 326 Roofing and HVAC	1	LS		
3	Building 407 Bird Wire Improvement	1	LS		
4	Building 532 Bird Wire Improvement	1	LS		
5	Unforeseen Conditions Allowance	1	LS	\$25,000	\$25,000
TAXABLE BASE BID SUBTOTAL					

TOTAL BID AMOUNT	
10.1% WASHINGTON STATE SALES TAX (WSST)	
BID TOTAL (WITH WSST)	

Note: Show prices in figures only.

Evaluation of Bids. In accordance with the provisions of the Contract Documents, Bids will be evaluated to determine the lowest Base Bid Subtotal offered by a responsible Bidder submitting a responsive Bid.

Addenda. Bidder acknowledges receipt and acceptance of all Addenda through No. _____ (Identify last Addenda by number)

Bid Security. A certified check, cashier's check, or other obligation of a bank, or a bid security bond in substantially the form set forth in Section 00 43 13, Bid Security Form, for at least 5% of the Base Bid Subtotal bid, without sales tax, shall be submitted with this bid.

Non-Collusion Representation. The Bidder declares under penalty of perjury that the Bid submitted is a genuine and not a sham or collusive bid, or made in the interest or on behalf of any person or firm not therein named; and further represents that the Bidder has not directly or indirectly induced or solicited any other bidder to submit a sham bid, or encouraged any other person or corporation to refrain from bidding; and that the Bidder has not in any manner sought by collusion to secure to the Bidder an advantage over any other bidder or bidders.

RCW 39.04.350 Certification. The Bidder represents and certifies, under penalty of perjury, that within the three-year period immediately preceding the Bid Date, the Bidder has not been determined by a final and binding citation and notice of assessment issued by the Department of Labor and Industries, or through a civil judgment entered by a court of limited or general jurisdiction, to have willfully violated, as defined in RCW 349.48.082, any provision of Chapter 49.46, 49.48, or 49.52 RCW.

Name of Firm

Date

Signature

By Title

_____ Mailing Address	_____ City, State	_____ Zip Code
--------------------------	----------------------	-------------------

_____ Telephone Number	_____ Email Address
---------------------------	------------------------

_____ WA State Contractor's License No.	_____ Date of Issue	_____ Expiration Date
--	------------------------	--------------------------

_____ Unified Business Identifier (UBI) No.	_____ Employment Security Department No.
--	---

Identification of Bidder as a sole proprietor, a partnership, a joint venture, a corporation,
or another described form of legal entity.

END OF SECTION

KNOW ALL MEN BY THESE PRESENTS:

That we, _____, as Principal, and
_____, as Surety, are held and
firmly bound unto the PORT OF TACOMA as Obligee, in the penal sum of
_____ Dollars, for the payment of which the
Principal and Surety bind themselves, their heirs, executors, administrators, successors
and assigned, jointly and severally, by these present

The condition of this obligation is such that if the Obligee shall make any award to the
Principal for _____, according to the
terms of the proposal or bid made by the Principal therefor, and the Principal shall duly
make and enter into a contract with the Obligee in accordance with the terms of said
proposal or bid and award and shall give bond for the faithful performance thereof, with
Surety or Sureties approved by the Obligee; or, if the principal shall, in case of failure to
do so, pay and forfeit to the Obligee the penal amount of the deposit specified in the call
for bids, then this obligation shall be null and void; otherwise it shall be and remain in full
force and effect and the Surety shall forthwith pay and forfeit to the Obligee, as penalty
and liquidated damages, the amount of this bond.

SIGNED, SEALED AND DATED THIS _____ DAY OF _____, 20____

BY _____
PRINCIPAL

BY _____
SURETY

AGENT AND ADDRESS

Note: Bidder may submit Surety's bid bond form, provided it is similar in substance, made
out in the name of the Port of Tacoma, and that the agent's name and address appear as
specified. Bonds containing riders limiting responsibility for toxic waste or limiting the term
of responsibility will be rejected.

END OF SECTION

THIS IS NOT TO BE SUBMITTED WITH A BID.

THE LOW RESPONSIVE BIDDER SHALL BE REQUIRED TO COMPLETE THIS RESPONSIBILITY DETAIL FORM AS SPECIFIED IN SECTION 00 21 00 - INSTRUCTIONS TO BIDDERS. **THIS COMPLETED RESPONSIBILITY DETAIL FORM SHALL BE SUBMITTED ELECTRONICALLY (PDF) VIA EMAIL TO THE CONTACT(S) IDENTIFIED IN THE LOW RESPONSIVE BIDDER SELECTION NOTIFICATION.**

BIDDER'S COMPANY NAME: _____

For the below Mandatory Bidder Responsibility Criteria, please mark the appropriate choice.

1.01 MANDATORY BIDDER RESPONSIBILITY CRITERIA

- A. The Bidder shall meet the following mandatory responsibility criteria as described in RCW 39.04.350(1). The Bidder shall be rejected as not responsible if any answer to questions 1 through 5 is "No" or any answer to questions 6 through 8 is "Yes."

1. Does the Bidder have a Certificate of Registration in compliance with RCW 18.27?
____ Yes ____ No
2. Does the Bidder have a current Washington State Unified Business Identifier number?
____ Yes ____ No
3. Does the Bidder have Industrial Insurance Coverage for the Bidder's employees working in Washington State as required in RCW 51?
____ Yes ____ No
4. Does the Bidder have an Employment Security Department number as required in RCW 50?

***Attach** letter dated within 6 months of bid opening date.

**Request a letter electronically by clicking on the following link
<https://fortress.wa.gov/esd/twt/pwcinternet/> or by emailing a request to
publicworks@esd.wa.gov.*

- ____ Yes ____ No
5. Does the Bidder have a Washington State Excise Tax Registration number as required in RCW 82?
____ Yes ____ No
6. Has the Bidder been disqualified from bidding on any public works project under RCW 39.06.010 or 39.12.065(3)?
____ Yes ____ No
7. Has the Bidder violated RCW 39.04.370 more than one time as determined by the Washington State Department of Labor and Industries?
____ Yes ____ No
8. Has the Bidder ever been found to be out of compliance with Apprenticeship Utilization requirements of RCW 39.04.320?
____ Yes ____ No

9. Has the Bidder ever been found to have willingly violated, as defined in RCW 49.48.082, any provision of chapter 49.46, 49.48, or 49.52 RCW within the three-year period immediately preceding the date of this bid solicitation?

___ Yes ___ No

If any answer to questions 1 through 5 is "No" or any answer to questions 6 through 8 is "Yes" - **STOP HERE** and contact the Contract Administrator. The Bidder is not responsible for this Work. Otherwise proceed to 1.02. **Provide attached to this completed form documentation to confirm responsibility criteria.**

For remaining criteria below, check or fill-out the appropriate item. Based upon the answer provided by the Bidder, the Port may request additional information or seek further explanation. As needed, provide backup documentation for any explanations listed below.

1.02 CONTRACT AND REGULATORY HISTORY

- A. The Port will evaluate whether the Bidder's contract and regulatory history demonstrates an acceptable record of past project performance and consistent responsibility. The Bidder shall answer the following questions. The Bidder may be rejected as not responsible if any answer to questions 1 through 5 below is "Yes."

1. Has the Bidder had a contract terminated for cause or default in the last 5 years?

___ Yes, **If YES, explain below.** ___ No

2. Has the Bidder required a Surety to take over all, or a portion of, a project to cure or respond to an asserted default or material breach of contract on the part of the Bidder on any public works project in the last 5 years?

___ Yes, **If YES, explain below.** ___ No

3. Have the Bidder and major Sub-Bidders been in bankruptcy, reorganization, and/or receivership on any public works project in the last 5 years?

___ Yes, **If YES, explain below.** ___ No

4. Have the Bidder and major Sub-Bidders been disqualified by any state or local agency from being awarded and/or participating on any public works project in the last 5 years?

___ Yes, **If YES, explain below.** ___ No

5. Are the Bidder and major Sub-Bidders currently a party to a formal dispute resolution process with the Port (i.e., a pending mediation, arbitration, or litigation)?

___ Yes, **If YES, explain below.** ___ No

1.03 ACCIDENT/INJURY EXPERIENCE

- A. The Port will evaluate the Bidder's accident/injury Experience Modification Factor ("EMF") from the Washington State Department of Labor and Industries to assess whether the Bidder has an acceptable safety record preventing personal injuries on projects.
- B. List the Bidder's accident/injury EMF for the last five (5) years. An experience factor is calculated annually by the Washington State Department of Labor and Industries.

Year	Effective Year	Experience Factor
1		
2		
3		
4		
5		

If the Bidder has received an EMF of greater than 1.0 for any year, explain the cause(s) of the designation and what remedial steps were taken to correct the EMF. The Bidder may be rejected as not responsible if the Bidder's EMF is greater than 1.0 and sufficient remedial steps have not been implemented.

1.04 WORK PERFORMED BY BIDDER

- A. The Bidder shall state the amount of the Contract Work, as an equivalent to the Total Bid Price, excluding taxes, insurance, and bonding, the Bidder will execute with its own forces.

_____%

1.05 ADDITIONAL CONTRACTOR INFORMATION

- A. As part of completing this Responsibility Detail Form, **submit the following information with the completed Responsibility Detail Form:**
1. Bidder's recent job resume, including a list of similar projects performed and contact information for the similar project Owner(s), a brief description of work, start and end dates, and contract amount.
 2. Resumes of bidder's proposed project manager and job superintendent.
- B. The Bidder's failure to provide the required project information may result in a determination of the Bidder being declared non-responsible by the Port.
- C. The Bidder shall submit this completed, **SIGNED** Responsibility Detail Form electronically (PDF), with all requested backup documentation, via email to the contact(s) noted on the Low Responsive Bidder Selection Notification.
- D. The Bidder and its subcontractors to verify that its subcontractors at each tier meet the responsibility criteria as required by RCW 39.06.020 and 39.04.350.
1. Bidder shall verify major subcontractors meet the responsibility criteria required. Fill out one Port of Tacoma Public Works Project Bidder Evaluation Checklist for Subcontractors for each major subcontractor and submit to the Port with this form. Backup documentation is not required to be submitted.

PROJECT: EBC Bldg 326 HVAC and Roof Replacement and Bldgs 407 and 532 Bird Wire

PROJECT NO. 101249.01

CONTRACT NO. 070941

Responsibility Certification Form

The Low responsive Bidder shall complete the Responsibility Detail Form, attach all documentation, and submit to the Port within 24 hours following receipt of the Low Responsive Bidder Selection Notification. All forms shall be submitted electronically (PDF) via email to the contact(s) listed on the Selection Notice. Note, the same project may be used to demonstrate experience across multiple categories if applicable.

By completing and signing this Responsibility Detail Form, the Bidder is certifying that the information contained within the form, the backup documentation, and any additional information requested by the Port is true and complete. The Bidder's failure to disclose the required information or the submittal of false or misleading information may result in the rejection of the Bidder's bid, revocation of award, or contract termination.

The information provided herein is true and complete.

Signature of Authorized Representative

Date

Print Name and Title

**PORT OF TACOMA PUBLIC WORKS PROJECT BIDDER EVALUATION CHECKLIST FOR
SUBCONTRACTORS**

PROJECT TITLE: EBC BLDG 326 HVAC AND ROOF
BIDDER: REPLACEMENT AND BLDGS 407 AND 532
CONTRACT AND PROJECT NUMBER: BIRD WIRE
070941 / 101249.01

This checklist shall be completed by the Bidder and its subcontractors to verify that its subcontractors at each tier meet the responsibility criteria as required by RCW 39.06.020 and 39.04.350.

This checklist should be submitted to the Port of Tacoma Contracts Administrator within 24 hours of request.

Document verification information or backup data is not to be submitted to the Port, this information should remain on file with the Contractor and be presented to the Port if requested at a later date.

Item No.	Item	Initials/ Comments
1.	At the time of bid submittal, have a certificate of registration in compliance with RCW 18.27: Check the L&I site https://fortress.wa.gov/lni/bbip/ . Verify that a subcontractor has an electrical contractor license, if required by chapter 19.28 RCW, or an elevator contractor license, if required by chapter 70.87 RCW.	
2.	While reviewing registration information above, also check contractor's Employer Liability Certificate to verify workers' comp (industrial insurance) premium status – current account. Complete a "Submit Contractor Tracking Request" to be notified if the contractor fails to pay workers' comp premiums or renew their contractor registration or if their electrical contractor license is suspended or revoked within one year.	
3.	State excise tax registration number (Department of Revenue). (contractor's Washington State Unified Business Identifier and tax registration number) http://dor.wa.gov/content/doingbusiness/registermybusiness/brd/ .	
4.	Not disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3). Check the Department of Labor and Industries http://www.lni.wa.gov/TradesLicensing/PrevWage/AwardingAgencies/DebarredContractors/ .	

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS
SECTION 00 45 13 - RESPONSIBILITY DETAIL FORM

Item No.	Item	Initials/ Comments
5.	<p>Verify subcontractors are registered with the Washington State Employment Security Department (ESD) and have an account number. Request a letter to be sent from the subcontractor electronically by clicking on the following link https://fortress.wa.gov/esd/twt/pwcinternet/ or by emailing a request to publicworks@esd.wa.gov. Include ESD#, UBI#, and business name in the email. Certificate of Coverage letter issued/dated within the last six months.</p> <p>Document if subcontractor confirms in writing, under penalty of perjury, that it has no employees and this requirement does not apply.</p>	

END OF SECTION

THIS AGREEMENT is made and entered into by and between the PORT OF TACOMA, a State of Washington municipal corporation, hereinafter designated as the "Port," and:

The "Contractor" is:	<hr/>	(Legal Name)
	<hr/>	(Address)
	<hr/>	(Address 2)
	<hr/>	(Phone No.)
The "Project" is:	<u>EBC Bldg 326 HVAC and Roof Replacement and Bldgs 407 and 532 Bird Wire</u>	(Title)
	<u>101249.01 070941</u>	(Project/ Contract No.)
	<u>401 Alexander Avenue</u>	(Project Address)
	<u>Tacoma, WA 98421</u>	(Project Address 2)
The "Engineer" is:	<u>Dakota Chamberlain, P.E.</u>	(Engineer)
	<u>Chief Facilities Development Office</u>	(Title)
	<u>dchamberlain@nwseaportalliance.com</u>	(Email)
	<u>(253) 592-6734</u>	(Phone No.)
The "Contractor's Representative" is:	<hr/>	(Representative)
	<hr/>	Title
	<hr/>	(Email)
	<hr/>	(Phone No.)

BACKGROUND AND REPRESENTATIONS:

The Port has caused Drawings, Specifications, and other Contract Documents to be prepared for the performance of Work on the Project.

The Port publicly solicited bids on the Contract Documents. The Contractor submitted a bid to the Port on the _____ day of _____, 20__ to perform the Work.

The Contractor represents that it has the personnel, experience, qualifications, capabilities, and means to accomplish the Work in strict accordance with the Contract Documents, within the Contract Time and for the Contract Price, and that it and its Subcontractors satisfy the responsibility criteria set forth in the Contract Documents, including any supplemental responsibility criteria.

The Contractor further represents that it has carefully examined, and is fully familiar with, all provisions of the Contract Documents, including any Addenda, that it has fully satisfied itself as to the nature, location, difficulty, character, quality, and quantity of the Work required by the Contract Documents and the conditions and other matters that may be encountered at or near the Project site(s), or that may affect performance of the Work or the cost or difficulty thereof, including all applicable safety and site responsibilities, and that it understands and can satisfy all scheduling and coordination requirements and interim milestones.

AGREEMENT:

The Port and the Contractor agree as follows:

1.0 CONTRACTOR TO FULLY PERFORM THE WORK

The Contractor shall fully execute and complete the entire Work described in the Contract Documents, except to the extent specifically indicated in the Agreement, the General Conditions of the Contract (as well as any Supplemental, Special, or other Conditions included in the project manual), the Drawings, the Specifications, and all Addenda issued prior to, and all modifications issued after, execution of the Contract.

2.0 DATE OF COMMENCEMENT

The date of commencement of the Work, which is the date from which the Contract Time is measured, shall be fixed as the date this agreement is executed.

3.0 CONTRACT TIME AND LIQUIDATED DAMAGES

The Contractor shall achieve all interim milestones as set forth in the Contract Documents and Substantial Completion of the entire Work not later than **150** calendar days from contract execution, subject to adjustments of this Contract Time as provided in the Contract Documents. The Contractor shall achieve Final Completion of the Work within **30** calendar days of the date on which Substantial Completion is achieved.

Provisions for liquidated damages as a reasonable estimate of future loss, as of the date of this Agreement, are included in the Contract Documents. The parties agree that the stated liquidated damages are not penalties individually or cumulatively.

The liquidated damages for failure to achieve Substantial Completion by the prescribed date shall be **\$250** per calendar day. After the prescribed Final Completion date, the liquidated damages for failure to achieve Final Completion shall be **\$100** per calendar day.

Liquidated damages assessed by the Port will be deducted from monies due to the Contractor, or from monies that will become due to the Contractor. The liquidated damages, as specified and calculated herein, shall be levied for each and every calendar day that Substantial Completion and/or Final Completion of the work is delayed beyond the prescribed completion dates, or the completion dates modified by the Port for extensions of the contract time.

4.0 CONTRACT PRICE

In accordance with the Contractor's bid dated _____, the Port shall pay the Contractor in current funds for the Contractor's performance of the Contract, the Contract Price of _____ Dollars (\$_____), subject to additions and deductions as provided in the Contract Documents. State and local sales tax is not included in the Contract Price, but will be due and paid by the Port with each progress payment.

6.0 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in the Contract Documents.

This Agreement is entered into as of the day and year first written above:

CONTRACTOR

PORT OF TACOMA

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Execution
Date: _____

END OF SECTION

PERFORMANCE BOND # _____

CONTRACTOR (NAME AND ADDRESS)

SURETY (NAME AND PRINCIPLE PLACE
OF BUSINESS)

OWNER (NAME AND ADDRESS)

AGENT OR BROKER (FOR
INFORMATION ONLY)

PORT OF TACOMA
P.O. BOX 1837
TACOMA, WA 98401-1837

KNOW ALL MEN BY THESE PRESENTS:

That _____ as Principal, hereinafter called Contractor,
and _____ as Surety, hereinafter called Surety, are
held and firmly bound unto the Port of Tacoma as Obligee, hereinafter called the Port, in the
amount of _____ Dollars (\$_____)
for the payment whereof Contractor and Surety bind themselves, their executors,
administrators, legal representatives, successors, and assigns, jointly and severally, firmly by
these presents.

WHEREAS:

Contractor shall execute an agreement with the Port for EBC Bldg 326 HVAC and Roof
Replacement and Bldgs 407 and 532 Bird Wire, Project No. 101249.01/Contract No. 070941,
a copy of which Contract is by reference made a part hereof (the term "Contract" as used
herein to include the aforesaid agreement together with all the Contract Documents,
addenda, modifications, all alterations, additions thereto, deletions therefrom, and any other
document or provision incorporated into the Contract) and is hereinafter referred to as the
Contract.

This bond is executed and issued pursuant to the provisions of Chapter 39.08 Revised Code
of Washington.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if Contractor
shall promptly and faithfully perform said Contract, then this obligation shall be null and void;
otherwise, it shall remain in full force and effect.

FURTHER:

- A. Surety hereby waives notice of any alterations, change orders, modifications, or
extensions of time made by the Port.
- B. Surety recognizes that the Contract includes provisions for additions, deletions, and
modifications to the work or Contract Time and the amounts payable to the
Contractor. Subject to the limitations contained in (A) above, Surety agrees that no
such addition, deletion, or modification, or any combination thereof, shall avoid or
impair Surety's obligation hereunder.

C. Whenever Contractor has been declared by the Port to be in default, and the Port has given Surety notice of the Port's determination of such default, Surety shall promptly (in no event more than fifteen (15) days following receipt of such notice) advise the Port of its intended action to:

1. Remedy the default within fifteen (15) days following its advice to the Port as set forth above, or
2. Assume within fifteen (15) days, following its advice to the Port as set forth above, completion of the Contract in accordance with the Contract Documents and become entitled to payment of the balance of the Contract Sum, or
3. Pay the Port upon completion of the Contract, in cash, the cost of completion together with all other reasonable costs and expenses incurred by the Port as a result of the Contractor's default, including but not limited to, those reasonable costs and expenses incurred by the Port in its efforts to mitigate its losses, which may include, but are not limited to, attorney's fees and efforts to complete the Work prior to the Surety exercising the options available to it as set forth herein.

D. If the Port shall commence suit and obtain judgment against the Surety for recovery hereunder, then the Surety, in addition to such judgment, shall pay all costs and attorney's fees incurred by the Port in enforcement of its rights hereunder. Venue for any action arising out of, or in connection with, this bond shall be in Pierce County, Washington.

E. No right or action shall accrue on this bond to, or for the use of, any person or corporation other than the Port of Tacoma.

Signed and Sealed the _____ day of _____, 20____.

IMPORTANT: Surety companies executing bonds must have an A.M. Best Rating of "A-, FSC (6)" or higher, have an underwriting limitation of not less than the Contract Sum, and be authorized to transact business in the State of Washington.

SURETY

CONTRACTOR

Signature

Signature

Printed Name and Title

Printed Name and Title

Power of Attorney attached.

END OF SECTION

LABOR AND MATERIAL PAYMENT BOND # _____

CONTRACTOR (NAME AND ADDRESS)

SURETY (NAME AND PRINCIPLE PLACE
OF BUSINESS)

OWNER (NAME AND ADDRESS)

PORT OF TACOMA
P.O. BOX 1837
TACOMA, WA 98401-1837

AGENT OR BROKER (FOR
INFORMATION ONLY)

KNOW ALL MEN BY THESE PRESENTS:

That _____ as Principal, hereinafter called Contractor, and _____ as Surety, hereinafter called Surety, are held and firmly bound unto the Port of Tacoma as Obligee, hereinafter called the Port, and all others entitled to recovery hereunder, in the amount of _____ Dollars (\$_____) for the payment whereof Contractor and Surety bind themselves, their executors, administrators, legal representatives, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS:

Contractor shall execute an agreement with the Port for EBC Bldg 326 HVAC and Roof Replacement and Bldgs 407 and 532 Bird Wire, Project No. 101249.01/Contract No. 070941, a copy of which Contract is by reference made a part hereof (the term "Contract" as used herein to include the aforesaid agreement together with all the Contract Documents, addenda, modifications, alterations, additions thereto, deletions therefrom, and any other document or provision incorporated into the Contract) and is hereinafter referred to as the Contract.

This bond is executed pursuant to the provisions of Chapter 39.08 Revised Code of Washington.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if Contractor shall promptly make payment to all claimants, as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract and shall indemnify and save the Port harmless from all cost and damage by reason of Contractor's default, then this obligation shall be null and void; otherwise, it shall remain in full force and effect, subject to the following conditions.

- A. Surety hereby waives notice of any alterations, change orders, modifications, or extensions of time made by the Port.

- B. Surety recognizes that the Contract includes provisions for additions, deletions, and modifications to the work or Contract Time and the amounts payable to the Contractor. Surety agrees that no such addition, deletion, or modification, or any combination thereof, shall avoid or impair Surety's obligation hereunder.
- C. Surety hereby agrees that every person protected under the provisions of RCW 39.08.010 who has not been paid as provided under the Contract, and pursuant to RCW 39.08.010, less any amounts withheld pursuant to statute, and less retainage withheld pursuant to RCW 60.28, after the expiration of a period of thirty (30) days after the date on which the completion of the Contract in accordance with RCW 39.08, may sue on this bond, prosecute the suit to final judgment as may be due claimant, and have execution thereon including recovery of reasonable costs and attorney's fees as provided by RCW 39.08. The Port shall not be liable for the payment of any costs or expenses of any such suit.
- D. No suit or action shall be commenced hereunder by any claimant unless claimant shall have given the written notices to the Port, and where required, the Contractor, in accordance with RCW 39.08.030.
- E. The amount of this bond shall be reduced by, and to the extent of, any payment or payments made in good faith hereunder, inclusive of the payment by Surety of claims which may be properly filed in accordance with RCW 39.08 whether or not suit is commenced under and against this bond.
- F. If any Claimant shall commence suit and obtain judgment against the Surety for recovery hereunder, then the Surety, in addition to such judgment and attorney fees as provided by RCW 39.08.030, shall also pay such costs and attorney fees as may be incurred by the Port as a result of such suit. Venue for any action arising out of, or in connection with, this bond shall be in Pierce County, Washington.

Signed and Sealed the _____ day of _____, 20____.

IMPORTANT: Surety companies executing bonds must have an A.M. Best Rating of "A-, FSC (6)" or higher, have an underwriting limitation of not less than the Contract Sum, and be authorized to transact business in the State of Washington.

SURETY

CONTRACTOR

Signature

Signature

Printed Name and Title

Printed Name and Title

Power of Attorney attached.

END OF SECTION

BOND NO: _____
PROJECT TITLE: EBC BLDG 326 HVAC AND
ROOF REPLACEMENT AND BLDGS 407 AND 532
BIRD WIRE
PROJECT NO.: 101249.01
CONTRACT NO.: 070941

KNOW ALL MEN BY THESE PRESENTS: That we, _____
_____, a corporation existing under and by virtue of the laws of the State
of Washington and authorized to do business in the State of Washington, as Principal, and
_____, a corporation organized and existing
under the laws of the State of _____ and authorized to
transact the business of surety in the State of Washington, as Surety, are jointly and
severally held and bound unto the PORT OF TACOMA, hereinafter called Port, as Obligee,
and are similarly held and bound unto the beneficiaries of the trust fund created by RCW
60.28 as their heirs, executors, administrators, successors, and assigns in the penal sum of
_____ (\$ _____) plus 5%
of any increases in the contract amount that have occurred or may occur, due to change
orders, increases in the quantities, or the addition of any new item of work.

WHEREAS, on the _____ day of _____, the said Principal herein executed
Contract No. 070941 with the Port for EBC Bldg 326 HVAC and Roof Replacement and
Bldgs 407 and 532 Bird Wire, Project No. 101249.01.

WHEREAS, said contract and RCW 60.28 require the Port to withhold from the Principal the
sum of 5% from monies earned by the Principal on estimates during the progress of the
work, hereinafter referred to as earned retained funds.

WHEREAS, the Principal has requested that the Port accept a bond in lieu of earned
retained funds as allowed under Chapter 60.28 RCW.

NOW THEREFORE, this obligation is such that the Surety, its successors, and assigns are
held and bound unto the Port and unto all beneficiaries of the trust fund created by RCW
60.28.011(1) in the aforesaid sum. This bond, including any proceeds therefrom, is subject to
all claims and liens and in the same manner and priority as set forth for retained percentages
in Chapter 60.28 RCW. The condition of this obligation is also that if the Principal shall satisfy
all payment obligations to persons who may lawfully claim under the trust fund created
pursuant to Chapter 60.28 RCW, to the Port, and indemnify and hold the Port harmless from
any and all loss, costs, and damages that the Port may sustain by release of said retainage
to Principal, then this obligation shall be null and void, provided the Surety is notified by the
Port that the requirements of RCW 60.28.021 have been satisfied and the obligation is duly
released by the Port.

IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable under this
obligation as Principal. The Surety will not be discharged or released from liability for any act,
omission, or defenses of any kind or nature that would not also discharge the Principal.

IT IS HEREBY FURTHER DECLARED AND AGREED that this obligation shall be binding upon and inure to the benefit of the Principal, the Surety, the Port, the beneficiaries of the trust fund created by Chapter 60.28 Revised Code of Washington (RCW) and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, said Principal and said Surety have caused these presents to be duly signed and sealed this _____ day of _____, 20____.

By: _____ Principal

Address: _____

City/ST/Zip: _____

Phone: _____

Surety Name: _____

By: _____ Attorney-In-Fact

Address: _____

City/ST/Zip: _____

Phone: _____

IMPORTANT: Surety companies executing bonds must have an A.M. Best Rating of "A-, FSC (6)" or higher, and be authorized to transact business in the State of Washington.

END OF SECTION

To:	Bank Name, Address, Phone	Escrow Account No:	
		Contract No:	070941
		Project No:	101249.01
Agency:	Port of Tacoma PO Box 1837 Tacoma, WA 98401-1837	Project Title:	EBC Bldg 326 HVAC and Roof Replacement and Bldgs 407 and 532 Bird Wire

This Retainage Escrow Agreement (the "Agreement") is made and entered into as of _____, 20__, by and among _____ ("Contractor"), with an address of _____, the Port of Tacoma (the "Port") and _____ ("Bank").

Contractor has directed the Port to deliver to Bank its retainage warrants or checks, which shall be payable to Bank and the Contractor jointly. Such warrants or checks are to be held in a restricted deposit account as described above (the "Pledged Account") and disbursed by Bank only in accordance with this Agreement and Chapter 60.28 RCW, and upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

1. The Port shall deliver to Bank from time to time checks or warrants payable jointly to Bank and the Contractor. Bank is hereby authorized by the Contractor to endorse in the Contractor's name any such check or warrant so that Bank may receive the proceeds thereof and invest the same and deposit such proceeds into the Pledged Account. The power of endorsement hereby granted to Bank by the Contractor shall be deemed a power coupled with an interest and shall be irrevocable during the term of this Agreement. Although Bank may be a payee named in such warrants or checks as shall be delivered to Bank, Bank's duties and responsibilities with respect to the same shall be only those duties and responsibilities that a depository bank would have pursuant to a control agreement among the Bank, the Port, and Contractor, as such agreement may exist in a form satisfactory to the Port and Article 4 of the Uniform Commercial Code of the State of Washington, as amended, for an item deposited with Bank for collection. For the purpose of each such purchase, Bank may follow the last written direction received by Bank from the Contractor, provided such direction otherwise conforms with the restrictions on investments recited herein. Below is a list of such bonds and other securities approved by the Port (the "Securities"). Other securities, except stocks, may be selected by the Contractor, subject to the express prior written approval of the Port, in its sole and absolute discretion. Purchase of such Securities shall be in a form which shall allow the Bank alone to reconvert such Securities into money if Bank is required to do so by the Administrator as provided in paragraph 5 of this Agreement. The investments selected by the Contractor, as approved by the Port and purchased by Bank, must mature on or prior to the completion date of the contract between the Contractor and the Port, including extensions thereof (the "Contract").
2. As security for the completion of the Project and satisfaction of the Contract, Contractor hereby pledges, assigns, hypothecates, and transfers to the Port, the Pledged Assets (as defined below)

and grants to the Port a security interest under the Uniform Commercial Code of the State of Washington, as amended, in and to the Pledged Assets. This Agreement creates and grants a valid, perfected first priority lien on the Pledged Assets, enforceable as such against all creditors of Contractor. Contractor covenants and agrees with the Port that it will not (a) sell, assign, transfer, exchange, or otherwise dispose of, or grant any option with respect to, the Pledged Assets, (b) create, incur, or permit to exist any lien or option in favor of, or any claim of any person with respect to, any of the Pledged Assets, or any interest therein, except for the lien provided for by this Agreement, (c) withdraw any money, securities or property from the Pledged Account, except as provided herein, or (d) attempt to modify or terminate Contractor's the agreement under which the Pledged Account was established. Contractor will defend the right, title, and security interest of the Port in and to the Pledged Assets against the claims and demands of all persons. "Pledged Assets" means the Pledged Account, now or hereafter constituted, including (a) all credit balances or other money now or hereafter credited to the Pledged Account; (b) all money, certificated and uncertificated securities, commodities contracts, instruments, documents, general intangibles, financial assets or other investment property now or hereafter in, or distributed from, the Pledged Account; (c) all income, products and proceeds of the sale, exchange, redemption or exercise of the foregoing, whenever occurring, whether as dividends, interest payments or other distributions of cash or property, including, without limitation, proceeds in the nature of accounts, general intangibles, and insurance proceeds; (d) any rights incidental to the ownership of the foregoing, such as voting, conversion and registration rights and rights of recovery for securities violations; and (e) all books and records pertaining to the foregoing.

3. When an interest on the Securities accrues and is paid, Bank shall collect such interest and forward it to the Contractor at the address designated below unless otherwise directed in writing by the Contractor.
4. Bank is not authorized to deliver to the Contractor all or any part of the Securities (or any monies derived from the sale of such Securities, or the negotiation of the Port's warrants or checks) except in accordance with Chapter 60.28 RCW based on written instructions from the Senior Contract Administrator for the Port (the "Administrator"). The Administrator shall inform the Bank and keep the Bank informed in writing of the name of the person or persons with authority to give the Bank such written instructions. Compliance with such instructions shall relieve Bank of any further liability related thereto. The estimated completion date on the Contract underlying this Agreement is _____. Upon request by Bank, the Port shall advise Bank in writing of any material change in the estimated Contract completion date. If such estimated completion date is changed, Bank is authorized to reinvest the monies held hereunder in accordance with the new estimated completion date.
5. In the event the Administrator orders Bank to do so in writing, and notwithstanding any other provisions of this Agreement, Bank shall, within ten (10) days of receipt of such order, reconvert into money the Securities and return such money together with any other monies, including accrued interest on such Securities to the Port. Consent of Contractor shall not be required for payment to the Port hereunder, and objection or other communication from Contractor shall not prevent, delay, or otherwise affect payment to the Port forthwith in accordance with the Port's order and this Agreement.
6. The Contractor agrees to pay Bank as compensation for Bank's services hereunder as follows:

Payment of all fees shall be the sole responsibility of the Contractor and shall not be deducted from any checks, moneys, Securities, or other property placed with Bank or held by Bank pursuant to this Agreement until and unless the Port directs the release thereof to the Contractor,

whereupon Bank shall be granted a first lien upon such property released and shall be entitled to reimburse Bank from such property for the entire amount of Bank's fees as provided for hereinabove. In the event that Bank is made a party to any litigation with respect to the checks, moneys, Securities, or other property held by Bank hereunder, or in the event that the conditions of this escrow are not promptly fulfilled or that Bank is required to render any service not provided for in these instructions, or that there is any assignment of the interests of this escrow or any modification hereof, Bank shall be entitled to reasonable compensation for such extraordinary services from the Contractor and reimbursement from the Contractor for all costs and expenses, including reasonable attorney fees occasioned by such default, delay, controversy or litigation.

7. Should Bank at any time and for any reason desire to be relieved of Bank's obligation as escrow holder hereunder, Bank shall give written notice to the Port and the Contractor. The Port and Contractor shall, within 20 days of the receipt of such notice, jointly appoint a successor escrow holder and instruct Bank to deliver all securities and funds held hereunder to said successor. If Bank is not notified of the appointment of the successor escrow holder within 20 days, Bank may return the subject matter hereof to the Port, and upon so doing, it absolves Bank from all further charges and obligations in connection with this Agreement.
8. Any one or more of the following events constitutes an Event of Default ("Event of Default") under this Agreement: (a) Contractor breaches the Contract; (b) Contractor fails to perform any covenant or obligation under this Agreement; (c) Contractor shall file a voluntary petition in bankruptcy or such a petition shall be filed against Contractor; and (d) a court of competent jurisdiction shall enter an order, judgment or decree approving a petition filed against Contractor seeking any reorganization, dissolution or similar relief under any present or future federal, state or other statute, law or regulation relating to bankruptcy, insolvency or other relief for debtors.
9. Upon the occurrence of an Event of Default, the Port may exercise, in addition to all other rights and remedies granted in this Agreement, all rights and remedies of a secured party under the Uniform Commercial Code of the State of Washington, as amended. Without limiting the generality of the foregoing, the Port, without demand of performance or other demand, presentment, protest, advertisement, or notice of any kind (except any notice required by law, this Agreement) to or upon Contractor or any other person (all and each of which demands, defenses, advertisements and notices are hereby waived to the extent not prohibited by law), may, upon the occurrence of an Event of Default, collect, receive, appropriate, and realize upon the Pledged Assets, or any part thereof, and/or may forthwith withdraw from the Pledged Account, sell, assign, give option or options to purchase or otherwise dispose of and deliver the Pledged Assets or any part thereof (or contract to do any of the foregoing).
10. This Agreement shall not be binding until executed by the Contractor and the Port and accepted by Bank.
11. This instrument contains the entire agreement between Bank, the Contractor and the Port with respect to this Agreement and Bank is not a party to nor bound by any instrument or agreement other than this; Bank shall not be required to take notice or demand, nor be required to take any action whatever except as herein expressly provided; Bank shall not be liable for any loss or damage not caused by Bank's own negligence or willful misconduct.
12. The foregoing provisions shall be binding upon the assigns, successors, personal representatives and heirs of the parties hereto.
13. This Agreement is subject to the laws of the State of Washington and is to be construed in accordance therewith.

14. Any legal action or proceeding with respect to this Agreement may be brought in the courts of the State of Washington or in the courts of the United States for the Western District of Washington, and by execution and delivery of this Agreement, Contractor consents, for itself and in respect of its property, to the nonexclusive jurisdiction of those courts. Contractor irrevocably waives any objection, including any objection to the laying of venue or based on the grounds of forum non conveniens, which it may now or hereafter have to the bringing of any action or proceeding in such jurisdiction in respect of this Agreement or any document related hereto.
15. The Contractor's Federal Income Tax Identification number is _____.

Contractor:

Port of Tacoma

Signature

Signature

Name/Title

Name/ Port Treasurer or Deputy Treasurer

Date

Date

The undersigned have read and hereby approve this Agreement on the date first set forth above

The above escrow instructions received and accepted this _____ day of _____, 20__.

Bank:

By _____
(Signature of Authorized Bank Officer)

Name: _____

Title: _____

SECURITIES AUTHORIZED BY THE PORT

1. FDIC insured time deposits and time deposits in commercial banks authorized by the Washington State Public Deposit Protection Commission.
2. Savings account deposits in commercial banks authorized by the Washington State Public Deposit Protection Commission.
3. Bills, certificates, notes or bonds of the United States;
4. Other obligations of the United States or its agencies; and
5. Obligation of any corporation wholly-owned by the government of the United States;

INSTRUCTIONS FOR RETAINAGE ESCROW AGREEMENTS:

Whenever possible, use the Port approved Escrow Agreement. The Port, at its discretion, may or may not accept an agreement form from another source.

Please return all three (3) originals of the Agreement, with completed contractor and bank information and signatures, and the escrow account number. The Port will review and sign the Agreement and distribute copies. One (1) original will go directly to the Bank, one (1) original will be returned to the Contractor.

Fill in the following on the Escrow Agreement:

- 1) Page 1 – Escrow Account Number
- 2) Page 1 – Name, address, and phone number of the Bank
- 3) Page 2 – Signature, typed/printed name, date, and the title of the Contractor Signatory.
- 4) Page 2 – Signature, typed/printed name, date, and the title of the Authorized Bank Officer signatory.

Do not fill in the date in the introductory paragraph. The Port will fill in this date once the document has been fully executed by the Port.

END OF SECTION

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ARTICLE 1 - THE CONTRACT DOCUMENTS

1.01 GENERAL

- A. Contract Documents form the Contract. The Contract Documents are enumerated in the Agreement between the Port and Contractor ("Agreement"). Together, the Contract Documents form the Contract. The Contract represents the entire integrated agreement between the parties and supersedes all prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only in writing and only as set forth in the Contract Documents.
- B. Headings only for convenience. The titles or headings of the sections, divisions, parts, articles, paragraphs, and subparagraphs of the Contract Documents are intended only for convenience.

1.02 DEFINITIONS

- A. "Contractor" means the person or entity contracting to perform the Work under these Contract Documents. The term Contractor includes the Contractor's authorized representative for purposes of identifying obligations and responsibilities under the Contract Documents, including the ability to receive notice and direction from the Port.
- B. "Day" means a calendar day unless otherwise specifically designated.
- C. "Drawings" are the graphic and pictorial portions of the Contract Documents showing the design, location, and dimensions of the Work, including plans, elevations, sections, details, and diagrams.
- D. "Engineer" is the Port employee generally tasked with administering the Project on the Port's behalf and the person with overall responsibility for managing, for the Port, the Project scope, budget, and schedule. To the extent empowered, the Engineer may delegate to others at the Port (such as a Project Manager or Inspector) the responsibility for performing delegated responsibilities of the Engineer's under this Contract.
- E. "Port" means the Port of Tacoma. The Port will designate in writing a representative (usually the Engineer) who shall have the authority to act on the Port's behalf related to the Project. The "Port" does not include staff, maintenance, or safety workers, or other Port employees or consultants that may contact the Contractor or be present at the Project site.
- F. "Project" is identified in the Agreement and is the total construction to be performed by or through the Port, of which the Work performed under the Contract Documents may be only a part.
- G. "Specifications" are those portions of the Contract Documents that specify the written requirements for materials, equipment, systems, standards, and workmanship for the Work and for the performance of related services.
- H. "Subcontractor" means a person or entity that contracts directly with the Contractor to perform any Work under the Contract Documents. "Subcontractor of any tier" includes Subcontractors as well as any other person or entity, including suppliers, that contracts with a Subcontractor or a lower-tier Subcontractor (also referred to as "Sub-subcontractors") to perform any of the Work.
- I. "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all labor, tools, equipment, materials, services, and incidentals necessary to complete all obligations under the Contract Documents. The Work may constitute only a part of the Project, and may interface and need to be coordinated with the work of others.

1.03 INTENT OF THE CONTRACT DOCUMENTS

- A. Intent of Contract Documents. The intent of the Contract Documents is to describe the complete Work and to include all items necessary for the proper execution and completion of the Work by the Contractor.
- B. Contract Documents are complementary. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor is required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.
- C. No third party contract rights. The Contract Documents shall not create a contractual relationship of any kind (1) between the Port and a Subcontractor of any tier (although the Port does not waive any third-party beneficiary rights it may otherwise have as to Subcontractors of any tier), (2) between the Contractor and the Engineer or other Port employees or consultants, or (3) between any persons or entities other than the Port and Contractor.

1.04 CORRELATION OF THE CONTRACT DOCUMENTS

- A. Precedence. In the event of a conflict or discrepancy between or among the Contract Documents, the conflict or discrepancy will be resolved by the following order of precedence: with an addendum or Change Order having precedence over an earlier document, and computed dimensions having precedence over scaled dimensions, and large scale drawings take precedence over small scale drawings:
 - 1. The signed Agreement
 - a. Supplemental Conditions
 - b. General Conditions
 - c. Division 01 General Requirements of Specifications
 - d. All other Specifications, including all remaining divisions, material and system schedules and attachments, and Drawings
 - e. All other sections in Division 00 not specifically identified herein by Section
- B. Inconsistency between or among Contract Documents. If there is any inconsistency between the Drawings, schedules, or Specifications, or any attachments, the Contractor will make an inquiry to the Engineer to determine how to proceed, and, unless otherwise directed, the Contractor will provide the better quality or greater quantity of any work or materials, as reasonably interpreted by the Port, at no change in the Contract Sum or Contract Time. Thus, if Work is shown on Drawings, but not contained in Specifications or schedules, or contained in Specifications or schedules, but not shown on the Drawings, the Work as shown or contained will be provided at no change in the Contract Sum or Contract Time, according to Specifications or Drawings to be issued by the Port.
- C. Inconsistency with law. In the event of a conflict between the Contract Documents and applicable laws, codes, ordinances, regulations, or orders of governmental authorities having jurisdiction over the Work, or in the event of any conflict between such laws, the most stringent requirements govern.
- D. Organization of Contract Documents. The organization of the Specifications and Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of the Work to be performed. The Port assumes no responsibility for the division and proper coordination of Work between particular Subcontractors.

- E. Bid quantities are estimates only. Any “bid quantities” set forth in the Contract Documents are estimates only. The Port does not warrant that the actual amount of Work will correspond to any estimates. The basis of payment will be the actual quantities performed in accordance with the Contract Documents.

1.05 OWNERSHIP OF THE CONTRACT DOCUMENTS

- A. Port owns all Contract Documents. All Drawings, Specifications, and other Contract Documents furnished to the Contractor are Port property, and the Port retains all intellectual property rights, including copyrights. The Contract Documents are to be used only with respect to the Project.

ARTICLE 2 - PORT OF TACOMA

2.01 AUTHORITY OF THE ENGINEER

- A. Engineer will be Port’s representative. The Engineer or the Engineer’s designee will be the Port’s representative during the Project and will administer the Project on the Port’s behalf.
- B. Engineer may enforce all obligations. The Engineer has the authority to enforce all requirements imposed on the Contractor by the Contract Documents.
- C. Only Engineer is agent of Port. Other than the Engineer, no other Port employee or consultant is an agent of the Port, and none are authorized to agree on behalf of the Port to changes in the Contract Sum or Contract Time, nor to waive provisions of the Contract Documents, nor to direct the Contractor to take actions that change the Contract Sum or Contract Time, nor to accept notice of protests or claims on behalf of the Port.

2.02 ADMINISTRATION OF THE CONTRACT

- A. Port will administer Contract. The Port will provide administration of the Contract through the Engineer or the Engineer’s designee. All communications with the Port or its consultants related to the Contract will be through the designated representative.
- B. Port not responsible for means and methods. The Port is not responsible for, and will have no control or charge of, the means, methods, techniques, sequences, or procedures of construction, or for safety precautions or programs incidental thereto, because these are the sole responsibility of the Contractor. If the Port makes any suggestion of means, methods, techniques, sequences, or procedures, the Contractor will exercise its independent judgment in deciding whether to adopt the suggestion, except as otherwise provided in the Contract Documents.
- C. Port not responsible for acts or omissions of Contractor or Subcontractors. The Port is not responsible for, and will have no control or charge of, the acts or omissions of the Contractor, Subcontractors of any tier, suppliers, or any of their agents or employees, or any other persons performing a portion of the Work.
- D. Port not responsible for the Work. The Port is not responsible for the Contractor’s failure to carry out the Work in accordance with the Contract Documents. The presence of the Engineer or others at the Project site at any time does not relieve the Contractor from its responsibility for non-conforming Work.
- E. Port will have access to the Work. The Port and its representatives will at all times have access to the Work in progress, and the Contractor will provide proper facilities for such access and for inspection.

2.03 INFORMATION PROVIDED BY THE PORT

- A. Port to furnish information with reasonable promptness. The Port shall furnish information and services required of the Port by the Contract Documents with reasonable promptness.
- B. Subsurface investigation. The Port may have undertaken a limited investigation of the soil and other subsurface conditions at the Project site for design purposes only. The results of these investigations will be available for the convenience of the Contractor, but they are not Contract Documents. There is no warranty or guarantee, express or implied, that the conditions indicated are representative of those existing at the site or that unforeseen developments may not occur. The Contractor is solely responsible for interpreting the information.

2.04 CONTRACTOR REVIEW OF PROJECT INFORMATION

- A. Contractor to familiarize itself with site and conditions of Work. Prior to executing the Contract, the Contractor shall visit the site, become generally familiar with local conditions under which the Work is to be performed, and correlate personal observations with the requirements of the Contract Documents. By signing the Contract, the Contractor confirms that the Contract Sum is reasonable compensation for the Work; that the Contract Time is adequate; that it has carefully examined the Contract Documents and the Project site; and that it has satisfied itself as to the nature, location, and character of the Work, the labor, materials, equipment, and other items required and all other requirements of the Contract Documents. The Contractor's failure fully to acquaint itself with any such condition does not relieve the Contractor from the responsibility for performing the Work in accordance with the Contract Documents, within the Contract Time, and for the Contract Sum.
- B. Contractor to review Contract Documents. Because the Contract Documents are complementary, the Contractor will, before starting each portion of the Work, carefully study and compare the various Drawings, Specifications, and other Contract Documents, as well as all information furnished by the Port.
- C. Contractor to confirm field conditions. Before starting each portion of the Work, the Contractor shall take field measurements of and verify any existing conditions, including all Work in place, and all general reference points; shall observe any conditions at the site affecting the Contractor; and shall carefully compare field measurements, conditions and other information known to the Contractor with the Contract Documents.

2.05 PORT'S RIGHT TO REJECT, STOP, AND/OR CARRY-OUT THE WORK

- A. Port may reject Work. The Port has the authority, but not the obligation, to reject work, materials, and equipment that is defective or that otherwise does not conform to the Contract Documents, and to decide questions concerning the Contract Documents. However, the failure to so reject, or the presence of the Port at the site, shall not be construed as assurance that the Work is acceptable or being completed in compliance with the Contract Documents.
- B. Port may stop Work. If the Contractor fails to correct Work that does not comply with the requirements of the Contract Documents, or repeatedly or materially fails to properly carry out the Work, the Port may issue an order to stop all or a portion of the Work until the cause for the order has been eliminated. The Port's right to stop the Work shall not impose a duty on the Port to exercise this right for the benefit of the Contractor or any third party.
- C. Port may carry-out Work. If the Contractor fails to perform the Work properly, fails to perform any provision of this Contract, or fails to maintain the Progress Schedule, or if the Port reasonably concludes that the Work will not be completed in the specified manner or within the Contract Time, then the Port may, after three (3) days' written notice to the Contractor and without prejudice to any other remedy the Port may have, perform itself or have performed any

or all of the Work and may deduct the cost thereof from any payment then or later due the Contractor.

2.06 SEPARATE CONTRACTORS

- A. Port may engage separate contractors or perform work with its own forces. The Port may contract with other contractors ("Separate Contractor") in connection with the Project or perform work with its own forces. The Contractor shall coordinate and cooperate with any Port forces or Separate Contractors, as applicable. The Contractor shall provide reasonable opportunity for the introduction and storage of materials and the execution of work by others.
- B. Contractor to inspect work of others. If any part of the Contractor's Work depends on the work of the Port or any Separate Contractor, the Contractor shall inspect and promptly report to the Port, in writing, any defects that impact the Contractor. Failure of the Contractor to so inspect and report defects in writing shall constitute an acceptance by Contractor of the work of the Port or Separate Contractor.
- C. Contractor to resolve claims of others. Should the Contractor, or any of its Subcontractors of any tier, cause damage of any kind, including but not limited to delay, to any Separate Contractor, the Contractor shall promptly, and using its best efforts, settle or otherwise resolve the dispute with the Separate Contractor. The Contractor shall also promptly remedy damage caused to completed or partially completed construction.

2.07 OFFICERS AND EMPLOYEES OF THE PORT

- A. No personal liability. Officers, employees, and representatives of the Port, including the Commissioners, acting within the scope of their employment, shall not be personally liable to Contractor for any acts or omissions arising out of the Project.

ARTICLE 3 - CONTRACTOR'S RESPONSIBILITIES

3.01 DUTY TO PERFORM THE ENTIRE WORK

- A. Contractor must perform entire Work in accordance with Contract Documents. The Contractor shall perform the entire Work required by the Contract in accordance with the Contract Documents. Unless otherwise specifically provided, the Contractor shall provide and pay for all labor, tools, equipment, materials, electricity, power, water, other utilities, transportation, and other facilities necessary for the execution and completion of the Work.
- B. Contractor shall be independent contractor. The Contractor shall be, and operate as, an independent contractor in the performance of the Work. The Contractor is not authorized to enter into any agreements or undertakings for, or on behalf of, the Port and is not an agent or employee of the Port.

3.02 OBSERVED ERRORS, INCONSISTENCIES, OMISSIONS, OR VARIANCES IN THE CONTRACT DOCUMENTS

- A. Contractor to notify Port of any discrepancy. The Contractor's obligations to review and carefully study the Contract Documents and field conditions are for the purpose of facilitating coordination and construction. If the Contractor at any time observes that the Contract Documents, including Drawings and Specifications, vary from the conditions of the Project site, are in error, or omit any necessary detail, the Contractor shall promptly notify the Engineer in writing through a Request for Information. Any Work done after such observation, until authorized by the Engineer, shall be at Contractor's risk. The Contractor shall also promptly report to the Engineer any observed error, inconsistency, omission, or variance with applicable laws through a Request for Information. If the Contractor fails either to carefully study and compare the Contract Documents, or to promptly report any observed error, inconsistency,

omission, or variance, the Contractor shall assume full responsibility and shall bear all costs, liabilities, and damages attributable to the error, inconsistency, omission, or variance.

- B. Requests for Information. The Contractor shall submit Requests for Information concerning the Contract Documents by following the procedure and using such form as the Port may require. The Contractor shall minimize Requests for Information by thoroughly studying the Contract Documents and reviewing all Subcontractor requests. The Contractor shall allow adequate time in its planning and scheduling for a response from the Port to a Request for Information.
- C. Port may provide information to supplement Drawings and Specifications. Minor items of work or detail that are omitted from the Drawings and Specifications, but inferable from the information presented and normally provided by accepted good practice, shall be provided and/or performed by the Contractor as part of the Contract Sum and within the Contract Time. Similarly, the Engineer may furnish to the Contractor additional Drawings and clarifications, consistent with the Contract Documents, as necessary to detail and illustrate the Work. The Contractor shall conform its Work to such additional Drawings and clarifications at no increase in the Contract Sum or Contract Time.

3.03 SUPERVISION AND RESPONSIBILITY FOR SUBCONTRACTORS

- A. Contractor responsible for Work and workers. The Contractor shall have complete control of the means, methods, techniques, sequences, or procedures related to the Work, and for all safety precautions or programs. The Contractor shall have complete control over, and responsibility for, all personnel performing the Work. The Contractor is also responsible for the acts and omissions of the Contractor's principals, employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors of any tier.
- B. Contractor to supervise the Work. The Contractor shall continuously supervise and direct the Work using competent and skilled personnel and the Contractor's best skill and attention.
- C. Contractor to enforce discipline and good order. The Contractor shall enforce strict discipline and good order among all workers on the Project, and shall not employ any unfit person or anyone not skilled in the work to which they are assigned. Incompetent, careless, or negligent workers shall immediately be removed from the Work. The Port may, but is not obligated to, require the Contractor to remove from the Work, at no change in the Contract Sum or Contract Time, anyone whom the Port considers objectionable.

3.04 MATERIALS AND EQUIPMENT

- A. Material and equipment to be new. All materials and equipment to be incorporated into the Work shall be new, unless specifically provided otherwise in the Contract Documents. The Contractor shall, if required in writing by the Port, furnish satisfactory evidence regarding the kind and quality of any materials, identify the source, and warrant compliance with the Contract Documents. The Contractor shall ensure that all materials and equipment are protected, kept dry, and stored under cover in a manner to protect such materials and equipment.
- B. Material and equipment shall conform to manufacturer instructions. All materials and equipment shall conform, and shall be applied, installed, used, maintained, and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, or processor, unless otherwise specifically provided by the Engineer.

3.05 CONTRACTOR WARRANTIES

- A. Work will be of good quality and performed in workmanlike manner. In addition to any specific warranties set forth in the Contract Documents, the Contractor warrants that the Work, including all materials and equipment furnished under the Contract, will be of good quality and

new, will be performed in a skillful and workmanlike manner, and will conform to the requirements of the Contract Documents. Any Work not conforming to this warranty, including unapproved or unauthorized substitutions, shall be considered defective.

- B. Work will be free from defects. The Contractor warrants that the Work will be free from defects for a period of one (1) year from the date of Substantial Completion of the Project.
- C. Contractor to collect and deliver warranties to Port. The Contractor shall collect and deliver to the Port any written warranties required by the Contract Documents. These warranties shall be obtained and enforced by the Contractor for the benefit of the Port without the necessity of separate assignment. These warranties shall extend to the Port all rights, claims, benefits, and interests that the Contractor may have under express or implied warranties or guarantees against a Subcontractor of any tier, supplier, or manufacturer for defective or non-conforming Work. Warranty provisions that purport to limit or alter the Port's rights under the Contract Documents, or the laws of the State of Washington, are null and void.
- D. General requirements. The Contractor is not relieved of its general warranty obligations by the specification of a particular product or procedure in the Contract Documents. Warranties in the Contract Documents shall survive completion, acceptance, and final payment.

3.06 REQUIRED WAGES

- A. Contractor will pay required wages. The Contractor shall pay (and shall ensure that all Subcontractors of any tier pay) all prevailing wages and other wages (such as Davis-Bacon Act wages) applicable to the Project. See Specification Section 00 73 46.
- B. The Contractor shall defend (at Contractor's sole cost, with legal counsel approved by Port), indemnify, and hold the Port harmless from all liabilities, obligations, claims, demands, damages, disbursements, lawsuits, losses, fines, penalties, costs, and expenses, whether direct or indirect, and including, but not limited to, attorneys' fees and consultants' fees and other costs and expenses of litigation, from any violation or alleged violation by the Contractor or any Subcontractor of any tier of RCW 39.12 ("Prevailing Wages on Public Works") or Chapter 51 RCW ("Industrial Insurance").

3.07 STATE AND LOCAL TAXES

- A. Contractor will pay taxes on consumables. The Contractor will pay the retail sales tax on all consumables used during performance of the Work and on all items that are not incorporated into the final Work; this tax shall be included in the Contract Sum.
- B. Port will pay taxes on the Contract Sum. The Port will pay state and local retail sales tax on the Contract Sum with each progress payment, and on final payment, for transmittal by the Contractor to the Washington State Department of Revenue or to the applicable local taxing authority. Rule 170: WAC 458-20-170.
- C. Direct all tax questions to the Department of Revenue. The Contractor should direct all questions concerning taxes on any portion of the Work to the State of Washington Department of Revenue or to the local taxing authority.
- D. State Sales Tax - Rule 171: WAC 458-20-171. For work performed related to building, repairing, or improving streets, roads, etc., which are owned by a municipal corporation, or political subdivision of the state, or by the United States, and which are used, primarily, for foot or vehicular traffic, the Contractor shall include Washington State Retail Sales Taxes in the various schedule prices, or other contract amounts, including those that the Contractor pays on the purchase of materials, equipment, or supplies used or consumed in doing the Work.

1. The bid form will indicate which bid items are subject to Rule 171. Any such identification by the Port is not binding upon the Department of Revenue.

3.08 PERMITS, LICENSES, FEES, AND ROYALTIES

- A. Contractor to provide and pay for permits unless otherwise specified. Unless otherwise specified, the Contractor shall procure and pay for all permits, licenses, and governmental inspection fees necessary or incidental to the performance of the Work. All costs related to these permits, licenses, and inspections shall be included in the Contract Sum. Any action taken by the Port to assist the Contractor in obtaining permits or licenses shall not relieve the Contractor of its sole responsibility to obtain and pay for permits, licenses, and inspections as part of the Contract Sum.
- B. Contractor's obligations when permit must be in Port's name. When applicable law or agency requires a permit to be issued to a public agency, the Port will support the Contractor's request for the permit and accept the permit in the Port's name, if:
 1. The Contractor takes all necessary steps required for the permit to be issued;
 2. The permit applies to Work performed in connection with the Project; and
 3. The Contractor agrees in writing to abide by all requirements of the permit and to defend and hold harmless the Port from any liability in connection with the permit.
- C. Contractor to pay royalties. The Contractor shall pay all royalties and license fees required for the Work unless otherwise specified in the Contract Documents.

3.09 SAFETY

- A. Contractor solely responsible for safety. The Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work and the performance of the Contract.
- B. Port not responsible for safety. The Port may identify safety concerns to the Contractor; however, no action or inaction of the Port or any third party relating to safety will: (1) relieve the Contractor of its sole and complete responsibility for safety and sole liability for any consequences, (2) impose any obligation on the Port or a third party to inspect or review the Contractor's safety program or precautions, (3) impose any continuing obligation on the Port or a third party to ensure the Contractor performs the Work safely, or (4) affect the Contractor's responsibility for the protection of property, workers, and the general public.
- C. Contractor to maintain a safe Work site. The Project site may be occupied during performance of the Work. The safety of these site occupants is of paramount importance to the Port. The Contractor shall maintain the Work site and perform the Work in a safe manner and in accordance with the Washington Industrial Safety and Health Act (WISHA) and all other applicable safety laws, rules, and regulations. This requirement shall apply continuously and not be limited to working hours.
- D. Contractor to protect Work site and adjacent property until Final Completion. The Contractor shall continuously protect the Work and adjacent property from damage. At all times until Final Completion, the Contractor shall be responsible for, and protect from damage, weather, deterioration, theft, and vandalism, the Work and all materials, equipment, tools, and other items incorporated or to be incorporated in the Work, and shall repair any damage, injury, or loss.

3.10 CORRECTION OF WORK

- A. Contractor to correct defective Work. The Contractor shall, at no cost to the Port, promptly correct Work that is defective or that otherwise fails to conform to the requirements of the Contract Documents. Such Work shall be corrected, whether before or after Substantial Completion, and even if it was previously inspected or observed by the Port.
- B. One-year correction period. The Contractor shall correct all defects in the Work appearing within one (1) year of Substantial Completion or within any longer period prescribed by law or by the Contract Documents. The Contractor shall initiate remedial action within fourteen (14) days of receipt of notice from the Port and shall complete remedial work within a reasonable time. Work corrected by the Contractor shall be subject to the provisions of this Section 3.10 for an additional one-year period following the Port's acceptance of the corrected Work.
- C. Contractor responsible for defects and failures to correct. The Contractor shall be responsible for any expenses incurred by the Port resulting from defects in the Work. If the Contractor refuses or neglects to correct the defects, or does not timely accomplish corrections, the Port may correct the Work and charge the Contractor the cost of the corrections. If damage or loss of service may result from a delay in correction, the corrections may be made by the Port and reimbursed by the Contractor.
- D. Port may accept defective work. The Port may, at its sole option, elect to retain defective or nonconforming Work. In such a case, the Port shall reduce the Contract Sum by a reasonable amount to account for the defect or non-conformance.
- E. No period of limitation established. Nothing contained in this Section 3.10 establishes a period of limitation with respect to any obligations under the Contract Documents or law. The establishment of the one (1) year correction period relates only to the specific obligation of the Contractor to correct defective or non-conforming Work.

3.11 UNCOVERING OF WORK

- A. Contractor to uncover work covered prior to inspection. If any portion of the Work is covered prior to inspection and approval, the Contractor shall, at its expense, uncover or remove the Work for inspection by the Port or others, and replace the Work to the standard required by the Contract Documents.
- B. Contractor to uncover work at Port's request. After initial inspection and observation, the Port may order a reexamination of Work, and the Work must be uncovered by the Contractor. If the uncovered Work complies with the Contract Documents, the Port shall pay the cost of reexamination and replacement. If the Work is found not to comply with the Contract Documents, the Contractor shall pay the cost of replacement, unless the Contractor demonstrates that it did not cause the defect in the Work.

3.12 RELOCATION OF UTILITIES

- A. Contractor should assume underground utilities are in approximate locations. The Contractor should assume that the locations of any underground or hidden utilities, underground tanks, and plumbing or electrical runs indicated in surveys or the Contract Documents are shown in approximate locations. The accuracy of this information is not guaranteed by the Port and shall be verified by the Contractor. The Contractor shall comply with RCW 19.122.030 and utilize a utility locator service to locate utilities on Port property. The Contractor shall bear the risk of loss if any of its Work directly or indirectly damages or interrupts any utility service or causes or contributes to damages of any nature.

- B. Utility relocation or removal. Where relocation or removal of utilities is necessary or required, it shall be performed at the Contractor's sole expense, unless the Contract Documents specify otherwise. If a utility owner is identified as being responsible for relocating or removing utilities, the work will be accomplished at the utility owner's convenience, either during, or in advance of, construction. Unless otherwise specified, it shall be the Contractor's sole responsibility to coordinate, schedule, and pay for work performed by a utility owner.
- C. Contractor to notify Port of unknown utilities. If the Contractor discovers the presence of any unknown utilities, it shall immediately notify the Engineer in writing.

3.13 LABOR

- A. Contractor responsible for labor peace. The Contractor is responsible for labor peace relating to the Work and shall cooperate in maintaining Project-wide labor harmony. The Contractor shall use its best efforts as an experienced contractor to adopt and implement policies and practices designed to avoid work stoppages, slowdowns, disputes, or strikes.
- B. Contractor to minimize impact of labor disputes. The Contractor will take all necessary steps to prevent labor disputes from disrupting or otherwise interfering with access to Port property. If a labor dispute disrupts the progress of the Work or interferes with access, the Contractor shall promptly and expeditiously take all necessary action to eliminate or minimize the disruption or interference.

3.14 INDEMNIFICATION

- A. Duty to defend, indemnify, and hold harmless. To the fullest extent permitted by law and subject to this Section 3.14, the Contractor shall defend (at the Contractor's sole cost, with legal counsel approved by Port), indemnify, and hold harmless the Port, including its Commission, officers, managers, employees (including the Engineer), any consultants, and the agents and employees, successors and assigns of any of them (the "Indemnified Parties") from and against claims, damages, lawsuits, losses (including loss of use), disbursements, liabilities, obligations, fines, penalties, costs, and expenses, whether direct and indirect or consequential, including but not limited to, consultants' fees, and attorneys' fees incurred on such claims and in proving the right to indemnification ("Claims"), arising out of, or resulting from, the acts or omissions of the Contractor, a Subcontractor of any tier, their agents, and anyone directly or indirectly employed by any of them or anyone for whose acts they may be liable (individually and collectively, the "Indemnitor").
- B. Duty to defend, indemnify, and hold harmless for sole negligence. The Contractor will fully defend, indemnify, and hold harmless the Indemnified Parties for the sole negligence or willful misconduct of the Indemnitor.
- C. Duty to defend, indemnify, and hold harmless for concurrent negligence. Where Claims arise from the concurrent negligence of (1) the Port; and (2) the Indemnitor, the Contractor's obligations to indemnify and defend the Indemnified Parties under this Section 3.14 shall be effective only to the extent of the Indemnitor's negligence.
- D. Duty to indemnify not limited by workers' compensation or similar employee benefit acts. In claims against any of the Indemnified Parties by an employee of the Contractor, a Subcontractor of any tier, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under this Section 3.14 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable under workers' compensation acts, disability benefit acts, or other employee benefit acts. After mutual negotiation of the parties, the Contractor waives immunity as to the Indemnified Parties under Title 51 RCW, "Industrial Insurance."

- E. Intellectual property indemnification. The Contractor will be liable for and shall defend (at the Contractor's sole cost, with legal counsel approved by Port) indemnify, and hold the Indemnified Parties harmless for Claims for infringement by the Contractor of copyrights or patent rights arising out of or relating to the Project.
- F. Labor peace indemnification. If the Contractor fails to satisfy its labor peace obligations under the Contract, the Contractor will be liable for and shall defend (at the Contractor's sole cost, with legal counsel approved by Port), indemnify, and hold harmless the Indemnified Parties for Claims brought against the Port by third parties (including but not limited to lessees, tenants, contractors, customers, licensees, and invitees of the Port) for injunctive relief or monetary loss.
- G. Joinder. The Contractor agrees to being added by the Port as a party to any arbitration or litigation with third parties in which the Port alleges indemnification or seeks contribution from the Indemnitor. The Contractor shall cause each of its Subcontractors of any tier to similarly stipulate in their subcontracts; in the event any does not, the Contractor shall be liable in place of such Subcontractor(s) of any tier.
- H. Other. To the extent that any portion of this Section 3.14 is stricken by a court or arbitrator for any reason, all remaining provisions shall retain their vitality and effect. The obligations of the Contractor under this Section 3.14 shall not be construed to negate, abridge, or otherwise reduce any other right or obligations of indemnity which would otherwise exist. To the extent the wording of this Section 3.14 would reduce or eliminate an available insurance coverage, it shall be considered modified to the extent necessary so that the insurance coverage is not affected. This Section 3.14 shall survive completion, acceptance, final payment, and termination of the Contract.

3.15 WAIVER OF CONSEQUENTIAL DAMAGES

- A. Mutual waiver of consequential damages. The Contractor and Port waive claims against each other for consequential damages arising out of, or relating to, this Contract. This mutual waiver includes, but is not limited to: (1) damages incurred by the Port for rental expenses, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons, and (2) damages incurred by the Contractor for principal and home office overhead and expenses including, but not limited to, the compensation of personnel stationed there, for losses of financing, business, and reputation, for losses on other projects, for loss of profit, and for interest or financing costs. This mutual waiver includes, but is not limited to, all consequential damages due to either party's termination.
- B. Limitation. Nothing contained in this Section 3.15; however, shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents, to preclude damages specified in the Agreement, or to affect the Contractor's obligation to indemnify the Port for direct, indirect, or consequential damages alleged by a third party.

ARTICLE 4 - SUBCONTRACTORS AND SUPPLIERS

4.01 RESPONSIBILITY FOR ACTIONS OF SUBCONTRACTORS AND SUPPLIERS.

- A. Contractor responsible for Subcontractors. The Contractor is fully responsible to the Port for the acts and omissions of its Subcontractors of any tier and all persons either directly or indirectly employed by the Contractor or its Subcontractors.

4.02 AWARD OF CONTRACTS TO SUBCONTRACTORS AND SUPPLIERS

- A. Contractor to provide proposed Subcontractor information. The Contractor, within ten (10) days after the Port's notice of award of the Contract, shall provide to the Engineer with the names of the persons or entities proposed to perform each of the principal portions of the Work (i.e., either a Subcontractor listed in a bid or proposal or a Subcontractor performing Work valued at least ten percent (10%) of the Contract Sum) and the proprietary names, and the suppliers of, the principal items or systems of materials and equipment proposed for the Work. No progress payment will become due until after this information has been furnished.
- B. Port to respond promptly with objections. The Port may respond promptly to the Contractor in writing stating: (1) whether the Port has reasonable objection to any proposed person or entity, or (2) whether the Port requires additional time for review. If the Port makes a reasonable objection, the Contractor shall replace the Subcontractor with no increase to the Contract Sum or Contract Time. Such a replacement shall not relieve the Contractor of its responsibility for the performance of the Work and compliance with all of the requirements of the Contract within the Contract Sum and Contract Time.
- C. Reasonable objection defined. "Reasonable objection" as used in this Section 4.02 includes, but is not limited to: (1) a proposed Subcontractor of any tier different from the entity listed with the bid, (2) lack of "responsibility" of the proposed Subcontractor, as defined by Washington law and the Bidding Documents, or lack of qualification or responsibility of the proposed Subcontractor based on the Contract or Bidding Documents, or (3) failure of the Subcontractor to perform satisfactorily in the Port's opinion (such as causing a material delay or submitting a claim that the Port considers inappropriate) on one or more projects for the Port within five (5) years of the bid date.
- D. No substitution allowed without permission. The Contractor shall not substitute a Subcontractor, person, or organization without the Engineer's written consent.

4.03 SUBCONTRACTOR AND SUPPLIER RELATIONS

- A. Contractor to schedule, supervise, and coordinate Subcontractors. The Contractor shall schedule, supervise, and coordinate the operations of all Subcontractors of any tier, including suppliers. The Contractor shall ensure that appropriate Subcontractors coordinate the Work of lower-tier Subcontractors.
- B. Subcontractors to be bound to Contract Documents. By appropriate agreement, the Contractor shall require each Subcontractor and supplier to be bound to the terms of the Contract Documents and to assume toward the Contractor, to the extent of their Work, all of the obligations that the Contractor assumes toward the Port under the Contract Documents. Each subcontract shall preserve and protect the rights of the Port and shall allow to the Subcontractor, unless specifically provided in the subcontract, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Port. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with lower-tier Subcontractors.
- C. Contractor to correct deficiencies in Subcontractor performance. When a portion of the Work subcontracted by the Contractor is not being prosecuted in accordance with the Contract Documents, or if such subcontracted Work is otherwise being performed in an unsatisfactory manner in the Port's opinion, the Contractor shall, on its own initiative or upon the written request of the Port, take immediate steps to correct the deficiency or remove the non-performing party from the Project. The Contractor shall replace inadequately performing Subcontractors upon request of the Port at no change in the Contract Sum or Contract Time.

- D. Contractor to provide subcontracts. Upon request, the Contractor will provide the Port copies of written agreements between the Contractor and any Subcontractor.

ARTICLE 5 - WORKFORCE AND NON-DISCRIMINATION REQUIREMENTS

5.01 COMPLIANCE WITH NON-DISCRIMINATION LAWS

- A. Contractor to comply with non-discrimination laws. The Contractor shall fully comply with all applicable laws, regulations, and ordinances pertaining to non-discrimination.

5.02 SMALL BUSINESS ENTERPRISE PARTICIPATION.

- A. Small business participation encouraged. The Port's policy is to encourage the Contractor to solicit and document participation, and to provide and promote the maximum lawful, practicable opportunity for increased participation by small business enterprises.

ARTICLE 6 - CONTRACT TIME AND COMPLETION

6.01 CONTRACT TIME

- A. Contract Time is measured from Contract execution. Unless otherwise provided in the Agreement, the Contract Time is the period of time, including authorized adjustments, specified in the Contract Documents from the date the Contract is executed to the date Substantial Completion of the Work is achieved.
- B. Commencement of the Work. The Contractor shall begin Work in accordance with the notice of award and the notice to proceed and shall complete all Work within the Contract Time. When the Contractor's signed Agreement, required insurance certificate with endorsements, bonds, and other submittals required by the notice of award have been accepted by the Port, the Port will execute the Contract and, following receipt of other required pre-work submittals, will issue a notice to proceed to allow the Contractor to mobilize and commence physical Work at the Project site, as further described in these contract documents. No Work at the Project site may commence until the Port issues a notice to proceed.
- C. Contractor shall achieve specified completion dates. The Contractor shall achieve Substantial Completion within the Contract Time and shall achieve Final Completion within the time period thereafter stated in the Contract Documents.
- D. Time is of the essence. Time limits stated in the Contract Documents, including any interim milestones, are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

6.02 PROGRESS AND COMPLETION

- A. Contractor to maintain schedule. The Contractor's sequence and method of operations, application of effort, and work force shall at all times be created and implemented to ensure the orderly, expeditious, and timely completion of the Work and performance of the Contract. The Contractor shall furnish sufficient forces and shall work such hours, including extra shifts, overtime operations, and weekend and holiday work as may be necessary to ensure completion of the Work within the Contract Time and the approved Progress Schedule.
- B. Contractor to take necessary steps to meet schedule. If the Contractor fails substantially to perform in a timely manner in accordance with the Contract Documents and, through the fault of the Contractor or Subcontractor(s) of any tier, fails to meet the Progress Schedule, the Contractor shall take such steps as may be necessary to immediately improve its progress by increasing the number of workers, shifts, overtime operations, or days of work, or by other means and methods, all without additional cost to the Port. If the Contractor believes that any

action or inaction of the Port constitutes acceleration, the Contractor shall immediately notify the Port in writing and shall not accelerate the Work until the Port either directs the acceleration in writing or denies the constructive acceleration.

- C. Liquidated damages not exclusive. Any provisions in the Contract Documents for liquidated damages shall not preclude other damages due to breaches of Contract of the Contractor.

6.03 SUBSTANTIAL COMPLETION

- A. Substantial Completion defined. Substantial Completion is the stage in the progress of the Work, or portion or phase thereof, when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Port can fully occupy or utilize the Work, or the designated portion thereof, for its intended use, all requirements in the Contract Documents for Substantial Completion have been achieved, and all required documentation has been properly submitted to the Port in accordance with the Contract Documents. All Work, other than incidental corrective or punch list Work and final cleaning, must be completed. The fact that the Port may occupy the Work or a designated portion thereof does not indicate that Substantial Completion has occurred or that the Work is acceptable in whole or in part.
- B. Work not Substantially Complete unless Final Completion attainable. The Work is not Substantially Complete unless the Port reasonably judges that the Work can achieve Final Completion within the period of time specified in the Contract Documents.
- C. Notice of Substantial Completion. When the Work or designated portion has achieved Substantial Completion, the Port will provide a notice to establish the date of Substantial Completion. The notice shall establish responsibilities of the Port and Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall finish all remaining Work. If the notice of Substantial Completion does not so state, all responsibility for the foregoing items shall remain with the Contractor until Final Completion.

6.04 COMPLETION OF PUNCH LIST

- A. Contractor shall complete punch list items prior to Final Completion. The Contractor shall cause punch list items to be completed prior to Final Completion. If, after Substantial Completion, the Contractor does not expeditiously proceed to correct punch list items or if the Port considers that the punch list items, are unlikely to be completed prior to the date established for Final Completion (or such other period of time as is specified in the Contract Documents), the Port may, upon seven (7) days' written notice to the Contractor, take over and perform some or all of the punch list items. The Port may also take over and complete any portion of the Work at any time following Substantial Completion and deduct the actual cost of performing the Work (including direct and indirect costs) from the Contract Sum. The Port's rights under this Section 6.04 are not obligations and shall not relieve the Contractor of its responsibilities under any other provisions of the Contract Documents.

6.05 FINAL COMPLETION

- A. Final Completion. Upon receipt of written notice from the Contractor that all punch list items and other Contract requirements are completed, the Contractor will notify the Port, and the Port will perform a final inspection. If the Port determines that some or all of the punch list items have not been addressed, the Contractor shall be responsible to the Port for all costs, including re-inspection fees, for any subsequent reviews to determine completion of the punch list. When the Port determines that all punch list items have been satisfactorily addressed, that the Work is acceptable under the Contract Documents, and that the Work has fully been performed, the Port will promptly notify the Contractor of Final Completion.

- B. Contractor responsible for costs if Final Completion is not timely achieved. In addition to any liquidated damages, the Contractor is liable for, and the Port may deduct from any amounts due the Contractor, all costs incurred by the Port for services performed after the contractual date of Final Completion, whether or not those services would have been performed prior to that date had Final Completion been timely achieved.
- C. Final Completion submittals. The Port is not obligated to accept the Project as complete until the Contractor has submitted all required submittals to the Port.
- D. Contractor responsible for the Work until Final Completion. The Contractor shall assume the sole risk of loss and responsibility for all Work under the Contract, and all materials to be incorporated in the Work, whether in storage or at the Project site, until Final Completion. Damage from any cause to either permanent or temporary Work, utilities, materials, equipment, existing structures, the site, or other property owned by the Port or others, shall be repaired by the Contractor to the reasonable satisfaction of the Port at no change in the Contract Sum.

6.06 FINAL ACCEPTANCE

- A. Final Acceptance. Final Acceptance is the formal action of the Port accepting the Project as complete. Public notification of Final Acceptance will be posted on the Port's external website (<http://www.portoftacoma.com/final-acceptance>).
- B. Final Acceptance not an acceptance of defective Work. Final Acceptance shall not constitute acceptance by the Port of unauthorized or defective Work, and the Port shall not be prevented from requiring the Contractor to remove, replace, repair, or dispose of unauthorized or defective Work or recovering damages due to the same.
- C. Completion of Work under RCW 60.28. Pursuant to RCW 60.28, "Lien for Labor, Materials, Taxes on Public Works," completion of the Contract Work shall occur upon Final Acceptance.

6.07 PORT'S RIGHT TO USE THE PREMISES

- A. Port has right to use and occupy Work. The Port reserves the right to occupy or use any part of the Work before or after Substantial Completion of some or all of the Work without relieving the Contractor of any of its obligations under the Contract. Such occupancy or use shall not constitute acceptance by the Port of any of the Work, and shall not cause any insurance to be canceled or lapse.
- B. No compensation due if Port elects to use and occupy Work. No additional compensation shall be due to the Contractor as a result of the Port's use or occupancy of the Work or a designated portion.

ARTICLE 7 - PAYMENT

7.01 ALL PAYMENTS SUBJECT TO APPLICABLE LAWS AND SCHEDULE OF VALUES

- A. Payment of the Contract Sum. The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Port to the Contractor for performance of the Work under the Contract Documents. Payments made to the Contractor are subject to all laws applicable to the Port and the Contractor. Payment of the Contract Sum constitutes full compensation to the Contractor for performance of the Work, including all risk, loss, damages, or expense of whatever character arising out of the nature or prosecution of the Work. The Port is not obligated to pay for extra work or materials furnished without prior written approval of the Port.
- B. Schedule of Values. All payments will be based upon an approved Schedule of Values. Prior to submitting its first Application for Payment, the Contractor shall submit a Schedule of Values to

the Port allocating the entire Contract Sum to the various portions of the Work. The Schedule of Values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Port may require. This schedule, unless objected to by the Port, shall be used as a basis for reviewing the Contractor's applications for payment.

7.02 APPLICATIONS FOR PAYMENT

- A. Applications for Payment. Progress payments will be made monthly for Work duly certified, approved by the Engineer, and performed (based on the Schedule of Values and actual quantities of Work performed) during the calendar month preceding the Application for Payment. These amounts are paid in trust to the Contractor for distribution to Subcontractors to the extent, and in accordance with, the approved Application for Payment.

7.03 PROGRESS PAYMENTS

- A. Progress payments. Following receipt of a complete Application for Payment, the Engineer will either authorize payment or indicate in writing to the Contractor the specific reasons why the payment request is being denied, in whole or in part, and the remedial action the Contractor must take to receive the withheld amount. After a complete Application for Payment has been received and approved by the Port, payment will be made within thirty (30) days. Any payments made by, or through, or following receipt of, payment from third parties will be made in accordance with the third party's policies and procedures.
- B. Port may withhold payment. The Port may withhold payment in whole or in part as provided in the Contract Documents or to the extent reasonably necessary to protect the Port from loss or potential loss for which the Contractor is responsible, including loss resulting from the Contractor's acts and omissions.

7.04 PAYMENT BY CONTRACTOR TO SUBCONTRACTORS

- A. Payment to Subcontractors. With each Application for Payment, the Contractor shall provide a list of Subcontractors to be paid by the Contractor. No payment request shall include amounts the Contractor does not intend to pay to a Subcontractor because of a dispute or other reason. If, however, after submitting an Application for Payment, but before paying a Subcontractor, the Contractor discovers that part or all of a payment otherwise due to the Subcontractor is subject to withholding from the Subcontractor under the subcontract (such as for unsatisfactory performance or non-payment of lower-tier Subcontractors), the Contractor may withhold the amount as allowed under the subcontract, but it shall give the Subcontractor and the Port written notice of the remedial actions that must be taken and pay the Subcontractor within eight (8) working days after the Subcontractor satisfactorily completes the remedial action identified in the notice.
- B. Payment certification to be provided upon request. The Contractor shall provide, with each Application for Payment, a certification signed by Contractor attesting that all payments by the Contractor to Subcontractors from the last Application for Payment were made within ten (10) days of the Contractor's receipt of payment. The certification will also attest that the Contractor will make payment to Subcontractors for the current Application for Payment within ten (10) days of receipt of payment from the Port.

7.05 FINAL PAYMENT

- A. Final payment. Final applications for payment are due within seven (7) days following Final Completion. Final payment of the unpaid balance of the Contract Sum, except retainage, will be made following Final Completion and within thirty (30) days of the Contractor's submission of an approved final Application for Payment.

- B. Releases required for final payment. The final payment shall not become due until the Contractor delivers to the Port a complete release of all liens arising out of the Contract, as well as an affidavit stating that, to the best of Contractor's knowledge, its release includes all labor and materials for which a lien could be filed. If a Subcontractor of any tier refuses to furnish a release or waiver required by the Port, the Port may (a) retain in the fund, account, or escrow funds in such amount as to defray the cost of foreclosing the liens of such claims and to pay attorneys' fees, the total of which shall be no less than 150% of the claimed amount, or (b) accept a bond from the Contractor, satisfactory to the Port, to indemnify the Port against the lien. If any such lien remains unsatisfied after all payments from the retainage are made, the Contractor shall refund to the Port all moneys that the Port may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.
- C. Contractor to hold Port harmless from liens. The Contractor shall defend (at the Contractor's sole cost, with legal counsel approved by Port), indemnify, and hold harmless the Port from any liens, claims, demands, lawsuits, losses, damages, disbursements, liabilities, obligations, fines, penalties, costs, and expenses, whether direct or indirect, including but not limited to, attorneys' fees and consultants' fees and other costs and expenses, except to the extent a lien has been filed because of the failure of the Port to make a contractually required payment.

7.06 RETAINAGE

- A. Retainage to be withheld. In accordance with RCW 60.28, a sum equal to five percent (5%) of each approved Application for Payment shall be retained. Prior to submitting its first Application for Payment, the Contractor shall exercise one of the options listed below:
 - 1. Retained percentages will be retained by the Port in a fund; or
 - 2. Deposited by the Port in an interest-bearing account in a bank, mutual savings bank, or savings and loan association; or
 - 3. Placed in escrow with a bank or trust company; or
 - 4. If the Contractor provides a bond in place of retainage, it shall be in an amount equal to 5% of the Contract Sum plus Change Orders. The retainage bond shall be based on the form furnished in Section 00 61 23 or otherwise acceptable to the Port and duly completed and signed by a licensed surety or sureties registered with the Washington State Insurance Commissioner and on the currently authorized insurance list published by the Washington State Insurance Commissioner. The surety or sureties must be rated at least "A-, FSC(6)" or higher by A.M. Best Rating Guide and be authorized by the Federal Department of the Treasury. Attorneys-in-fact who sign the retainage bond must file with each bond a certified and effective Power of Attorney statement.
- B. Contractor may withhold retainage from Subcontractors. The Contractor or a Subcontractor may withhold not more than five percent (5%) retainage from the monies earned by any Subcontractor or lower-tier Subcontractor, provided that the Contractor pays interest to the Subcontractor at the same interest rate it receives from its reserved funds. If requested by the Port, the Contractor shall specify the amount of retainage and interest due a Subcontractor.
- C. Release of retainage. Retainage will be withheld and applied by the Port in a manner required by RCW 60.28 and released in accordance with the Contract Documents and statutory requirements. Release of the retainage will be processed in the ordinary course of business within sixty (60) days following Final Acceptance of the Work by the Port provided that no notice of lien has been given as provided in RCW 60.28, that no claims have been brought to the attention of the Port, that the Port has no claims under this Contract, and that release of retention has been duly authorized by the State. The following items must also be obtained

prior to release of retainage: pursuant to RCW 60.28, a certificate from the Department of Revenue; pursuant to RCW 50.24, a certificate from the Department of Employment Security; and appropriate information from the Department of Labor and Industries including approved affidavits of wages paid for the Contractor and each subcontractor.

7.07 DISPUTED AMOUNTS

- A. Disputed amounts. If the Contractor believes it is entitled to payment for Work performed during the prior calendar month in addition to the agreed-upon amount, the Contractor may submit to the Port, along with the approved Application for Payment, a separate written payment request specifying the exact additional amount claimed to be due, the category in the Schedule of Values to which the payment would apply, the specific Work for which additional payment is sought, and an explanation of why the Contractor believes additional payment is due.

7.08 EFFECT OF PAYMENT

- A. Payment does not relieve Contractor of obligations. Payment to the Contractor of progress payments or final payment does not relieve the Contractor from its responsibility for the Work or its responsibility to repair, replace, or otherwise make good defective Work, materials, or equipment. Likewise, the making of a payment does not constitute a waiver of the Port's right to reject defective or non-conforming Work, materials, or equipment (even though they are covered by the payment), nor is it a waiver of any other rights of the Port.
- B. Acceptance of final payment waives claims. Acceptance of final payment by the Contractor, a Subcontractor of any tier or a supplier shall constitute a waiver of claims except those previously made in writing and identified as unsettled in Contractor's final Application for Payment.
- C. Execution of Change Order waives claims. The execution of a Change Order shall constitute a waiver of claims by the Contractor arising out of the Work to be performed or deleted pursuant to the Change Order, except as specifically described in the Change Order.

7.09 LIENS

- A. Contractor to discharge liens. The Contractor shall promptly pay (and secure the discharge of any liens asserted by) all persons properly furnishing labor, equipment, materials, or other items in connection with the performance of the Work including, but not limited to, any Subcontractors of any tier.

ARTICLE 8 - CHANGES IN THE WORK

8.01 CHANGES IN THE WORK

- A. Changes in the Work authorized. Without invalidating the Contract and without notice to the Contractor's surety, the Port may authorize changes in the Work after execution of the Contract, including changes in the Contract Sum or Contract Time. Changes shall occur solely by Change Order, Unilateral Change Directive, or Minor Change in Work. All changes in the Work are effective immediately, and the Contractor shall proceed promptly to perform the change, unless otherwise provided in the Change Order or Directive.
- B. Changes in the Work Defined.
 - 1. A Change Order is a written instrument signed by the Port and Contractor stating their agreement to a change in the Work and the adjustment, if any, in the Contract Sum and/or Contract Time.

2. A Unilateral Change Directive is a written instrument issued by the Port to transmit new or revised Drawings, issue additions or modifications to the Contract, furnish other direction and documents adjustment, if any, to the Contract Sum and/or Contract Time. A Unilateral Change Directive is signed only by the Port, without requiring the consent or signature of the Contractor.
 3. A Minor Change in the Work is a written order from the Port directing a change that does not involve an adjustment to the Contract Sum or the Contract Time.
- C. Request for Proposal: At any time, the Port may issue a Proposal Request directing the Contractor to propose a change to the Contract Sum and/or Contract Time, if any, based on a proposed change in the Work. The Contractor shall submit a responsive Change Order proposal as soon as possible, and no later than fourteen (14) days after receipt, in which the Contractor specifies in good faith the extent to which the Contract Sum and/or Contract Time would change. All cost components shall be limited to the manner described in Section 8.02(B). If the Contractor fails to timely respond to a Proposal Request, the Port may issue the change as a Unilateral Change Directive.
1. Fixed price method is default for Contractor Change Order proposal. When the Port has requested that the Contractor submit a Change Order proposal, the Port may specify the basis on which the Contract Sum will be adjusted by the Contractor. The Engineer's preference, unless otherwise indicated, is for changes in the Work to be priced using Lump Sums or Unit Prices or on a time and material (Force Account) basis if unit pricing or lump sums cannot be negotiated or determined. In all instances, however, proposed changes shall include a not-to-exceed price for the change and shall be itemized for evaluation purposes in accordance with Section 8.02(B), as requested by the Engineer.
 2. The Port may accept or reject the Contractor's Change Order proposal, request further documentation, or negotiate acceptable terms with the Contractor. If The Port and Contractor reach agreement on the terms of any change in the Work, including any adjustment in the Contract Sum or Contract Time, such agreement shall be incorporated in a Change Order.
 3. The Change Order shall constitute full payment and final settlement of all claims for time and for direct, indirect, and consequential costs, including costs of delays, inconvenience, disruption of schedule, or loss of efficiency or productivity, related to any Work either covered or affected by the Change Order, or related to the events giving rise to the request for equitable adjustment. The Port may reject a proposal, in which case the Port may either not effectuate the change or issue a Unilateral Change Directive. The Port will not make payment to the Contractor for any work until that work has been incorporated into an executed Change Order.
- D. Unforeseen Conditions: If the Contractor encounters conditions at the site that are: (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or any soils reports made available by the Port to the Contractor, or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall immediately provide oral notice to the Engineer before conditions are disturbed, followed within 24 hours by an initial written notice. The Contractor shall submit a detailed proposal no later than seven (7) days following discovery of differing site conditions. The Engineer will promptly investigate these conditions and, if the Engineer determines that they differ materially and cause an increase or decrease in the Contractor's cost or time required for performance of any part of the Work, will establish a change in the Contract Sum or Contract Time, or both, consistent with the

requirements of the Contract Documents. If the Contractor disputes the Engineer's determination, the Contractor may proceed as provided in the dispute resolution procedure (Article 11). No increase to the Contract Sum or the Contract Time shall be allowed if the Contractor does not comply with the contractual requirements or if the Contractor knew, or reasonably should have known, of the concealed conditions prior to executing the Contract.

- E. Proceed Immediately: Pending agreement on the terms of the Change Order or upon determination of a differing site condition as defined in 8.01(D), the Engineer may direct Contractor to proceed immediately with the change in the Work. Contractor shall not proceed with any change in the Work until it has obtained the Engineer's written approval and documentation of the following:
1. The scope of work
 2. An agreed upon maximum not-to-exceed amount
 3. The method of final cost determination
 4. Estimated time to complete the changed work
 5. As a change in the Work is performed, unless the parties have signed a written Change Order to establish the cost of the change, the Contractor shall maintain an itemized accounting of all costs related to the change based on the categories in Section 8.02(B) and provide such data to the Port upon request. This includes, without limitation, invoices, including freight and express bills, and other support for all material, equipment, Subcontractor, and other charges related to the change and, for material furnished from the Contractor's own inventory, a sworn affidavit certifying the actual cost of such material. Failure to provide data to the Port within seven (7) days of a request constitutes a waiver of any claim. The Port may furnish any material or equipment to the Contractor that it deems advisable, and the Contractor shall have no claim for any costs or fee on such material or equipment.
- F. Procedure for Unilateral Change Directive. Whether or not the Port has rejected a Contractor's proposal, the Port may issue a Unilateral Change Directive and the Contractor shall promptly proceed with the specified Work. If the Contractor disagrees with a Unilateral Change Directive, the Contractor shall advise the Port in writing through a Change Order proposal within seven (7) days of receipt. The Contractor's Change Order proposal shall reasonably specify the reasons for any disagreement and the adjustment it proposes. Without this timely Change Order proposal, the Contractor shall conclusively be deemed to have accepted the Port's proposal.
- G. Payment pending final determination of Force Account work. Pending final determination of the total cost of Force Account Work, and provided that the Work to be performed under Force Account is complete and any reservations of rights have been signed by the Port, the Contractor may request payment for amounts not in dispute in the next Application for Payment accompanied by documentation indicating the parties' agreement. Work done on a Force Account basis must be approved in writing on a daily basis by the Engineer or the Engineer's designee and invoices shall be submitted with an Application for Payment within sixty (60) days of performance of the Work.

8.02 CHANGES IN THE CONTRACT SUM

- A. Port to Decide How Changes are Measured. The Port may elect, in its sole discretion, how changes in the Work will be measured for payment. Change in the Work may be priced on a lump sum basis, through Unit Prices, as Force Account, or by another method documented in the executed Change Order, Unilateral Change Directive, or Minor Change in the Work.

- B. Determination of Cost of Change. The total cost of any change in the Work, including a claim under Article 11, shall not exceed the prevailing cost for the Work in the locality of the Project. In all circumstances, the change in the Work shall be limited to the reasonable, actual cost of the following components:
1. Direct labor costs: These are the actual labor costs determined by the number of additional craft hours at their normal hourly rate necessary to perform a change in the Work. The hourly cost of labor will be based upon the following:
 - a. Basic wages and fringe benefits: The hourly wage (without markup or labor burden) and fringe benefits paid by the Contractor as established by the Washington Department of Labor and Industries or contributed to labor trust funds as itemized fringe benefits, whichever is applicable, not to exceed that specified in the applicable "Intent to Pay Prevailing Wage," for the laborers, apprentices, journeymen, and foremen performing or directly supervising the change in the Work on site. These wages do not include the cost of Contractor's project manager or superintendent or above, and the premium portion of overtime wages is not included unless pre-approved in writing by the Port. Costs paid or incurred by the Contractor for vacations, per diem, subsistence, housing, travel, bonuses, stock options, or discretionary payments to employees are not separately reimbursable. The Contractor shall provide to the Port copies of payroll records, including certified payroll statements for itself and Subcontractors of any tier, upon the Port's request.
 - b. Workers' insurance: Direct contributions to the State of Washington as industrial insurance; medical aid; and supplemental pension by class and rates established by the Washington Department of Labor and Industries.
 - c. Federal insurance: Direct contributions required by the Federal Insurance Compensation Act (FICA); Federal Unemployment Tax Act (FUTA); and State Unemployment Compensation Act (SUCA).
 2. Direct material costs: This is an itemization, including material invoices, of the quantity and actual cost of additional materials necessary to perform the change in the Work. The cost will be the net cost after all discounts or rebates, freight costs, express charges, or special delivery costs, when applicable. No lump sum costs will be allowed unless approved in advance by the Port.
 3. Construction equipment usage costs: This is an itemization of the actual length of time that construction equipment necessary and appropriate for the Work is used solely on the changed Work times the applicable rental cost as established by the lower of the local prevailing rates published in www.equipmentwatch.com, as modified by the AGC/WSDOT agreement, or the actual rate paid to an unrelated third party. If more than one rate is applicable, the lowest available rate will be utilized. Rates and quantities of equipment rented that exceed the local fair market rental costs shall be subject to the Port's prior written approval. Total rental charges for equipment or tools shall not exceed 75% of the fair market purchase value of the equipment or the tool. Actual, reasonable mobilization costs are permitted if the equipment is brought to the site solely for the change in the Work. Mobilization and standby costs shall not be charged for equipment already present on the site.

The rates in effect at the time of the performance of the changed Work are the maximum rates allowable for equipment of modern design, and in good working condition, and include full compensation for furnishing all fuel, oil, lubrication, repairs, maintenance, and insurance. No gas surcharges are payable. Equipment not of modern design and/or not in

good working condition will have lower rates. Hourly, weekly, and/or monthly rates, as appropriate, will be applied to yield the lowest total cost.

4. Subcontractor costs: These are payments the Contractor makes to Subcontractors for changed Work performed by Subcontractors. The Subcontractors' cost of changed Work shall be determined in the same manner as prescribed in this Section 8.02 and, among other things, shall not include consultant costs, attorneys' fees, or claim preparation expenses.
5. Service provider costs: These are payments the Contractor makes to service providers for changed Work performed by service providers. The service providers' cost of changed Work shall be determined in the same manner as prescribed in this Section 8.02.
6. Markup: This is the maximum total amount for overhead, profit, and other costs, including office, home office and site overhead (including purchasing, project manager, superintendent, project engineer, estimator, and their vehicles and clerical assistants), taxes (except for sales tax on the Contract Sum), warranty, safety costs, printing and copying, layout and control, quality control/assurance, small or hand tools (a tool that costs \$500 or less and is normally furnished by the performing contractor), preparation of as-built drawings, impact on unchanged Work, Change Order and/or claim preparation, and delay and impact costs of any kind (cumulative, ripple, or otherwise), added to the total cost to the Port of any Change Order work. No markup shall be due, however, for direct settlements of Subcontractor claims by the Port after Substantial Completion. The markup shall be limited in all cases to the following schedule:
 - a. Direct labor costs -- 20% markup on the direct cost of labor for the party (Contractor or Subcontractor) providing labor related to the change in the Work;
 - b. Direct material costs -- 20% markup on the direct cost of material for the party (Contractor or Subcontractor) providing material related to the change in the Work;
 - c. Construction equipment usage costs -- 10% markup on the direct cost of equipment for the party (Contractor or Subcontractor) providing equipment related to the change in the Work;
 - d. Contractor markup on Subcontractor costs -- 10% markup for the Contractor on the direct cost (excluding markup) of a change in the Work performed by Subcontractors (and for Subcontractors, for a change in the Work performed by lower-tier Subcontractors); and
 - e. Service provider costs -- 5% markup for the Contractor on the direct cost (excluding markup) of a change in the Work performed by service providers.

The total summed markup of the Contractor and all Subcontractors of any tier shall not exceed 30% of the direct costs of the change in the Work. If the markup would otherwise exceed 30%, the Contractor shall proportionately reduce the markup for the Contractor and all Subcontractors of any tier.

7. Cost of change in insurance or bond premium. This is defined as:
 - a. Contractor's liability insurance: The actual cost (expressed as a percentage submitted with the certificate of insurance provided under the Contract Documents and subject to audit) of the Contractor's liability insurance arising directly from the changed Work; and

- b. Public works bond: The actual cost (expressed as a percentage submitted under the Contract Documents and subject to audit) of the Contractor's performance and payment bond arising directly from the changed Work.

Upon request, the Contractor shall provide the Port with supporting documentation from its insurer or surety of any associated cost incurred. The cost of the insurance or bond premium together shall not exceed 2.0% of the cost of the changed Work.

- 8. Unit Prices. If Unit Prices are specified in the Contract Documents or established by agreement of the parties for certain Work, the Port may apply them to the changed Work. Unit Prices shall include pre-agreed rates for material quantities and shall include reimbursement for all direct and indirect costs of the Work, including overhead, profit, bond, and insurance costs arising out of, or related to, the Unit Priced item. Quantities must be supported by field measurement statements signed by the Port, and the Port shall have access as necessary for quantity measurement. The Port shall not be responsible for not-to-exceed limit(s) without its prior written approval.

8.03 CHANGES IN THE CONTRACT TIME

- A. Extension of the Contract Time. If the Contractor is delayed at any time in the commencement or progress of the Work by events for which the Port is responsible, by unanticipated abnormal weather (subject to Section 8.03(E) below), or by other causes not the fault or responsibility of the Contractor that the Port determines may justify a delay in the Contract Time, then the Contract Time shall be extended by Change Order for such reasonable time as the Port may determine. In no event, however, shall the Contractor be entitled to any extension of time absent proof of: (1) delay to an activity on the critical path of the Project, or (2) delay transforming an activity to the critical path, so as to actually delay the anticipated date of Substantial Completion.
- B. Allocation of responsibility for delay not caused by Port or Contractor. If a delay was not caused by the Port, the Contractor, or anyone acting on behalf of any of them, the Contractor is entitled only to an increase in the Contract Time but not an increase in the Contract Sum.
- C. Allocation of responsibility for delay caused by Port. If a delay was caused by the Port or someone acting on behalf of the Port and affected the critical path, the Contractor shall be entitled to a change in the Contract Time and Contract Sum in accordance with Section 8.02. The Contractor shall not recover damages, an equitable adjustment, or an increase in the Contract Sum or Contract Time from the Port; however, where the Contractor could reasonably have avoided the delay. The Port is not obligated directly or indirectly for damages for any delay suffered by a Subcontractor of any tier that does not increase the Contract Time.
- D. Allocation of responsibility for delay caused by Contractor. If a delay was caused by the Contractor, a Subcontractor of any tier, or anyone acting on behalf of any of them, the Contractor is not entitled to an increase in the Contract Time or in the Contract Sum.
- E. Adverse weather. If adverse weather is identified as the basis for a claim for additional time, the claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not reasonably have been anticipated and had an adverse effect on the critical path of construction, and that the Work was on schedule (or not behind schedule through the fault of the Contractor) at the time the adverse weather conditions occurred. Neither the Contract Time nor the Contract Sum will be adjusted for normal inclement weather. For a claim based on adverse weather, the Contractor shall be eligible only for a change in the Contract Time (but not a change in the Contract Sum) if the Contractor can substantiate that there was significantly greater than normal inclement weather considering the full term of the Contract Time.

- F. Damages for delay. In the event the Contractor (including any Subcontractors of any tier) is held to be entitled to damages from the Port for delay beyond the amount permitted in Section 8.02(B), the total combined damages to the Contractor and any Subcontractors of any tier for each day of delay shall be limited to the same daily liquidated damage rate specified in the Contract Documents due the Port for the Contractor's delay in achieving Substantial Completion. By submitting a bid on the Work and executing the Contract, the Contractor represents that these liquidated damages are a reasonable estimate of its loss.
- G. Limitation on damages. The Contractor shall not be entitled to damages arising out of loss of efficiency; morale, fatigue, attitude, or labor rhythm; constructive acceleration; home office overhead; expectant under run; trade stacking; reassignment of workers; rescheduling of Work, concurrent operations; dilution of supervision; learning curve; beneficial or joint occupancy; logistics; ripple; season change; extended or increased overhead or general conditions; profit upon damages for delay; impact damages including cumulative impacts; or similar damages. Any effect that such alleged costs may have upon the Contractor or its Subcontractors of any tier is fully compensated through the markup on Change Orders paid through Section 8.02(B) and any liquidated damages paid hereunder.

8.04 RESERVATION OF RIGHTS

- A. Reservations of rights void unless signed by Port. Reservations of rights will be deemed waived and are void unless any reserved rights are described in detail and are signed by the Contractor and the Port.
- B. Procedure for unsigned reservations of rights. If the Contractor adds a reservation of rights not signed by the Port to any Change Order, Unilateral Change Directive, Change Order proposal, Application for Payment, or any other document, all amounts and all Work therein shall be considered disputed and not payable until costs are re-negotiated or the reservation is withdrawn or changed in a manner satisfactory to, and signed by, the Port. If the Port makes payment based on a document that contains a reservation of rights not signed by the Port, and if the Contractor cashes such payment, then the reservation of rights shall be deemed waived, withdrawn, and of no effect.

8.05 UNIT PRICES

- A. Adjustment to Unit Prices. If Unit Prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed (less than eighty percent (80%) or more than one hundred and twenty percent (120%) of the quantity estimated) so that application of a Unit Price would be substantially unfair, the applicable Unit Price but not the Contract Time, shall be adjusted if the Port prospectively approves a Change Order revising the Unit Price.
- B. Procedure to change Unit Prices. The Contractor or Port may request a Change Order revising a Unit Price by submitting information to support the change. A proposed change to a Unit Price will be evaluated by the Port based on the change in cost resulting solely from the change in quantity, any change in production rate or method as compared to the original plan, and the share, if any, of fixed expenses properly chargeable to the item. If the Port and Contractor agree on the change, a Change Order will be executed. If the parties cannot agree, the Contractor shall comply with the dispute resolution procedures (Article 11).

ARTICLE 9 - SUSPENSION AND TERMINATION OF CONTRACT

9.01 PORT'S RIGHT TO SUSPEND WORK

- A. Port may suspend the Work. The Port may at any time suspend the Work, or any part thereof, by giving notice to the Contractor. The Work shall be resumed by the Contractor as soon as

possible, but no later than fourteen (14) days after the date fixed in a notice to resume the Work. The Port shall reimburse the Contractor for appropriate and reasonable expenses consistent with Section 8.02 incurred by the Contractor as a result of the suspension, except where a suspension is the result of the Contractor repeatedly or materially failing to carry out or correct the Work in accordance with the Contract Documents, and the Contractor shall take all necessary steps to minimize expenses.

- B. Contractor obligations. During any suspension of Work, the Contractor shall take every precaution to prevent damage to, or deterioration of, the Work. The Contractor shall be responsible for all damage or deterioration to the Work during the period of suspension and shall, at its sole expense, correct or restore the Work to a condition acceptable to the Port prior to resuming Work.

9.02 TERMINATION OF CONTRACT FOR CAUSE BY THE PORT

- A. Port may terminate for cause. If the Contractor is adjudged bankrupt or makes a general assignment for the benefit of the Contractor's creditors, if a receiver is appointed due to the Contractor's insolvency, or if the Contractor, in the opinion of the Port, persistently or materially refuses or fails to supply enough properly skilled workmen or materials for proper completion of the Contract, fails to make prompt payment to Subcontractors or suppliers for material or labor, disregards laws, ordinances, or the instructions of the Port, fails to prosecute the Work continuously with promptness and diligence, or otherwise materially violates any provision of the Contract, then the Port, without prejudice to any other right or remedy, may terminate the Contractor after giving the Contractor seven (7) days' written notice (during which period the Contractor shall have the right to cure).
- B. Procedure following termination for cause. Following a termination for cause, the Port may take possession of the Project site and all materials and equipment, and utilize such materials and equipment to finish the Work. The Port may also exclude the Contractor from the Project site(s). If the Port elects to complete all or a portion of the Work, it may do so as it sees fit. The Port shall not be required to accept the lowest bid for completion of the Work and may choose to complete all or a portion of the Work using its own work force. If the Port elects to complete all or a portion of the Work, the Contractor shall not be entitled to any further payment until the Work is finished. If the expense of finishing the Work, including compensation for additional managerial and administrative services of the Port, exceeds the unpaid balance of the Contract Sum, the excess shall be paid by the Contractor.
- C. Port's remedies following termination for cause. The Port may exercise any rights, claims, or demands that the Contractor may have against third persons in connection with the Contract, and for this purpose the Contractor assigns and transfers to the Port all such rights, claims, and demands.
- D. Inadequate termination for cause converted to termination for convenience. If, after the Contractor has been terminated for cause, it is determined that inadequate "cause" for such termination exists, then the termination shall be considered a termination for convenience pursuant to Section 9.03.

9.03 TERMINATION OF CONTRACT FOR CONVENIENCE BY THE PORT

- A. Port may terminate for convenience. The Port may, at any time (without prejudice to any right or remedy of the Port), terminate all, or any portion of, the Contract for the Port's convenience and without cause. The Contractor shall be entitled to receive payment consistent with the Contract Documents only for Work properly executed through the date of termination, and costs necessarily incurred by reason of the termination (such as the cost of settling and paying claims arising out of the termination under subcontracts or orders), along with a fee of one

percent (1%) of the Contract Sum not yet earned on the whole or part of the Work. The total amount to be paid to the Contractor shall not exceed the Contract Sum as reduced by the amount of payments otherwise made. The Port shall have title to all Work performed through the date of termination.

9.04 TERMINATION OF CONTRACT BY THE CONTRACTOR

- A. Contractor may terminate for cause. The Contractor may terminate the Contract if the Work is stopped for a period of sixty (60) consecutive days through no act or fault of the Contractor or a Subcontractor of any tier, for either of the following reasons:
 - 1. Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped; or
 - 2. An act of government, such as a declaration of national emergency, that requires all Work to be stopped.
- B. Procedure for Contractor termination. If one of the reasons described in Section 9.04A exists, the Contractor may, upon seven (7) days' written notice to the Port (during which period the Port has the opportunity to cure), terminate the Contract and recover from the Port payment for Work executed through the date of termination in accordance with the Contract Documents and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead and profit on Work executed and direct costs incurred by reason of such termination. The total recovery of the Contractor shall not exceed the unpaid balance of the Contract Sum.
- C. Contractor may stop the Work for failure of Port to pay undisputed amounts. The Contractor may stop Work under the Contract if the Port does not pay undisputed amounts due and owing to the Contractor within fifteen (15) days of the date established in the Contract Documents. If the Port fails to pay undisputed amounts, the Contractor may, upon fifteen (15) additional days' written notice to the Port, during which the Port can cure, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay, and start-up.

9.05 SUBCONTRACT ASSIGNMENT UPON TERMINATION

- A. Subcontracts assigned upon termination. Each subcontract is hereby assigned by the Contractor to the Port provided that:
 - 1. The Port requests that the subcontract be assigned.
 - 2. The assignment is effective only after termination by the Port and only for those subcontracts that the Port accepts in writing.
 - 3. The assignment is subject to the prior rights of the surety, if any, under any bond issued in accordance with the Contract Documents.

When the Port accepts the assignment of a subcontract, the Port assumes the Contractor's rights and obligations under the subcontract, but only for events and payment obligations that arise after the date of the assignment.

ARTICLE 10 - BONDS

10.01 CONTRACTOR PERFORMANCE AND PAYMENT BONDS

- A. Contractor to furnish performance and payment bonds. Within ten (10) days following its receipt of a notice of award, and as part of the Contract Sum, the Contractor shall secure and furnish duly executed performance and payment bonds using the forms furnished by the Port.

The bonds shall be executed by a surety (or sureties) reasonably acceptable to the Port, admitted and licensed in the State of Washington, registered with the Washington State Insurance Commissioner, and possessing an A.M. Best rating of "A-, FSC (6)" or better and be authorized by the U.S. Department of the Treasury. Pursuant to RCW 39.08, the bonds shall be in an amount equal to the Contract Sum, and shall be conditioned only upon the faithful performance of the Contract by the Contractor within the Contract Time and upon the payment by the Contractor of all taxes, fees, and penalties to the State of Washington and all laborers, Subcontractors, and suppliers, and others who supply provisions, equipment, or supplies for the performance of the Work covered by this Contract. The bonds shall be signed by the person or persons legally authorized to bind the Contractor.

- B. On contracts of one hundred fifty thousand dollars or less, at the option of the contractor as defined in RCW 39.10.210, the Port may, in lieu of the bond, retain ten percent of the contract amount for a period of thirty days after date of final acceptance, or until receipt of all necessary releases from the department of revenue, the Employment Security Department, and the Department of Labor and Industries and settlement of any liens filed under chapter 60.28 RCW, whichever is later. The recovery of unpaid wages and benefits must be the first priority for any actions filed against retainage held by a state agency or authorized local government.

For contracts of one hundred fifty thousand dollars or less, the Port may accept a full payment and performance bond from an individual surety or sureties.

- C. Port may notify surety. If the Port makes or receives a claim against the Contractor, the Port may, but is not obligated to, notify the Contractor's surety of the nature and amount of the claim. If the claim relates to a possibility of a Contractor's default, the Port may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

ARTICLE 11 - DISPUTE RESOLUTION

11.01 NOTICE OF PROTEST AND CLAIM

- A. Dispute resolution procedure mandatory. All claims, direct or indirect, arising out of, or relating to, the Contract Documents or the breach thereof, shall be decided exclusively by the following alternative dispute resolution procedure, unless the parties mutually agree otherwise. If the Port and Contractor agree to a partnering process to assist in the resolution of disputes, the partnering process shall occur prior to, and not be in place of, the mandatory dispute resolution procedures set forth below.
- B. Notice of protest defined. Except for claims requiring notice before proceeding with the affected Work as otherwise described in the Contract Documents, the Contractor shall provide immediate oral notice of protest to the Engineer prior to performing any disputed Work and shall submit a written notice of protest to the Port within seven (7) days of the occurrence of the event giving rise to the protest that includes a clear description of the event(s). The protest shall identify any point of disagreement, those portions of the Contract Documents believed to be applicable, and an estimate of quantities and costs involved. When a protest relates to cost, the Contractor shall keep full and complete records and shall permit the Port to have access to those records at any time as requested by the Port.
- C. Claim defined. A claim is a demand by one of the parties seeking adjustment or interpretation of the Contract terms, payment of money, extension of time, or other relief with respect to the terms of the Contract Documents. The term "claim" also includes all disputes and matters in question between the Port and Contractor arising out of, or relating to, the Contract Documents. Claims must be initiated in writing and include a detailed factual statement and clear description of the claim providing all necessary dates, locations, and items of Work, the date or dates on which the events occurred that give rise to the claim, the names of employees

or representatives knowledgeable about the claim, the specific provisions of the Contract Documents that support the claim, any documents or oral communications that support the claim, any proposed change in the Contract Sum (showing all components and calculations) and/or Contract Time (showing cause and analysis of the resultant delay in the critical path), and all other data supporting the claim. Claims shall also be submitted with a statement certifying, under penalty of perjury, that the claim as submitted is made in good faith, that the supporting cost and pricing data are true and accurate to the best of Contractor's knowledge and belief, that the claim is fully supported, and that the amount requested accurately reflects the adjustment in the Contract Sum or Contract Time for which Contractor believes the Port is liable. A claim shall be deemed to include all changes, direct and indirect, in cost and in time to which the Contractor and Subcontractors of any tier are entitled and may not contain reservations of rights without the Port's written approval; any unapproved reservations of rights shall be without effect.

- D. Claim procedure. The Contractor shall submit a written claim within thirty (30) days of providing written notice of protest. The Contractor may delay submitting supporting data by an additional thirty (30) days if it notifies the Port in its claim that substantial data must be assembled. Any claim of a Subcontractor of any tier may be brought only through, and after review by and concurrence of, the Contractor.
- E. Failure to comply with notice of protest and claim requirements waives claims. Any notice of protest by the Contractor and any claim of the Contractor, whether under the Contract or otherwise, must be made pursuant to, and in strict accordance with, the applicable provisions of the Contract. Failure to properly and timely submit a notice of protest or to timely submit a claim shall waive the claim. No act, omission, or knowledge, actual or constructive, of the Port shall waive the requirement for timely written notice of protest and a timely written claim, unless the Port and the Contractor sign an explicit, unequivocal written waiver approved by the Port. The Contractor expressly acknowledges and agrees that the Contractor's failure to timely submit required notices of protest and/or timely submit claims has a substantial impact upon, and prejudices, the Port. For the purpose of calculating time periods, an "event giving rise to a claim," among other things, is not a Request for Information, but rather is a response that the Contractor believes would change the Contract Sum and/or Contract Time.
- F. False claims. The Contractor shall not make any fraudulent misrepresentations, concealments, errors, omissions, or inducements to the Port in the formation or performance of the Contract. If the Contractor or a Subcontractor of any tier submits a false or frivolous claim to the Port, which for purposes of this Section 11.01(F) is defined as a claim based in whole or in part on a materially incorrect fact, statement, representation, assertion, or record, the Port shall be entitled to collect from the Contractor by offset or otherwise (without prejudice to any right or remedy of the Port) any and all costs and expenses, including investigation and consultant costs, incurred by the Port in investigating, responding to, and defending against the false or frivolous claim.
- G. Compliance with lien and retainage statutes required. If a claim relates to, or is the subject of, a lien or retainage claim, the party asserting the claim may proceed in accordance with applicable law to comply with the notice and filing deadlines prior to resolution of the claim by mediation or by litigation.
- H. Performance required pending claim resolution. Pending final resolution of a claim, the Contractor shall continue to perform the Contract and maintain the Progress Schedule, and the Port shall continue to make payments of undisputed amounts due in accordance with the Contract Documents.

11.02 MEDIATION

- A. Claims must be subject to mediation. At any time following the Port's receipt of a written claim, the Port may require that an officer of the Contractor and the Port's designee (all with authority to settle) meet, confer, and attempt to resolve a claim. If the claim is not resolved during this meeting, the claim shall be subject to mandatory mediation as a condition precedent to the initiation of litigation. This requirement can be waived only by an explicit, written waiver signed by the Port and the Contractor.
- B. Mediation procedure. A request for mediation shall be filed in writing with the other party to the Contract, and the parties shall promptly attempt to agree upon a mediator. If the parties have not reached agreement within thirty (30) days of the request, either party may file the request with the American Arbitration Association, or such other alternative dispute resolution service to which the parties mutually agree, with a copy to the other party, and the mediation shall be administered by the American Arbitration Association (or other agreed service). The parties to the mediation shall share the mediator's fee and any filing fees equally. The mediation shall be held in Pierce County, Washington, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof. Unless the Port and the Contractor mutually agree in writing otherwise, all claims shall be considered at a mediation session that shall occur prior to Final Completion.

11.03 LITIGATION

- A. Claims not resolved by mediation are subject to litigation. Claims not resolved through mediation shall be resolved by litigation, unless the parties mutually agree otherwise. The venue for any litigation shall be Pierce County, Washington. The Contractor may bring no litigation on claims, unless such claims have been properly raised and considered in the procedures of this Article 11. The Contractor must demonstrate in any litigation that it complied with all requirements of this Article.
- B. Litigation must be commenced promptly. All unresolved claims of the Contractor shall be waived and released, unless the Contractor has complied with the requirements of the Contract Documents, and litigation is served and filed within 180 days of the date of Substantial Completion approved in writing by the Port or termination of the Contract. The pendency of mediation (the time period between receipt by the non-requesting party of a written mediation request and the date of mediation) shall toll these deadlines until the earlier of the mediator providing written notice to the parties of impasse, or thirty (30) days after the date of the mediation session.
- C. Port not responsible for attorneys' fees. Neither the Contractor nor a Subcontractor of any tier, whether claiming under a bond or lien statute or otherwise, shall be entitled to attorneys' fees directly or indirectly from the Port (but may recover attorneys' fees from the bond or statutory retainage fund itself to the extent allowable under law).
- D. Port may join Contractor in dispute. The Port may join the Contractor as a party to any litigation or arbitration involving the alleged fault, responsibility, or breach of contract of the Contractor or Subcontractor of any tier.

ARTICLE 12 - MISCELLANEOUS

12.01 GENERAL

- A. Rights and remedies are cumulative. The rights and remedies of the Port set forth in the Contract Documents are cumulative, and in addition to and not in limitation of, any rights and remedies otherwise available to the Port. The pursuit of any remedy by the Port shall not be

construed to bar the Port from the pursuit of any other remedy in the event of similar, different, or subsequent breaches of this Contract. All such rights of the Port shall survive completion of the Project or termination of the Contractor.

- B. Reserved rights do not give rise to duty. The rights reserved or possessed by the Port to take any action shall not give rise to a duty for the Port to exercise any such right.

12.02 WAIVER

- A. Waiver must be in writing and authorized by Port. Waiver of any provisions of the Contract Documents must be in writing and authorized by the Port. No other waiver is valid on behalf of the Port.
- B. Inaction or delay not a waiver. No action, delay in acting, or failure to act by the Port shall constitute a waiver of any right or remedy of the Port, or constitute an approval or acquiescence of any breach or defect in the Work, nor shall any delay or failure of the Port to act waive or otherwise prejudice the right of the Port to enforce a right or remedy at any subsequent time.
- C. Claim negotiation not a waiver. The fact that the Port and the Contractor may consider, discuss, or negotiate a claim that has or may have been defective or untimely under the Contract, shall not constitute a waiver of the provisions of the Contract Documents, unless the Port and the Contractor sign an explicit, unequivocal waiver.

12.03 GOVERNING LAW

- A. Washington law governs. This Contract and the rights and duties of the parties hereunder shall be governed by the internal laws of the State of Washington, without regard to its conflict of law principles.

12.04 COMPLIANCE WITH LAW

- A. Contractor to comply with applicable laws. The Contractor shall at all times comply with all applicable Federal, State and local laws, ordinances, and regulations. This compliance shall include, but is not limited to, the payment of all applicable taxes, royalties, license fees, penalties, and duties.
- B. Contractor to provide required notices. The Contractor shall give notices required by all applicable Federal, State and local laws, ordinances, and regulations bearing on the Work.
- C. Contractor to confine operations at site to permitted areas. The Contractor shall confine operations at the Project site to areas permitted by applicable laws, ordinances, permits, rules and regulations, and lawful orders of public authorities and the Contract Documents.

12.05 ASSIGNMENT

- A. Assignment. The Port and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party and to the partners, successors, assigns, and legal representatives of such other party. The Contractor may not assign, transfer, or novate all or any portion of the Contract, including but not limited to, any claim or right to the Contract Sum, without the Port's prior written consent. If the Contractor attempts to make an assignment, transfer, or novation without the Port's consent, the assignment shall be of no effect, and Contractor shall nevertheless remain legally responsible for all obligations under the Contract. The Contractor also shall not assign or transfer, to any third party, any claims it may have against the Port arising under the Contract or otherwise related to the Project.

12.06 TIME LIMIT ON CAUSES OF ACTION

- A. Time limit on causes of action. The Port and Contractor shall commence all causes of action, whether in contract, tort, breach of warranty, or otherwise, against the other arising out of, or related to, the Contract in accordance with the requirements of the dispute resolution procedure set forth in Article 11 of these General Conditions, within the time period specified by applicable law, and within the time limits identified in the Contract Documents. The Contractor waives all claims and causes of action not commenced in accordance with this Section 12.06.

12.07 SERVICE OF NOTICE

- A. Notice. Written notice under the Contract Documents by either the Contractor or Port may be served on the other party by personal service, electronic or facsimile transmission, or delivery service to the last address provided in writing to the other party. For the purpose of measuring time, notice shall be deemed to be received by the other party on the next business day following the sender's electronic or facsimile transmittal or delivery by delivery service.

12.08 RECORDS

- A. Contractor and Subcontractors to maintain records and cooperate with Port audit. The Contractor and Subcontractors of any tier shall maintain books, ledgers, records, documents, estimates, bids, correspondence, logs, schedules, emails, and other tangible and electronic data and evidence relating or pertaining to costs and/or performance of the Contract ("records") to such extent, and in such detail, as will properly reflect and fully support compliance with the Contract Documents and with all costs, charges, and other amounts of whatever nature. The Contractor shall preserve these records for a period of six (6) years following the date of Final Acceptance under the Contract. Within seven (7) days of the Port's request, both during the Project and for six (6) years following Final Acceptance, the Contractor and Subcontractors of any tier shall make available, at their office during normal business hours, all records for inspection, audit, and reproduction (including electronic reproduction) by the Port or its representatives; failure to fully comply with this requirement shall constitute a material breach of contract and a waiver of all claims by the Contractor and Subcontractors of any tier.
- B. Rights under RCW 42.56. The Contractor agrees, on behalf of itself and Subcontractors of any tier, that any rights under Chapter 42.56 RCW will commence at Final Acceptance, and that the invocation of such rights at any time by the Contractor or a Subcontractor of any tier, or their respective representatives, shall initiate an equivalent right to disclosures from the Contractor and Subcontractors of any tier for the benefit of the Port.

12.09 STATUTES

- A. Contractor to comply with Washington statutes. The Contractor shall abide by the provisions of all applicable statutes, regulations, and other laws. Although a number of statutes are referenced in the Contract Documents, these references are not meant to be, and are not, a complete list.
 - 1. Pursuant to RCW 39.06, "Registration, Licensing of Contractors," the Contractor shall be registered and licensed as required by the laws of the State of Washington, including but not limited to RCW 18.27, "Registration of Contractors," and shall satisfy all State of Washington bonding and insurance requirements. The Contractor shall also have a current state Unified Business Identifier number; have industrial insurance coverage for the Contractor's employees working in Washington as required by Title 51 RCW; have an Employment Security Department number as required by Title 50 RCW; have a state excise tax registration number as required in Title 82 RCW; and not be disqualified from

- bidding on any public works contract under RCW 39.06.010 (unregistered or unlicensed contractors) or RCW 39.12.065(3) (prevailing wage violations).
2. The Contractor shall comply with all applicable provisions of RCW 49.28, "Hours of Labor."
 3. The Contractor shall comply with pertinent statutory provisions relating to public works of RCW 49.60, "Discrimination."
 4. The Contractor shall comply with pertinent statutory provisions relating to public works of RCW 70.92, "Provisions in Buildings for Aged and Handicapped Persons," and the Americans with Disabilities Act.
 5. Pursuant to RCW 50.24, "Contributions by Employers," in general, and RCW 50.24.130 in particular, the Contractor shall pay contributions for wages for personal services performed under this Contract or arrange for an acceptable bond.
 6. The Contractor shall comply with pertinent provisions of RCW 49.17, "Washington Industrial Safety and Health Act," and Chapter 296-155 WAC, "Safety Standards for Construction Work."
 7. Pursuant to RCW 49.70, "Worker and Community Right to Know Act," and WAC 296-62-054 et seq., the Contractor shall provide to the Port, and have copies available at the Project site, a workplace survey or material safety data sheets for all "hazardous" chemicals under the control or use of Contractor or any Subcontractor of any tier.
 8. All products and materials incorporated into the Project as part of the Work shall be certified as "asbestos-free" and "lead-free" by United States standards, and shall also be free of all hazardous materials or substances. At the completion of the Project, the Contractor shall submit certifications of asbestos-free and of lead-free materials certifying that all materials and products incorporated into the Work meet the requirements of this Section, and shall also certify that materials and products incorporated into the Work are free of hazardous materials and substances.

END OF SECTION

PART 1 - GENERAL

1.01 SUBMITTAL REQUIREMENTS

- A. Evidence of the required insurance within 10 days of the issued Notice of Award to the Contractor.
- B. Updated evidence of insurance as required until final completion.

1.02 CONTRACTOR LIABILITY INSURANCE

- A. The Contractor shall secure and maintain until Final Completion, at its sole cost and expense, the following insurance in carriers reasonably acceptable to the Port, licensed in the State of Washington, registered with the Washington State Insurance Commissioner, and possessing an A.M. Best rating of "A-, FSC (6)" or better.
- B. The Port of Tacoma (Port) will be included as an additional insured(s) for both ongoing and completed operations by endorsement to the policy using ISO Form CG 20 10 11 85 or forms CG 20 10 03 97 and CG 20 37 10 01 (or equivalent coverage endorsements). The inclusion of the Port as an additional insured(s) shall not create premium liability for the Port.

Also, by endorsement to the policy, there shall be:

- 1. An express waiver of subrogation in favor of the Port;
 - 2. A cross liabilities clause; and
 - 3. An endorsement stating that the Contractor's policy is primary and not contributory with any insurance carried by the Port.
- C. If the Contractor, Supplier, or Subcontractors will perform any work requiring the use of a licensed professional, per RCW 18, the Contractor shall provide evidence to the Port of professional liability insurance in amounts not less than \$1,000,000.
 - D. This insurance shall cover all of the Contractor's operations, of whatever nature, connected in any way with the Contract, including any operations performed by the Contractor's Subcontractors of any tier. **It is the obligation of the Contractor to ensure that all Subcontractors (at whatever level) carry a similar program that provides the identified types of coverage, limits of liability, inclusion of the Port as additional insured(s), waiver of subrogation and cross liabilities clause.** The Port reserves the right to reject any insurance policy as to company, form, or substance. Contractor's failure to provide, or the Port's acceptance of, the Contractor's certificate of insurance does not waive the Contractor's obligation to comply with the insurance requirements of the Contract as specifically described below:
 - 1. Commercial General Liability Insurance on an Occurrence Form Basis including but not limited to:
 - a. Bodily Injury Liability;
 - b. Property Damage Liability;
 - c. Contractual Liability;
 - d. Products - Completed Operations Liability;
 - e. Personal Injury Liability;

- Alternatively, a Commercial General Liability (CGL) policy is acceptable if all of the above coverages are incorporated in the policy and there are no marine exclusions that will remove coverage for either vessels or work done by or above or around the water.
2. Comprehensive Automobile Liability including but not limited to:
 - a. Bodily Injury Liability;
 - b. Property Damage Liability;
 - c. Personal Injury Liability;
 - d. Owned and Non-Owned Automobile Liability; and
 - e. Hired and Borrowed Automobile Liability.
 3. Contractor's Pollution Liability (CPL) covering claims for bodily injury, property damage and cleanup costs, and environmental damages from pollution conditions arising from the performance of covered operations.
 - a. If the Work involves remediation or abatement of regulated waste to include, but not limited to asbestos containing materials, lead containing products, mercury, PCB, underground storage tanks, or other hazardous materials or substances, the CPL policy shall not exclude such coverage, or a specific policy covering such exposure shall be required from the Contractor and all Subcontractors performing such Work.
 - b. If the Work involves transporting regulated materials or substances or waste, a separate policy or endorsement to the CPL policy specifically providing coverage for liability and cleanup arising from an upset or collision during transportation of hazardous materials or substances shall be required from the Contractor and all Subcontractors performing such Work.
 - c. It is preferred that CPL insurance shall be on a true occurrence form without a sunset clause. However, if CPL insurance is provided on a Claims Made basis, the policy shall have a retroactive date prior to the start of this project, and this insurance shall be kept in force for at least three years after the final completion of this project. Alternatively, the contractor, at its option, may provide evidence of extended reporting period of not less than three (3) years in its place. The Contractor shall be responsible for providing the Port with certificates of insurance each year evidencing this coverage.
 - d. The Port shall be named as an Additional Insured(s) on the CPL policy.
- E. Except where indicated above, the limits of all insurance required to be provided by the Contractor shall be not less than \$2,000,000 for each occurrence and \$2,000,000 in the aggregate. However, coverage in the amounts of these minimum limits shall not be construed as to relieve the Contractor from liability in excess of such limits. The Additional Insured endorsement shall NOT be limited to the amounts specified by this contract unless expressly waived in writing by the Port of Tacoma.
- F. Except where indicated above, the limits of all insurance required to be provided by the Contractor shall be not less than \$2,000,000 for each occurrence. However, coverage in the amounts of these minimum limits shall not be construed as to relieve the Contractor from liability in excess of such limits. The Additional Insured endorsement shall NOT be limited to the amounts specified by this contract, unless expressly waived in writing by the Port.
- G. Contractor shall certify that its operations are covered by the Washington State Worker's Compensation Fund. The Contractor shall provide its Account Number or, if self-insured, its

Certificate of Qualification Number. The Contractor shall also provide evidence of Stop-Gap Employers' Liability Insurance.

- H. The Contractor shall furnish, within ten (10) days following issuance of the Notice of Award, a certificate of insurance satisfactory to the Port evidencing that insurance in the types and minimum amounts required by the Contract Documents has been secured. The Certificate of Insurance shall be signed by an authorized representative of the insurer together with a copy of the endorsement, which shows that the Port is named as additional insured.
- I. Contractor shall provide at least forty-five (45) days prior written notice to the Port of any termination or material change, or ten (10) days notice in the case of non-payment of premium(s).
- J. If the Contractor is required to make corrections to the Work after Final Completion, the Contractor shall obtain at its own expense, prior to the commencement of any corrective work, insurance coverage as required by the Contract Documents, which coverage shall be maintained until the corrections to the Work have been completed and accepted by the Port.

1.03 BUILDER'S RISK INSURANCE

- A. Until Final Completion of the Work, the construction Work is at the risk of the Contractor and no partial payment shall constitute acceptance of the Work or relieve the Contractor of responsibility of completing the Work under the Contract.
- B. Whenever the estimated cost of the Work is less than \$25,000,000, the Port will purchase and maintain, in a company or companies lawfully authorized and admitted to do business in Washington, property insurance written on a builder's risk "all-risk," including Earthquake and Flood with applicable sub-limits, or equivalent policy form to cover the course of construction in the amount of the full insurable value thereof. This property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the Port has an insurable interest in the property, whichever is later. This insurance shall include interests of the Port, the Contractor, and Subcontractors of any tier on the Project. There may be some differences between this Section and the builder's risk insurance secured by the Port; therefore, the Contractor shall provide an "installation floater" or similar property coverage for materials not yet installed, whether stored on site or off site or in transit, and the Contractor shall obtain property coverage for all Contractor-owned equipment and tools-each loss may be subject to a deductible. Losses up to the deductible amount shall be the responsibility of the Contractor. All tools and equipment not intended as part of the construction or installation will be the sole responsibility of the Contractor.

PART 2 - PRODUCTS - NOT USED

PART 3 - PRODUCTS - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 PREVAILING AND OTHER REQUIRED WAGES

- A. The Contractor shall pay (and shall ensure that all Subcontractors of any tier pay) all prevailing wages and other wages (such as Davis-Bacon Act wages) applicable to the Project.
- B. Pursuant to RCW 39.12, "Prevailing Wages on Public Works," no worker, laborer, or mechanic employed in the performance of any part of the Work shall be paid less than the "prevailing rate of wage" in effect as of the date that bids are due.
 - 1. Based on the bid submittal deadline for this project, the applicable effective date for prevailing wages for this project is February 5th, 2019.
- C. The State of Washington prevailing wage rates applicable for this public works project, which is located in Pierce County, may be found at the following website address of the Department of Labor and Industries:

<https://fortress.wa.gov/lni/wagelookup/prvWagelookup.aspx>
- D. The schedule of the prevailing wage rates is made a part of the Contract Documents by reference as though fully set forth herein; and a copy of the applicable prevailing wage rates are also available for viewing at the Port Administration Building, located at One Sitcum Plaza, Tacoma, WA 98421 (253-383-5841). Upon request to the Procurement Department at procurement@portoftacoma.com, the Port will email or mail a hard copy of the applicable Journey Level prevailing wages for this project.
- E. Questions relating to prevailing wage data should be addressed to the Industrial Statistician.

Mailing Address: Washington State Department of Labor and Industries
Prevailing Wage Office
P.O. Box 44540
Olympia, WA 98504

Telephone: (360) 902-5335

Facsimile: (360) 902-5300

- 1. If there is any discrepancy between the attached or provided schedule of prevailing wage rates and the published rates applicable under WAC 296-127-011, or if no schedule is attached, the applicable published rates shall apply with no increase in the Contract Sum. It is the Contractor's responsibility to ensure that the correct prevailing wage rates are paid.
- F. Statement to Pay Prevailing Wages
 - 1. Prior to any payment being made by the Port under this Contract, the Contractor, and each Subcontractor of any tier, shall file a Statement of Intent to Pay Prevailing Wages with the Department of Labor and Industries for approval.
 - 2. The statement shall include the hourly wage rate to be paid to each classification of workers entitled to prevailing wages, which shall not be less than the prevailing rate of wage, and the estimated number of workers in each classification employed on the Project by the Contractor or a Subcontractor of any tier, as well as the Contractor's contractor

registration number and other information required by the Department of Labor and Industries.

3. The statement, and any supplemental statements, shall be filed in accordance with the requirements of the Department of Labor and Industries. No progress payment shall be made until the Port receives such certified statement.
- G. The Contractor shall post, in a location readily visible to workers, at the Project site: (1) a copy of the Statement of Intent to Pay Prevailing Wages approved by the Industrial Statistician of the Department of Labor and Industries, and (2) the address and telephone number of the Industrial Statistician of the Department of Labor and Industries to whom a complaint or inquiry concerning prevailing wages may be directed.
- H. If a State of Washington prevailing wage rate conflicts with another applicable wage rate (such as Davis-Bacon Act wage rate) for the same labor classification, the higher of the two shall govern.
- I. Pursuant to RCW 39.12.060, if any dispute arises concerning the appropriate prevailing wage rate for work of a similar nature, and the dispute cannot be adjusted by the parties in interest, including labor and management representatives, the matter shall be referred for arbitration to the Director of the Department of Labor and Industries, and his or her decision shall be final and conclusive and binding on all parties involved in the dispute.
- J. Immediately following the end of all work completed under this Contract, the Contractor and each Subcontractor of any tier, shall file an approved Affidavit of Wages Paid with the Department of Labor and Industries.
- K. The Contractor shall defend (at the Contractor's sole cost, with legal counsel approved by Port), indemnify, and hold the Port harmless from all liabilities, obligations, claims, demands, damages, disbursements, lawsuits, losses, fines, penalties, costs, and expenses, whether direct, indirect, including, but not limited to, attorneys' fees and consultants' fees and other costs and expenses, from any violation or alleged violation by the Contractor or any Subcontractor of any tier of RCW 39.12 ("Prevailing Wages on Public Works") or Chapter 51 RCW ("Industrial Insurance"), including, but not limited to, RCW 51.12.050.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS APPLICABLE PORT-WIDE

- A. The Contractor shall submit, prior to the start of work, a list of emergency contact numbers for itself and subcontractors, suppliers, and manufacturer representatives. Each person on the project site shall have a valid identification card that is tamper proof with laminated photo identification, such as one of the following:
1. State-issued Driver's license (also required if driving a vehicle)
 2. Card issued by a governmental agency
 3. Passport
 4. Pacific Maritime Association card
 5. Labor organization identification card
- B. Identification cards shall be visible while on the work site or easily displayed when requested.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

- A. The accompanying Drawings and Specifications show and describe the location and type of Work to be performed under this project. Work is more specifically defined on the drawings listed in Section 00 01 15.
1. The Work under this contract is to provide, furnish and install all labor, materials and equipment required to complete the work, installed, tested, and ready for use, and as described in these documents.
 2. The EBC Bldg 326 HVAC and Roof Replacement and Bldgs 407 and 532 Bird Wire consists of:

Building 326 - removal and replacement of roofing, removal and reinstallation of two HVAC units, replacement of three additional HVAC units, installation of bird deterrent system and utility work in support of the project.

Building 407 and 532 - supplement or replace existing bird deterrent systems for better performance.

1.02 LOCATION

- A. The work is located at:
- 401 Alexander Avenue
- Tacoma, WA 98421

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies work sequence and constraints.
- B. The purpose of the milestones, sequence and limitations of construction are to ensure that the Contractor understands the requirements and limitations on its work by the specific characteristics of the Contract, schedules and conducts work in a manner consistent with achieving these purposes, and complies with the construction schedule, the specific sequence, constraints, milestones and limitations of work specified.
- C. Sequence of construction. Plan the sequence of construction to accommodate all the requirements of the specifications. The Contract Price shall include all specified requirements as described in this Section.

1.02 CONTRACTOR ACCESS AND USE OF PREMISES

- A. Activity Regulations
 - 1. Ensure Contractor personnel deployed to the project become familiar with and follow all regulations or restrictions established by the Engineer.
- B. Occupied Building
 - 1. The Contractor will be working in existing buildings which are occupied during normal business hours, as stipulated below.
 - 2. Protect materials and equipment in areas adjoining the immediate work area.
- C. Working Facility
 - 1. The Facility will remain in operation for the duration of construction. The Contractor shall conduct all items of the Work in such a manner as to prevent interference with the normal operations of the Facility.
- D. Work Site Regulations
 - 1. Keep within the limits of work and assigned avenues of ingress and egress. Do not enter any areas outside the designated work location unless previously approved by the Engineer. The Contractor must comply with the following conditions:
 - a. Restore all common areas to a clean and useable condition that permits the resumption of Tenant operations after the Contractor ceases daily work.
 - b. Be responsible for control and security of Contractor-owned equipment and materials at the work site. Report to Port Security (phone (253) 383-9472) any missing/lost/stolen property.
 - c. Ensure all materials, tools and equipment will be removed from the site or secured within the designated laydown area at the end of each shift.
 - d. Ensure tenant work space is protected from possible falling debris during HVAC removal/replacement and/or any sheathing removal.

1.03 CONSTRAINTS - GENERAL

- A. Constraints for Work at Site
 - 1. Mechanical Work Constraints:

- a. The Contractor is to notify in writing to the Port at least 72 hours prior to any outage to the HVAC system. Notification will indicate the start date and duration of the outage.
 - b. Duration of HVAC system outages should be kept to a minimum to provide the least impact to tenants occupying the building.
 - c. All openings due to removal of HVAC equipment, controls or utilities will be properly sealed, protected and insulated to protect the interior of the building.
 - d. Installation and reinstallation of HVAC equipment shall occur at the earliest possible time following completion of preceeding work.
2. Electrical Work Constraints:
 - a. The Contractor is to notify in writing to the Port at least 72 hours prior to any power outage. Notification will indicate the start date and duration of the outage.
 - b. Scheduled power outages are to occur outside of normal buisness hours.
 - c. The Contractor is responsible for the design, installation and removal of temporary power to facilitate the completion of Work.
3. Other:
 - a. Building 326 is occupied by Port Tenant(s) whose normal business hours are Mon - Fri 8:00am to 5:00pm. All work required to be performed inside of the building will occur outside of normal business hours.
 - b. Buildings 407 and 532 are occupied by Port Tenants. The bird deterrent work is entirely on the exterior of the buildings and may occur at any time. The Contractor shall provide a schedule for notification purposes indicating the start, duration and working hours anticipated.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION

PART 1 - GENERAL

1.01 PAYMENT PROCEDURES

- A. Monthly pay estimates shall clearly identify the work performed for the given time period based on the approved Schedule of Values.
 - 1. At the Pre-construction meeting, the Engineer and the Contractor shall agree upon a date each month when payment applications shall be submitted.
- B. Prior to submitting a payment application, the Contractor and Engineer shall meet each month to review the work accomplished to determine the actual quantities including labor, materials and equipment charges to be billed.
 - 1. Prior to the payment application meeting, the Contractor shall submit to the Engineer all measurement documentation as referenced in these contract documents; to include all measurement by weight, volume or field.
 - 2. For all change work being done on a force account basis, the Contractor shall submit prior to meeting with Engineer all Force Account back-up documentation as required to process the payment application where Force Account work is being billed. The Engineer and the Contractor shall review the documentation at the payment application meeting to verify quantities and review the work accomplished.
 - 3. The Contractor shall bring a copy of all documentation to the pay application meeting with the Engineer.
- C. Following the Engineers' review, the Contractor shall prepare an original pay estimate with complete supporting documentation attached and submit it electronically using e-Builder®.
- D. An estimated cashflow statement projecting the Contractor's monthly billings on the project shall be submitted with each payment application.

1.02 PAYMENT PRICING

- A. Pricing for the various lump sum or unit prices in the Bid Form, as further specified herein, shall include all compensation to be received by the Contractor for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the work in accordance with the requirements of the Contract Documents.
- B. Pricing also includes all costs of compliance with the regulations of public agencies having jurisdiction, including safety and health requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA).
- C. No separate payment will be made for any item that is not specifically set forth in the Bid Form, and all costs therefore shall be included in the prices named in the Bid Form for the various appurtenant items of work.
- D. All other work not specifically mentioned in the measurement and payment sections identified below shall be considered incidental to the work performed and merged into the various unit and lump sum prices bid. Payment for work under one item will not be paid for under any other item.
- E. The Port of Tacoma reserves the right to make changes should unforeseen conditions necessitate such changes. Where work is on a unit price basis, the actual quantities occasioned by such changes shall govern the compensation.

1.03 LUMP SUM MEASUREMENT

- A. Lump sum measurement will be for the entire item, unit of Work, structure, or combination thereof, as specified and as indicated in the Contractor's submitted bid.
 - 1. If the Contractor requests progress payments for lump sum items, such progress payments will be made in accordance with an approved Schedule of Values. The quantity for payment for completed work shall be an estimated percentage of the lump sum amount, agreed to between the Engineer and Contractor, payable in monthly progress payments in increments proportional to the work performed in amounts as agreed between the Engineer and the Contractor.

1.04 MEASUREMENT OF QUANTITIES FOR UNIT PRICES

- A. Measurement Standards:
 - 1. All Work to be paid for at a contract price per unit measurement, as indicated in the Contractor's submitted bid, will be measured by the Engineer in accordance with United States Standard Measures.
- B. Measurement by Area: Measurement by area will be by the square dimension shown on the Contract Drawings or as specified. Method of square measurement will be as specified.
- C. Linear Measurement: Linear measurement will be by the linear dimension listed or indicated in the Contractor's submitted bid. Unless otherwise indicated, items, components, or Work to be measured on a linear basis will be measured at the centerline of the item in place.
- D. Field Measurement for Payment:
 - 1. The Contractor shall take all measurements by providing equipment, workers, and survey crews as required to measure quantities in accordance with the provisions for measurement specified herein. No allowance will be made for specified tolerances.
 - 2. The Engineer will verify all quantities of Work performed by the Contractor on a unit-price basis, for progress payment purposes.

1.05 REJECTED, EXCESS, OR WASTED MATERIALS

- A. Quantities of material wasted or disposed of in a manner not called for under the Contract; rejected loads of material, including material rejected after it has been placed by reasons of the failure of the Contractor to conform to the provisions of the Contract; material not unloaded from the transporting vehicle; material placed outside the lines indicated on the Contract Drawings or established by the Engineer; or material remaining on hand after completion of the Work, will not be paid for, and such quantities shall not be included in the final total quantities. No additional compensation will be permitted for loading, hauling, and disposing of rejected material.

1.06 MEASUREMENT AND PAYMENT

- A. Item #1: Mobilization and Demobilization
 - 1. Payment for MOBILIZATION AND DEMOBILIZATION shall be for preparatory work and operations performed by the Contractor including, but not limited to, completion and submittal and approval of the following:
 - a. All bonds and insurance certificates
 - b. Construction Site Safety and Security Plan (CSSP)
 - c. Initial submittal schedule

- d. Schedule of Values
 - e. Detailed CPM progress schedule
 - f. Pre-construction photographs and videotapes
 - g. Erosion and Sediment Control Plan
 - h. Hazardous and Contaminated Substance Health and Safety Plan
 - i. Establishing Contractor's Project Manager, Superintendent, and other required specified personnel on the Work site full time.
 - j. Furnishing and installing all temporary facilities and controls as needed for the safe and proper completion of the work, including utilities, sanitary facilities, barriers and enclosures, fences, staging and entrance areas, and field offices, as specified.
 - k. Mobilization onto the site required in support of the Contractor's first 30 days of operations.
 - l. Furnishing and installing project signs, as specified.
2. Mobilization and Demobilization shall be paid at the lump sum price listed in the Contractor's submitted bid. Incremental payment shall be made for each location as follows:
- a. 40% after completion of 5% of the total contract amount of other bid items have been earned.
 - b. 40% after completion of 20% of the total contract amount of other bid items have been earned.
 - c. 20% after completion of all work on the project has been completed, including cleanup and acceptance of the project by the Port.
- B. Item #2: Building 326 Roofing and HVAC
- 1. Item Description: The Work of this item includes but is not limited to: removal and replacement of roofing, removal and replacement of insulation, removal and reconstruction of roof parapet wall, replacement of siding at parapet wall, removal and reinstallation of two existing HVAC units, replacement of three HVAC units, installation of bird deterrent system and utility work needed to facilitate roof replacement including temporary power.
 - 2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
 - 3. Payment: This item will be paid for at the Contract lump sum price as specified in the Contractor's submitted bid, in accordance with the approved Schedule of Values.
- C. Item #3: Building 407 Bird Wire Improvement.
- 1. Item Description: The Work of this item includes, but is not limited to, the supplementation or replacement of existing bird deterrent system.
 - 2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
 - 3. Payment: This item will be paid for based on actual quantities for the period being billed.
- D. Item #4: Building 532 Bird Wire Improvement.

1. Item Description: The Work of this item includes, but is not limited to, the supplementation or replacement of existing bird deterrent system.
 2. Measurement: This item will be measured based on a percentage complete for the overall lump sum amount.
 3. Payment: This item will be paid for based on actual quantities for the period being billed.
- E. Item #5: Unforeseen Conditions Allowance.
1. Item Description: This allowance will be for UNFORESEEN CONDITIONS for work unidentified at the time of bid and will be paid preferably as negotiated unit price(s) or lump sum(s). If unit prices or lump sums cannot be established, work will be paid on a time and materials basis per section 00 72 00 General Conditions Article 8.0. Work under this bid item shall be accomplished upon written direction from the Engineer as a Minor Change in Work. This entire bid item may or may not be used.
 2. Measurement: This item will be measured based upon the method agreed upon for each Minor Change issued.
 3. Payment: This item will be paid for at the price agreed upon for each Change in Work issued by the Engineer in accordance with procedures noted in Section 01 26 00 - Change Management Procedures.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.02 SUBMITTALS

- A. The Contractor shall submit the following documentation to the Port:
 - 1. List of Labor Rates
 - a. For the Contractor and each subcontractor, a list of labor rates for each trade applicable to the scope of work to be performed. These submitted rates shall be broken down to include the base wage, fringes, FICA, SUTA, FUTA, industrial insurance, and medical aid premiums as stated in the General Conditions. The rates shall not contain any travel time, safety, loss efficiency factors, overhead, or profit. Rates shall be submitted for straight time, overtime, and double time in a form acceptable to the Engineer. Contractor shall provide proof of all labor rate costs as required by the Engineer, including the submission of a copy of the most current Workers Compensation Rate Notice from Labor & Industries and a copy of the Unemployment Insurance Tax Rate notice from the Employment Security Department.
 - 1) If labor rates change during the course of the project or additional labor rates become required to complete the work, the Contractor shall submit new rates for approval.
 - 2. List of Equipment.
 - a. Submit for the Contractor and each subcontractor, a list of equipment and rates applicable to the scope of work to be performed. The equipment rates shall conform to the rates shown on Equipment Watch. A separate page from equipment watch detailing the hourly rate shall be submitted as backup documentation for each piece of equipment.
 - 1) If the list of equipment and/or equipment rates changes during the course of the project or additional equipment becomes required to complete the work, the Contractor shall submit a new list and rates for approval.
 - 3. No applications for payment or change orders will be processed for the Contractor until labor and equipment rates have been submitted and approved.

1.03 METHOD TO CALCULATE ADJUSTMENTS TO CONTRACT PRICE

- A. One of the following methods shall be used:
 - 1. Unit Price Method;
 - 2. Firm Fixed Price Method (Lump Sum); or,
 - 3. Time and Materials Method (Force Account).
- B. The Port preferred methods are firm fixed price or unit prices.

1.04 MINOR CHANGES IN THE WORK

- A. Engineer will issue a written directive authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.05 PROPOSAL REQUESTS

- A. Port-Initiated Proposal Requests: The Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Work Change Proposal Requests issued by Engineer are not instructions either to stop work in progress or to execute the proposed change.
 2. Contractor shall submit a written proposal within the time specified in the General Conditions. The proposal shall represent the Contractor's offer to perform the requested work, and the pricing set forth within the proposal shall represent full, complete, and final compensation for the proposed change and any impacts to any other Contract Work, including any adjustments in the Contract Time.
 - a. Include a breakdown of the changed work in sufficient detail that permits the Engineer to substantiate the costs.
 - 1) Generally, the cost breakdown should be divided into the time and materials categories listed in the General Conditions under Article 8.02.B for either Lump Sum Proposals or Force Account Proposals.
 - 2) For Unit Price Proposals, include the quantity and description of all work involved in the unit pricing being proposed, along with a not to exceed total cost.
 - b. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Proposals: If latent or differing site conditions require modifications to the Contract, the Contractor may initiate a claim by submitting a request for a change to the Engineer.
1. Notify the Engineer immediately upon finding differing conditions prior to disturbing the site.
 2. Provide follow-up written notification and differing site conditions proposal within the time frames set forth in the General Conditions.
 3. Provide the differing site condition change proposal in the same or similar manner as described above under 1.04.A.
 4. Comply with requirements in Section 00 26 00 Substitution Procedures if the proposed change requires substitution of one product or system for product or system specified.
 5. Proposal Request Form: Use form acceptable to Engineer.

1.06 PROCEEDING WITH CHANGED WORK

- A. The Engineer may issue a directive instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order per the General Conditions, Article 8.01.E.
1. The directive will contain a description of change in the Work and a not-to-exceed amount. It will designate the method to be followed to determine the change in the Contract Sum or the Contract Time.

1.07 CHANGE ORDER PROCEDURES

- A. Issuance of Change Order

1. On approval of the Contractor's proposal, and following successful negotiations, the Engineer will issue a Change Order for signature by the Contractor and execution by the Engineer.
 - a. The Contractor shall sign and return the Change Order to the Engineer within **four (4) days** following receipt of the Change Order from the Engineer. If the Contractor fails to return the signed Change Order within the allotted time, the Engineer may issue a Unilateral Change Directive.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes specifications for preparation, format, and submittal of Schedule of Values.
- B. The Schedule of Values will establish unit prices for individual items of work.
- C. The Schedule of Values will be the basis for payment of contract work.

1.02 PREPARATION

- A. To facilitate monthly pay requests, develop the Schedule of Values based on the Contractor's submitted Bid. The schedule of Values shall be used to provide an allocation of the Work for measurement and payment to a level of detail to ensure accurate payment for the Work accomplished.
- B. Obtain the agreement of the Engineer on the Schedule of Values. No payment will be made prior to an agreed upon Schedule of Values.
- C. Include an updated version of the Schedule of Values as changes occur. Update the Schedule of Values to include:
 - 1. Dollars earned and percent complete for the current progress payment period,
 - 2. Dollars earned and percent complete to-date, excluding the current progress payment period,
 - 3. Total dollars earned and percent complete to-date,
 - 4. Total dollars remaining, and
 - 5. Changes resulting from Change Orders.
- D. The total value of the line items in the Schedule of Values plus any approved Change Orders shall be equal to the current approved contract price.
- E. The value of stored material shall be identified in the Schedule of Values with both a material-purchase activity and a separate corresponding installation activity in the Construction Schedule(s).
- F. Include as exhibits, drawings or sketches as necessary, to better define the limits of pay items that are in close proximity and that have no clear boundary in the Contract Drawings.

1.03 SUBMITTAL

- A. Submit preliminary Schedule of Values within 10 days of the effective date of the Notice to Proceed.
- B. Submit corrected Schedule of Values within 10 days upon receipt of reviewed Schedule of Values.
- C. At the Engineer's request, submit documentation substantiating the cost allocations for line items within the Schedule of Values.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 SCHEDULE OF VALUES

- A. Submit the Schedule of Values in a form acceptable to the Engineer.

- B. Provide updated Schedule of Values as required by the Engineer and as indicated in the Contract Documents.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE

- A. The purpose of this section is to provide the framework for communication between the Port and the Contractor by defining the types and timing of administrative tasks, including meetings and other items related to communications.

1.02 NOTICE TO PROCEED

- A. Contract execution will be made per the requirements of the Contract Documents. Once the contract has been executed and all pre-work submittals have been received, the Engineer will issue a Notice to Proceed (NTP).
 - 1. In certain instances, the Engineer may issue to the Contractor a Limited NTP for specified elements of the work described in these Contract Documents.
- B. The Contractor shall submit all pre-work submittals within 10 days of contract execution. A list of pre-work submittals is located in section 01 33 00 3.02 (A).
 - 1. No contract time extension shall be granted for any delays in issuance of the NTP by the Engineer due to the Contractor's failure to provide acceptable submittals required by the Contract Documents.

1.03 COORDINATION

- A. The Contractor shall coordinate all its activities through the Engineer.
- B. The Contractor shall coordinate construction operations as required to execute the Work efficiently, to obtain the best results where installation of one part of the Work depends on other portions.

1.04 PROJECT MEETINGS

- A. Pre-Construction Meeting
 - 1. After execution of the contract, but prior to commencement of any work at the site, a mandatory one time meeting will be scheduled by the Engineer to discuss and develop a mutual understanding relative to the administration of the safety program, preparation of the Schedule of Values, change orders, RFI's, submittals, scheduling prosecution of the work. Major subcontractors who will engage in the work shall attend.
 - 2. Suggested Agenda: The agenda will include items of significance to the project. A sample agenda is attached to this section.
 - 3. Location of the Pre-Construction Meeting will be held at the Port of Tacoma Administration Building located at One Sitcum Plaza.
- B. Weekly Progress Meetings – Progress meetings include the Contractor, Engineer, consultants and others affected by decisions made.
 - 1. The Engineer will arrange meetings, prepare standard agenda with copies for participants, preside at meetings, record minutes and distribute copies within ten working days to the Contractor, meeting participants, and others affected by decisions made.
 - a. The Engineer will approve submitted meeting minutes in writing within 10 working days.

2. Attendance is required for the Contractor's job superintendent, major subcontractors and suppliers, Engineer, and representatives of the Port as appropriate to the agenda topics for each meeting.
3. Standard Agenda
 - a. Review minutes of previous meeting
 - b. Review of work progress
 - c. Field observations, problems, and decisions
 - d. Identification of problems that impede planned progress
 - e. Maintenance of Progress Schedule (3 weeks ahead; 1 week back)
 - f. Corrective measures to regain projected schedules
 - g. Planned progress during succeeding work period
 - h. Coordination of projected progress
 - i. Maintenance of quality and work standards
 - j. Effect of proposed changes on progress schedule and coordination
 - k. Demonstration that the project record drawings are up-to-date
 - l. Other business relating to the work

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. The Port and Contractor shall use the Port Contract Management application (e-Builder®) for electronic information exchange throughout the duration of the Contract, as later described.
 - 1. e-Builder® is a web-based application accessed via the web.
 - 2. The Contractor will receive up to two separate user accounts for access to e-Builder®.
 - 3. The joint use of this system is to facilitate and coordinate the electronic exchange of Requests for Information, Submittals, Change Order Proposals, Pay Applications, and project specific correspondence.

1.02 USER ACCESS LIMITATIONS

- A. Contractor's access to e-Builder® is granted and controlled by the Engineer.
 - 1. The users assigned by the Contractor to use e-Builder® shall be competent and experienced with the practices commonly employed in the industry for electronically submitting requests for information, submittals, product data, shop drawings and related items as required by the contract and the methods commonly used for project correspondence transmission and filing.
 - 2. Any users assigned by the Contractor whom the Engineer determines is incapable of performing the prescribed tasks in an accurate, competent and efficient manner will be removed upon request from the Engineer. The qualifications and identity of a replacement user shall be submitted within 24 hours for consideration by the Engineer. Once accepted by the Engineer, the user account will be modified accordingly.

1.03 CONTRACTOR TECHNOLOGY REQUIREMENTS

- A. The Contractor is responsible for providing and maintaining web enabled devices capable of running the desktop version of the e-Builder® website effectively.

1.04 CONTRACTOR SOFTWARE REQUIREMENTS

- A. The Contractor is responsible for providing and maintaining the following:
 - 1. An office suite that is Microsoft Office 2013 compatible for generation and manipulation of correspondence.
 - 2. A program capable of editing, annotating and manipulating Adobe pdf files for inserting the Contractor's review stamp, clouding and adding notation to the files as necessary for review by the Engineer.

1.05 CONTRACTOR RESPONSIBILITY

- A. Provide all the equipment, internet connections, software, personnel and expertise required to support the use of e-Builder® as described in the Contract documents.

1.06 PORT RESPONSIBILITY

- A. Provide the Contractor with the following:
 - 1. All forms necessary for application to obtain permissions to access e-Builder® as described above.
 - 2. Information, basic user guides and requirements on methods for using e-Builder®.
 - 3. Instruction for the Contractor's staff utilizing e-Builder®.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 UTILIZATION OF E-BUILDER®

- A. The Contractor shall provide required information in a timely manner that also supports the project schedule and meets the requirements of the Contract.
- B. The Contractor shall provide and maintain competent and qualified personnel to perform the various tasks required to support the work within e-Builder®.
- C. The Port will not be liable for any delays associated from the usage of e-Builder® including, but not limited to: slow response time, Port maintenance and off-line periods, connectivity problems or loss of information. Under no circumstances shall the usage of e-Builder® software be grounds for a time extension or cost adjustment to the contract.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes the requirements to provide a preliminary schedule and construction progress schedule, bar chart type.

1.02 SUBMITTALS

- A. Within 10 days following execution of the contract, submit preliminary baseline schedule defining planned operations.
- B. If the preliminary baseline schedule requires revision after review, submit revised baseline schedule within 10 days.
- C. Within 20 days after review of preliminary baseline schedule, submit draft of proposed complete baseline schedule for review.

1.03 QUALITY ASSURANCE

- A. Scheduler: Contractor's personnel or Consultant specializing in Critical Path Method (CPM) scheduling with one year's minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.

1.04 SCHEDULE FORMAT

- A. The baseline project schedule shall be produced using the CPM format.
- B. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
- C. Sheet Size: Multiples of 11 x 17 (280 x 432 mm).

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 BASELINE SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.
- B. The baseline project schedule shall include all the activities listed in the Schedule of Values and be directly related to items listed in the Bid Form. The Contractor is encouraged to add sufficient activities to facilitate a clear understanding of the means and methods planned for the various work items.
- C. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction and critical path. At a minimum it shall include and show the following:
 - 1. A time scale showing the elementary work items needed to complete the work;
 - 2. Estimated time durations for each activity, defined as any single identifiable work step within the project;
 - 3. A graphical network diagram showing the logical sequence of activities, their precedence relationships, and estimated float or leeway available for each;
 - 4. The different categories of work as distinguished by crew requirements, equipment requirements, and construction materials; and

- 5. The different areas of responsibility, such as distinctly separate or subcontracted work, and identifiable subdivisions of work.
- D. It shall be maintained and updated as necessary to accurately reflect past progress and the most probable future progress.
- E. Activities shown shall include submittals, milestones, and sufficient task breakdown for major components of work.
- F. Identify work of separate stages and other logically grouped activities.
- G. Provide sub-schedules to define critical portions of the entire schedule.
- H. Provide separate schedule of submittal dates for shop drawings, product data, samples, owner-furnished products, products identified, and dates reviewed submittals will be required from the Engineer. Indicate decision dates for selection of finishes.

3.02 PROGRESS SCHEDULE

- A. From the regularly-maintained baseline project schedule, progress schedules showing a three-week look-ahead, one-week look-back, shall be submitted and distributed at the weekly progress meetings. The progress schedule shall represent a practical plan to complete the work shown within the contract work window presented. At a minimum, the presentation, typically a Gantt-style chart, shall convey the task durations, a logical work sequence, task interdependencies, and identify important or critical constraints.
- B. Submittal and distribution of progress schedules will be understood to be the Contractor's representation that the scheduled work meets the requirements of the contract documents and that the work will be executed in the manner and sequence presented, and over the durations indicated.
- C. The scheduling, coordination, and execution of construction in accordance with the contract documents are the responsibility of the Contractor. The Contractor shall involve, coordinate, and resolve scheduling with all subcontractors, material suppliers, or others affected in development of the progress schedules.
- D. The progress schedule shall be used for coordination purposes for inspection and testing purposes as well as validation of work progress against the baseline schedule.

3.03 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- D. Indicate changes required to maintain Date of Substantial Completion.
- E. Submit reports required to support recommended changes.
- F. Provide an updated progress schedule with each Pay Application.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the requirements to provide a submittal log and project submittals.

1.02 SUBMITTAL LOG

- A. Contractor shall, within 10 days prepare and submit for Engineer approval a detailed log of all the submittals required under this Contract, along with any other submittals identified by the Port or Contractor. The log shall include, but not be limited to, schedules, required construction Work plans, equipment and material cut sheets, shop drawings, project record documents, test results, survey records, record drawings, results of QC testing, and all other items for which a submittal is required. The submittal log shall be organized by CSI Specification Division, and Section number and include the following information:
1. Submittal Number
 2. Item identification
 3. Scheduled submittal date, date returned, date approved
 4. Date submittal or material is needed
 5. After the submittal log is reviewed and approved by the Engineer, it shall become the basis for the submittal of all items by Contractor.

1.03 COMPLIANCE

- A. Failure to comply with these requirements shall be deemed as the Contractor's agreement to furnish the exact materials specified or materials selected by the Engineer based on these specifications.

1.04 SHOP DRAWINGS AND MANUFACTURERS' LITERATURE

- A. The Port will not accept shop drawings that prohibit the Port from making copies for its own use.
- B. Shop drawings shall be prepared accurately and to a scale sufficiently large to indicate all pertinent features of the products and the method of fabrication, connection, erection, or assembly with respect to the Work.
- C. All drawings submitted to the Engineer for approval shall be drawn to scale as ANSI D.
- D. Required electronic formats for these drawings are as follows:
1. AutoCad DWG
 2. PDF - Formatted to print to half-scale using 11x17 paper
- E. Catalog cuts or brochures 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. General catalogs or partial lists will not be accepted. Manufacturers' original electronic files are required for submitting.

1.05 SUBMITTAL REVIEW

- A. After review of each of Contractor's submittals, the submittal will be returned to Contractor with a form indicating one or more of the following:
1. No Exceptions Taken - Means, accepted subject to its compatibility with future submittals and additional partial submittals for portions of the work not covered in this submittal. But it

- does not constitute approval or deletion of specified or required items not shown in the partial submittal.
2. Make Corrections Noted - Same as Item 1, except that minor corrections as noted shall be made by Contractor.
 3. Reviewed - Submittal has been reviewed by the Port, does not constitute approval, and the Contractor is responsible for requirements in submittal.
 4. Review as Noted - Submittal has to be reviewed by the Port with comments as noted.
 5. Revise and Resubmit - Means, rejected because of major inconsistencies or errors. Resolve or correct before next submittal.
 6. Rejected - Means, submitted material does not conform to the Contract Documents in a major respect (e.g., wrong material, size, capacity, model, etc.).
- B. Submittals marked "No Exceptions Taken," "Make Corrections Noted," or "Reviewed as Noted" authorizes Contractor to proceed with construction covered by those data sheets or shop drawings with corrections, if any, incorporated.
- C. When submittals or prints of shop drawings have been marked "Revise and Resubmit" or "Rejected," Contractor shall make the necessary corrections and submit required copies. Every revision shall be shown by number, date, and subject in a revision block, and each revised shop drawing shall have its latest revision numbers and items clearly indicated by clouding around the revised areas on the shop drawing.
- D. Submittals authorized by the Engineer do not in any case supersede the Contract Documents. The approval by the Engineer shall not relieve the Contractor from responsibility to conform to the Drawings or Specifications, or correct details when in error, or ensure the proper fit of parts when installed. A favorable review by the Port of shop drawings, method of work, or information regarding material and equipment Contractor proposes to furnish shall not relieve Contractor of its responsibility for errors therein and shall not be regarded as assumption of risk or liability by the Port or its officers, employees, or representatives. Contractor shall have no claim under the Contract on account of failure or partial failure, or inefficiency or insufficiency of any plan or method of work, or material and equipment so accepted. Favorable review means that the Port has no objection to Contractor using, upon its own full responsibility, the plan or method of work proposed, or furnishing the material and equipment proposed.
- E. It is considered reasonable that the Contractor's submittals shall be complete and acceptable by at least the second submission of each submittal. The Port reserves the right to deduct monies from payments due Contractor to cover additional costs for review beyond the second submission.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PREPARATION OF SUBMITTALS

- A. The Contractor shall submit all shop drawings, catalog cuts, brochures and physical samples using e-Builder® (a web based construction management software). All post-document-generated notations such as notes, arrows, stamps, clouding, or other items, are required to be shown directly on the submittal document. **Each submittal shall be accompanied by a transmittal developed within the e-Builder® software.**

- B. A separate submittal shall be prepared for each product or procedure and shall be further identified by referencing the Specification Section and paragraph number and each submittal shall be numbered consecutively.
- C. Product submittals that cannot be accomplished electronically shall be submitted electronically without attachments, marked as being hand delivered, and accompanied by a printed version of a transmittal.
- D. Shop and detail drawings shall be submitted in related packages. All equipment or material details which are interdependent, or are related in any way, must be submitted indicating the complete installation. Submittals shall not be altered once marked "No Exceptions Taken" Revisions shall be clearly marked and dated. Major revisions must be submitted for approval.
- E. The Contractor shall thoroughly review all shop and detail drawings, prior to submittal, to assure coordination with other parts of the work.
- F. Components or materials which require shop drawings and which arrive at the job site prior to approval of shop drawings shall be considered as not being made for this project and shall be subject to rejection and removal from the premises.
- G. All submittal packages including, but not limited to, product data sheets, mix designs, shop drawings and other required information for submittal must be submitted, reviewed and approved before the relevant scheduled task may commence. It is the responsibility of the Contractor to provide the submittal information which may drive a task on the construction schedule to submit items well enough in advance as to provide adequate time for review and comment from the Engineer without adversely impacting the construction schedule.
- H. When completing the e-Builder® submittal form, a Date Due field is required to be completed. This field is intended to inform the Port of the urgency of the submittal. Failure of the Port to return the submittal by the date provided by the Contractor will not be considered grounds for a contract time extension.

3.02 PRE-WORK SUBMITTALS

- A. Prior to issuance of Notice to Proceed, the following submittals must be submitted and accepted.
 - 1. Per 00 72 00, Progress Schedule
 - 2. Per 00 73 63, Emergency Contact Numbers
 - 3. Per 01 35 29, Health and Safety Plan (HASP)
 - 4. Per 01 35 29, Spill Prevention and Countermeasures Plan (SPCC)
 - 5. Per 01 35 47, List of equipment and EPA emission Certification Letter
- B. Per 01 57 13, prior to the first task in the field may begin, the Construction SWPPP must be submitted and accepted.

3.03 MAINTENANCE OF SUBMITTAL LOG

- A. Prepare and submit for Port review a detailed submittal log conforming to the requirements of paragraph 1.02 of this section. When approved by the Engineer, use the submittal log to track the transmittal of submittals to the Engineer, the receipt of submittal comments from the Engineer, and all subsequent action with respect to each submittal. Provide an updated copy of the submittal log to the Engineer during each weekly progress meeting, unless otherwise approved by the Engineer.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. The work includes the requirements for health and safety provisions necessary for all work at the site for this project. The work also includes compliance with all laws, regulations and ordinances with respect to safety, noise, dust, fire and police action, civil disobedience, security or traffic.
- B. Some of the work tasks may place workers in the potential position of coming into contact with regulated building materials, waste, or environmental media. Detailed information regarding the known nature and extent of refuse and regulated materials in the project area is included in Section 00 31 26 Existing Hazardous Material Information.
- C. The Contractor shall monitor site conditions for indications of identified and other potentially hazardous, dangerous, and/or regulated materials (suspicious material). Indicators of suspicious material include, but are not limited to, refuse, oily sheen or coloring on soil or water, or oily or chemical odors. If suspicious materials are encountered, the Contractor shall stop all work in that area and notify the Engineer immediately.

1.02 SUBMITTALS

- A. Prior to the start of any Work, the Contractor shall provide a site specific Health and Safety Plan (HASP), which meets all the requirements of local, state and federal laws, rules and regulations. The HASP shall address all requirements for general health and safety and shall include, but not be limited to:
 - 1. Description of work to be performed and anticipated chemical and/or physical hazards associated with the work;
 - 2. Map of the site(s) illustrating the location of the anticipated hazards and areas of control for those hazards (including containments, exclusion/work zones, and contaminant reduction/decontamination zones);
 - 3. Hazardous material inventory and safety data sheets (SDSs) for all chemicals which will be brought on site;
 - 4. Signage appropriate to warn site personnel and visitors of anticipated site hazards;
 - 5. Documentation that the necessary workers have completed the required Hazardous Waste Operations and Emergency Response (HAZWOPER) training;
 - 6. Engineering controls/equipment to be used to protect against anticipated hazards;
 - 7. Personal protective equipment and clothing including head, foot, skin, eye, and respiratory protection;
 - 8. Procedures which will be used for:
 - a. Lockout/Tagout,
 - b. Fall protection,
 - c. Hot work,
 - d. Asbestos and lead hazards,
 - e. Suspicious materials and/or unidentified materials,
 - f. Odorous conditions and toxic gases;

9. Site housekeeping procedures and personal hygiene practices;
 10. Personnel and equipment decontamination plan;
 11. Administrative controls;
 12. Emergency plan including locations of and route to nearest hospital;
 13. Name and qualification of person preparing the HASP and person designated to implement and enforce the HASP;
 14. Lighting and sanitation; and
 15. Signatory page for site personnel to acknowledge receipt, understanding, and agreement to comply with the HASP.
- B. Prior to the start of any Work, the Contractor shall provide a site specific Spill Prevention, Control and Countermeasures (SPCC) Plan, which meets all the requirements of local, state and federal laws, rules and regulations.
- C. Contractor may submit the HASP and SPCC Plan as one comprehensive document or may submit the plans as separate documents.

1.03 POTENTIAL CHEMICAL HAZARDS

A. Site Contaminants

1. The Contractor must provide site workers with Hazard Communication standard information for potential site contaminants (in accordance with WAC 296-843). The Contractor shall ensure that all site workers are aware of and understand this information. Additional information shall also be provided by the Contractor, as necessary, to meet the Hazard Communication Standard and HASP requirements as noted in WAC 296-901-14010 and 296-843. Workers shall be instructed on basic methods or techniques to assist in detecting suspicious material.

B. Potential Exposures Routes

1. Inhalation: Airborne dusts, fibers, particulates, or vapors may be released during site activities. Inhalation of airborne inorganic arsenic may occur.
2. Skin and Eye Contact: Dusts generated during site work activities may settle on the skin or clothing of site workers. Also, workers may contact potentially regulated sediments, or water, in the normal course of their work. Precautions to prevent skin or eye contact with hazardous materials will be included in the HASP. Arsenic exposure may cause skin irritation.
3. Ingestion: Inadvertent transfer of site contaminants from hands or other objects to the mouth could occur if site workers eat, drink, smoke, chew tobacco, or engage in similar activities in work areas. This could result in ingestion of site contaminants. Precautions to prevent accidental or inadvertent ingestion of hazardous materials will be included in the HASP.

- C. Chemical hazards may also result from Contractor operations resulting in inadvertent release of fuel, oil, or other chemicals in a manner that would expose workers.

1.04 POTENTIAL PHYSICAL AND OTHER HAZARDS

- A. The Work of the Contractor is described elsewhere in these specifications. Precautions to prevent all anticipated physical and other hazards, including heavy equipment shall be addressed in the HASP.

- B. Specific aspects of construction resulting in physical hazards anticipated for this project include, but are not limited to the following:
 - 1. Operation of equipment, including excavators, loaders, cranes, forklifts and related equipment, presenting hazards of entrapment, ensnarement, and being struck by moving parts.
- C. Other anticipated physical hazards:
 - 1. Heat stress, such as that potentially caused by impermeable clothing (may reduce the cooling ability of the body due to evaporation reduction);
 - 2. Cold stress, such as that potentially caused during times when temperatures are low, winds are high, especially when precipitation occurs during these conditions;
 - 3. Biological hazards, such as mold, insect stings, or bites, poisonous plants (i.e., poison oak, sumac, etc.); and
 - 4. Trips and falls.
- D. Firewatch Procedures
 - 1. A firewatch is implemented to ensure the fire-safety of a building, structure or area in the event of any act (e.g., hot work) or situation instigating an increased risk of fire. The term "firewatch" is used to describe a dedicated person or persons whose sole responsibility is to look for fires within an established area.
 - 2. A firewatch is required when all hot work is being performed.
 - 3. The firewatch is to perform the following functions:
 - a. Firewatch personnel are to keep diligent watch for fires in the general area where the work is being performed.
 - b. Firewatch personnel are to be familiar with facilities and procedures for sounding an alarm in the event of a fire.
 - c. Firewatch personnel are to have fire extinguishing equipment readily available and be trained in its use, including practice on test fires.
 - d. Firewatch personnel are to inspect the site prior to hot work activities to ensure that combustibles are removed or covered and that any nearby holes or penetrations in the ground and walls are sealed or covered with fire-safe materials.
 - e. Firewatch personnel are to watch for fires in all exposed areas. If a fire is located, firewatch personnel are to sound the evacuation alarm immediately and after that try to extinguish the fire, only when obviously within the capacity of the equipment available.
 - f. The firewatch is to be maintained for at least 120 minutes after completion of hot work such as cutting, welding, or other open flame operations, in order to detect and extinguish smoldering and flaming fires. During this time, the work area and other adjacent areas where sparks or flame may have traveled are to be searched for signs of combustion.

PART 2 - PRODUCTS

2.01 SAFETY SIGNAGE

- A. The Contractor shall provide signage at strategic locations within the project site to alert jobsite workers and visitors of the work, associated hazards, and required precautions.

2.02 PRODUCTS SPECIFIED FOR HEALTH AND SAFETY

- A. Provide the equipment and supplies necessary to support the work as described in the site-specific HASP. Equipment and supplies may include, but are not limited to:
 - 1. All chemicals to be used on site;
 - 2. A hazardous materials inventory and SDSs for the chemicals brought on site;
 - 3. Fencing and barriers;
 - 4. Warning signs and labels;
 - 5. Fire extinguishers;
 - 6. Equipment to support hot work;
 - 7. Equipment to support lockout/tagout procedures;
 - 8. Scaffolding and fall protection equipment;
 - 9. Personal protective equipment (hard hats, foot gear, skin, eye, and respiratory protection);
 - 10. Demolition equipment and supplies;
 - 11. First aid equipment;
 - 12. Spill response and spill prevention equipment; and
 - 13. Field documentation logs/supplies.

PART 3 - EXECUTION

3.01 WORK AREA PREPARATION

- A. Contractor shall comply with health and safety rules, regulations, ordinances promulgated by the local, state, and federal government, the various construction permits, and other sections of the Contract Documents. Such compliance shall include, but not be specifically limited to: any and all protective devices, equipment and clothing; guards; restraints; locks; latches; switches; and other safety provisions that may be required or necessitated by state and federal safety regulations. The Contractor shall determine the specific requirements for safety provisions and shall have inspections and reports by the appropriate safety authorities to be conducted to ensure compliance with the intent of the regulations.
- B. Contractor shall inform employees, subcontractors and their employees of the potential danger in working with any potentially regulated materials and equipment at the project site.
 - 1. The Contractor shall not proceed with jobsite activities that might result in exposure of employees to hazardous materials until the HASP is reviewed by the Engineer.
- C. All Contractor employees expected to work at the jobsite or individuals entering the jobsite shall read the Contractor HASP before they enter the jobsite, and will sign a statement provided by the Contractor that they have read and understand the HASP. A copy of the Contractor's HASP shall be readily available at the site at all times the work is being performed.

- D. Contractor shall perform whatever work is necessary for safety and be solely and completely responsible for conditions of the job site, including safety of all persons (including employees of the Engineer, Engineer's Representative, and Contractor) and property during the Contract period. This requirement applies continuously and is not limited to normal working hours.
- E. The Engineer's review of the Contractor's performance does not include an opinion regarding the adequacy of, or approval of, the Contractor's safety supervisor, the site-specific HASP, safety program or safety measures taken in, on, or near the job site.
- F. Accidents causing death, injury, or damage must be reported immediately to the Engineer and the Port Security Department in person or by telephone or messenger. In addition, promptly report in writing to the Engineer all accidents whatsoever arising out of, or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of witnesses.
- G. If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing within 24 hours after occurrence, to the Engineer, giving full details of the claim.

3.02 SITE SAFETY AND HEALTH OFFICER

- A. Contractor shall provide a person designated as the Site Safety and Health Officer, who is thoroughly trained in rescue procedures, has a minimum current 40-hour HAZWOPER certification (minimum), and trained to use all necessary safety equipment, air monitoring equipment, and gas detectors. The person must be available and/or present at all times while work is being performed, and conduct testing, as necessary.
- B. The Site Safety and Health Officer shall be empowered with the delegated authority to order any person or worker on the project site to follow the safety rules. Failure to observe these rules is sufficient cause for removal of the person or worker(s) from this project.
- C. The Site Safety and Health Officer is responsible for determining the extent to which any safety equipment must be utilized, depending on conditions encountered at the site.

3.03 SPILL PREVENTION AND CONTROL

- A. The Contractor shall be responsible for prevention, containment and cleanup of spilling petroleum and other chemicals/hazardous materials used in the Contractor's operations. All such prevention, containment and cleanup costs shall be borne by the Contractor.
- B. The Contractor is advised that discharge of oil, fuel, other petroleum, or any chemicals/hazardous materials from equipment or facilities into state waters or onto adjacent land is not permitted under state water quality regulations.
- C. In the event of a discharge of oil, fuel or chemicals/hazardous materials into waters, or onto land with a potential for entry into waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup shall include proper disposal of all spilled material and used cleanup materials.
- D. The Contractor shall, at a minimum, take the following measures regarding spill prevention, containment and cleanup:
 - 1. Fuel hoses, lubrication equipment, hydraulically operated equipment, oil drums and other equipment and facilities shall be inspected regularly for drips, leaks or signs of damage, and shall be maintained and stored properly to prevent spills. Proper security shall be maintained to discourage vandalism.

2. All land-based chemical, oil and products' storage tanks shall be diked, contained and/or located so as to prevent spills from escaping into the water. Dikes and containment area surfaces shall be lined with impervious material to prevent chemicals or oil from seeping through the ground and dikes.
 3. All visible floating sheen shall be immediately contained with booms, dikes or other appropriate means and removed from the water prior to discharge into state waters. All visible spills on land shall be immediately contained using dikes, straw bales or other appropriate means and removed using sand, sawdust or other absorbent material, which shall be properly disposed of by the Contractor. Waste materials shall be temporarily stored in drums or other leak-proof containers after cleanup and during transport to disposal. Waste materials shall be disposed offsite in accordance with applicable local, state and federal regulations.
 4. In the event of any oil or product discharges into public waters, or onto land with a potential for entry into public waters, the Contractor shall immediately notify the Port Security at their listed 24-hour response number:
 - a. Port Security: 253-383-9472
- E. The Contractor shall maintain the following materials (as a minimum) at each of the project sites:
1. Oil-absorbent booms: 100 feet;
 2. Oil-absorbent pads or bulk material, adequate for coverage of 200 square feet of surface area;
 3. Oil-skimming system; and
 4. Oil dry-all, gloves and plastic bags.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. The Work includes the requirements to provide air and noise control measures until Final Completion of the Work.

1.02 SUBMITTALS

- A. Prior to Notice to Proceed, the Contractor shall submit a list of equipment to be used on the project and certify in writing that all equipment on the list and any additional equipment, including Contractor's, subcontractors or supplier's equipment, shall meet the requirements of 3.01 below.

PART 2 - PRODUCTS - NOT USED

PART 3 – EXECUTION

3.01 AIR POLLUTION CONTROL

- A. The Contractor shall meet or exceed EPA Tier 2 off-road diesel engine emission standards for off-road equipment ≥ 25 hp and meet or exceed EPA 1994 on-road diesel engine emission standards for on-road equipment except as follows:
 - 1. Equipment being used in an emergency or public safety capacity
- B. The Contractor shall not discharge smoke, dust, and other hazardous materials into the atmosphere that violate local, state or federal regulations.
- C. No vehicles can idle for more than 5 consecutive minutes, except as follows:
 - 1. Idling is required to bring or maintain the equipment to operating temperature;
 - 2. Engine idling is necessary to accomplish work for which the equipment was designed (i.e. operating a crane); or
 - 3. Idling vehicles being used in an emergency or public safety capacity.
- D. The Contractor shall minimize nuisance dust by cleaning, sweeping, vacuum sweeping, sprinkling with water, or other means. Equipment for this operation shall be on the job site or available at all times.

3.02 NOISE CONTROL

- A. The Contractor shall comply with all local controls and noise level rules, regulations and ordinances which apply to work performed pursuant to the Contract.
- B. All internal combustion engines used on the job shall be equipped with a muffler of a type recommended by the manufacturer.

END OF SECTION

PART 1 - GENERAL

1.01 PERMITS, CODES, AND REGULATIONS

- A. The following permits/approvals are on file and incorporated into the Contract:
 - 1. City of Tacoma Building Permits; BLDCA18-0490, BLDCA18-0491 and BLDCA18-0492, See Appendix A
 - 2. State Environmental Policy Act (SEPA) Compliance - Exempt, See Appendix E
 - 3. Shoreline Management Act / Critical Areas Compliance - Exempt, See Appendix D
- B. Conform with the requirements of listed permits and additional or other applicable permits, codes, and regulations as may govern the Work.
- C. Obtain and pay fees for licenses, permits, inspections, and approvals required by laws ordinances, and rules of appropriate governing or approving agencies necessary for proper completion of Work (other than those listed under item 1.01.A above and Special Inspections called for by the International Building Code).
- D. Conform with current applicable codes, regulations and standards, which is the minimum standard of quality for material and workmanship. Provide labor, materials, and equipment necessary for compliance with code requirements or interpretations, although not specifically detailed in Drawings or specifications. Be familiar with applicable codes and standards prior to bidding.
- E. Process through Engineer, request to extend, modify, revise, or renew any of the permits (listed in 1.01.A above). Furnish requests in writing and include a narrative description and adequate Drawings to clearly describe and depict proposed action. Do not contact regulatory agency with requests for permit extensions, modifications, revisions, or renewals without the prior written consent of the Engineer.

1.02 VARIATIONS WITH CODES, REGULATIONS AND STANDARDS

- A. Nothing in the Drawings and specifications permits Work not conforming to codes, permits, or regulations. Promptly submit written notice to the Engineer of observed variations or discrepancies between the Contract Documents and governing codes and regulations.
- B. Appropriate modifications to the Contract Documents will be made by Change Order to incorporate changes to Work resulting from code and/or regulatory requirements. Contractor assumes responsibility for Work contrary to such requirements if Work proceeds without notice.
- C. Contractor is not relieved from complying with requirements of Contract Documents which may exceed, but not conflict with requirements of governing codes.

1.03 COORDINATION WITH REGULATORY AGENCIES

- A. Coordinate Work with appropriate governing or regulating authorities and agencies.
- B. Provide advance notification to proper officials of Project schedule and schedule revisions throughout Project duration, in order to allow proper scheduling of inspection visits at proper stages of Work completion.
- C. Regulation coordination is in addition to inspections conducted by Engineer. Notify Engineer at least 48 hours in advance of scheduled inspections involving outside regulating officials, to allow Engineer to be present for inspections.

PART 2 - PRODUCTS - NOT USED

PART 3 – EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes requirements relating to referenced standards.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue specified in this section, except where a specific date is established by applicable code.
- C. Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.
- D. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 QUALITY CONTROL FOR COMPLIANCE:

- A. The Contractor shall perform such detailed examination, inspection, quality control and assurance of the Work as to ensure that the Work is progressing and is being completed in strict accordance with the Contract Documents. The Contractor shall plan and lay out all Work in advance of operations so as to coordinate all Work without delay or revision. The Contractor shall be responsible for inspection of portions of the Work already performed to determine that such portions are in proper condition to receive subsequent Work. Under no conditions shall a portion of Work proceed prior to preparatory work having been satisfactorily completed. The Contractor shall ensure that the responsible Subcontractor has carefully examined all preparatory work and has notified the Contractor (who shall promptly notify the Port in writing) of any defects or imperfections in preparatory work that will, in any way, affect completion of the Work.

1.02 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop Drawings or as instructed by the manufacturer.
- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.04 REFERENCES AND STANDARDS

- A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.

- D. Neither the contractual relationships, duties or responsibilities of the parties in Contract, nor those of the Engineer, shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING SERVICES

- A. Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities.
 - 1. Neither observations by an inspector retained by the Port, the presence or absence of such inspector at the site, nor inspections, tests, or approvals by others, shall relieve the Contractor from any requirement of the Contract Documents, nor is any such inspector authorized to change any term or condition of the Contract Documents.
- B. Necessary materials testing shall be performed by an independent testing laboratory during the execution of the Work and paid for by the Port of Tacoma, unless otherwise specified. Access to the area necessary to perform the testing and/or to secure the material for testing, shall be provided by the Contractor.
- C. Testing does not relieve Contractor from performing work to contract requirements.
- D. Re-testing required because of non-conformance to specified requirements will be charged to the Contractor by deducting testing charges from the Contract Sum via Change Order.
- E. Material testing for initial material approval will be performed by an independent, certified laboratory and paid for by the Contractor. These tests must be dated within six (6) months of the submittal date.
- F. Subsequent sampling and testing, required as the work progresses to ensure continual control of materials and compliance with all requirements of the Contract documents, shall be the responsibility of the Port, except as required by other sections of these Specifications.

1.06 MANUFACTURER'S FIELD SERVICES

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up equipment, test, and adjust and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer subject to approval of Engineer.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes requirements relating to the following:
 - 1. Temporary utilities,
 - 2. Temporary telecommunications services,
 - 3. Temporary sanitary facilities,
 - 4. Temporary Controls: Barriers, enclosures, and fencing, and
 - 5. Field offices.

1.02 TEMPORARY UTILITIES

- A. Provide and pay for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
- B. Existing facilities shall not be used.
- C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to allow for efficient communication via telephone and the internet with the Port and outside parties at all times for the duration of the project.

1.04 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.
- C. At end of construction, remove facilities and restore site to same or better condition as originally found.

1.05 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for Port's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

- A. Construction: Contractor's option.
- B. Provide 6 ft. (1.8 m) high fence around construction site; equip with vehicular gates with locks.

1.07 EXTERIOR ENCLOSURES

- A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections,

and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.08 INTERIOR ENCLOSURES

- A. Provide temporary partitions and ceilings to separate work areas from the Port-occupied areas, to prevent penetration of dust and moisture into the Port-occupied areas, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces

1.09 TREE AND VEGETATION PROTECTION

- A. The Contractor shall carefully protect existing trees and vegetation noted to remain from damage by construction activities.
- B. If a tree or vegetation designated for protection is damaged or destroyed in the course of the Work, the Contractor shall replace it with new comparable in species and size as required by the Engineer. Where it is necessary to replace trees or vegetation damaged by construction, the Contractor shall bear all expenses associated with replacement and establishment of the replacement vegetation.

1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to final inspection.
- B. Clean and repair damage caused by installation or use of temporary work.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes requirements relating to the following:
 - 1. Access roads
 - 2. Parking
 - 3. Construction parking controls
 - 4. Traffic Control
 - 5. Maintenance
 - 6. Removal, repair
 - 7. Mud from site vehicles

PART 2 - PRODUCTS

2.01 SIGNS, SIGNALS, AND DEVICES

- A. Post Mounted and Wall Mounted Traffic Control and Informational Signs, as specified.
- B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdictions.

PART 3 - EXECUTION

3.01 ACCESS TO SITE

- A. Contractor shall conduct all business through the gate assigned by the Engineer.
 - 1. The Contractor may be required to relocate entry and related work areas as required by Port Operations.
- B. Provide unimpeded access for emergency vehicles. Maintain 20 foot (6 m) width driveways with turning space between and around combustible materials.
- C. Provide and maintain access to fire hydrants free of obstructions.

3.02 PARKING

- A. All Contractor's employee cars and work vehicles will be parked on-site as designated by the Engineer.

3.03 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles, and Port operations.
- B. Prevent parking on or adjacent to access roads or in non-designated areas.

3.04 MAINTENANCE

- A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, Products, mud, snow, and ice.
- B. Maintain existing paved areas used for construction. Promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.05 REMOVAL, REPAIR

- A. Repair existing facilities damaged by use, to original condition.
- B. Repair damage caused by installation.

3.06 PUBLIC STREET AND ONSITE ROADWAY CLEANING

- A. The Contractor shall be responsible for preventing dirt and dust escaping from trucks and other vehicles operating on or departing the project site by sweeping, covering dusty loads, washing truck tires, and all other reasonable methods.
- B. In the event that the above requirements are violated and no action is taken by the Contractor after notification of infraction by the Engineer, the Port reserves the right to have the streets, roadways, and other paved surfaces in question cleaned by others and have the expense of the operation charged to the Contractor.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. The Work shall consist of planning, installing, inspecting, maintaining and removing Temporary Erosion and Sediment Control (TESC) Best Management Practices (BMPs) to prevent pollution of air and water; and to control, respond to, and dispose of eroded sediment and turbid water during the term of the Contract.
- B. These TESC requirements shall apply to all areas associated with the Work, including, but not limited to, the following:
 - 1. Work areas;
 - 2. Equipment and material storage areas;
 - 3. Staging areas;
 - 4. Discharge points within or adjacent to the work areas that are impacted by stormwater runoff from the site.
- C. Acceptance of TESC plans does not constitute an approval of permanent Work or drainage design (e.g., size and location of roads, pipes, restrictors, channels, retention facilities, utilities, etc.).
- D. Contractor shall read and conform to all requirements set forth in Washington Department of Ecology's (Ecology) NPDES General Permit for Discharges Associated with Construction Activities (CSGP).

1.02 REFERENCES

- A. The rules, requirements, and regulations that apply to this Work include, but are not necessarily limited to the following:
 - 1. Washington Department of Ecology, "Stormwater Management Manual for Western Washington," current version.
 - 2. Department of Ecology NPDES General Permit for Discharges Associated with Construction Activities, current version.
 - 3. Washington State Department of Transportation, current version, Standard Specification M41-10, Division 8-01 Erosion Control and Water Pollution Control.
 - 4. Pierce County Stormwater and Site Development Manual, current version (if applicable).

1.03 SUBMITTALS

- A. A Construction Stormwater Pollution Prevention Plan (SWPPP), as required by NPDES permit;
 - 1. Contractor shall be responsible for updating the project SWPPP during construction to reflect the required changes to BMPs, as needed, to comply with the CSGP at no additional cost to the Port.
- B. A copy of all Contractor site inspection logs and monthly Discharge Monitoring Reports (DMRs).

PART 2 – PRODUCTS

PART 3 – EXECUTION

3.01 GENERAL

- A. The Contractor must comply with the Port's Phase I Municipal Stormwater Permit. The Contractor shall be the responsible Operator/Permittee for the duration of the project.
- B. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply as determined by the Engineer.
- C. Contractor shall be solely responsible for all BMP modifications and upgrades to comply with the CSGP and the requirements of this Section, at no additional cost to the Port.
- D. Contractor shall be solely responsible for any damages and fines incurred because of Contractor, subcontractor, or supplier actions in implementing the requirements of this Section.
- E. The Contractor shall be solely responsible for schedule impacts incurred because of Contractor, subcontractor, or supplier actions in implementing the requirements of this Section.

3.02 TEMPORARY EROSION AND SEDIMENT CONTROL DEVELOPMENT

- A. Contractor shall prepare and submit a site-specific SWPPP prior to initiating any ground disturbing activities.
 - 1. The SWPPP describes construction activities and sequencing, and the proposed Temporary and Permanent Erosion and Sediment Control measures. If there are any changes to BMPs or personnel on the site, Contractor must update the SWPPP and be prepared to submit the SWPPP to the Port and Ecology upon request.
 - 2. The SWPPP shall consist of planning, installing, inspecting, maintaining, and removing TESC BMPs per Volume II of the Stormwater Management Manual for Western Washington (current version) or equivalent. The BMPs shown in the Drawings are the minimum required to prevent pollution of air and water, to control peak volumetric flow rates and velocity of stormwater, and to control, respond to, and dispose of eroded sediment and turbid water during the term of the Contract.
 - 3. A SWPPP template is available to the Contractor for this purpose. The template was prepared by the Port to meet part of the National Pollution Discharge Elimination System (NPDES) stormwater permit requirements for the project. Contractor may use the applicable Port template to prepare the project SWPPP or prepare their own SWPPP. If the Contractor elects to prepare their own SWPPP, it must meet or exceed the control measures required by Ecology (reference Ecology's Stormwater Management Manual for Western Washington, current version).
 - 4. Because this Project will disturb less than 1 acre of land, the Port's short form template will meet the project SWPPP requirements. The SWPPP short form template is included in Appendix C.
 - 5. If Contractor chooses to write a SWPPP separate from the Port-provided SWPPP, it must comply with all of the requirements set forth by the CSGP.
- B. Contractor shall develop project-specific TESC BMPs and incorporate them into the SWPPP. Contractor shall address the following issues as part of developing and implementing the BMPs:

1. TESC BMPs must meet the requirements in Ecology's Volume II of the Stormwater Management Manual for Western Washington (current version) or equivalent.
2. TESC notes and details shown in the Drawings and the information in this Section form a basis of the minimum requirements for a TESC Plan. Contractor shall develop a TESC Plan specific to the construction schedule and proposed means and methods prior to commencing construction activities for the duration of the Project.

3.03 TEMPORARY EROSION AND SEDIMENT CONTROL IMPLEMENTATION

- A. Contractor is responsible for implementing and updating the SWPPP including TESC BMPs.
 1. Contractor shall inspect the TESC measures daily and maintain these measures to ensure continued proper functioning for the duration of the Project.
 2. Contractor will be responsible for documenting TESC site inspections on a weekly basis in areas of active construction and on a monthly basis in areas that have undergone stabilization. Contractor shall keep records of the inspections on site.
 3. During the construction period the Contractor shall, at no additional cost to the Port, upgrade and/or maintain TESC measures as needed, based on Contractor means and methods, work sequencing, and changing site conditions (e.g., changes to impervious surface coverage, proximity of work to storm conveyance systems, storm events, etc.). Contractor shall modify these measures for changing site conditions and update the SWPPP to document all modifications made.
- B. Contractor shall ensure that water, or a dust palliative and a dispensing subcontractor, if needed, is available for project use. It is the responsibility of the Contractor to develop and adhere to appropriate safety measures pertaining to the palliative use. This also includes ensuring the dispensing subcontractor develops and adheres to the appropriate safety measures, if a dispensing subcontractor is used. Water used for dust suppression shall not be applied at such a rate or in a location that it will generate runoff from the site.
- C. In the event that additional temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the Work as scheduled or as ordered by the Engineer, such work shall be performed by the Contractor at its own expense.
- D. Contractor shall remove all TESC facilities, install permanent site surfacing improvements and permanent BMPs with minimal disturbance, and shall clean stormwater facilities prior to Work completion.

END OF SECTION

PART 1 - GENERAL

1.01 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 - PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PART 3 - EXECUTION

3.01 TRANSPORTATION AND HANDLING

- A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- B. Transport and handle products in accordance with manufacturer's instructions.
- C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.02 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.

- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Prevent contact with material that may cause corrosion, discoloration, or staining.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes requirements relating to the following:
 - 1. Examination, preparation, and general installation procedures
 - 2. Cutting and patching

1.02 SUBMITTALS

- A. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project
 - 2. Integrity of weather exposed or moisture resistant element
 - 3. Efficiency, maintenance, or safety of any operational element
 - 4. Visual qualities of sight exposed elements
- B. Photographic documentation of site and building prior to start of work.
- C. Project As-Built Documents: Accurately record actual locations of capped and active utilities.

PART 2 - PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.

- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.04 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work;
 - 2. Fit products together to integrate with other work;
 - 3. Provide openings for penetration of mechanical, electrical, and other services;
 - 4. Match work that has been cut to adjacent work;
 - 5. Repair areas adjacent to cuts to required condition;
 - 6. Repair new work damaged by subsequent work;
 - 7. Remove samples of installed work for testing when requested; and
 - 8. Remove and replace defective and non-conforming work.
- C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- D. Employ skilled and experienced installers to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.

3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.05 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.06 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes information for progress and final cleaning and restoration of damaged work prior to final inspection.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.01 PROGRESS CLEAN-UP

- A. The Contractor shall clean the project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with all requirements for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials for the type of material to be stored.
 - 4. Coordinate progress cleaning for joint use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free from waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 74 19.

- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration until Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.02 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds. in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances.
 - f. Remove debris and surface dust from limited access spaces, including roofs, attics, and similar spaces.
 - g. Sweep concrete floors broom clean in unoccupied spaces.
 - h. Remove labels that are not permanent.
 - i. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - j. Leave Project clean and ready for occupancy.

3.03 REPAIR OF WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surface, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
2. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes construction waste management requirements.

1.02 DEFINITIONS

- A. Co-mingled or Off-site Separation: Collecting all material types into a single bin or mixed collection system and separating the waste materials into recyclable material types at an off-site facility.
- B. Construction, Demolition and Land-Clearing (CDL) Waste: Includes all nonhazardous solid wastes resulting from construction, remodeling, alterations, repair, demolition, and land clearing. Includes material that is recycled, reused, salvaged or disposed as garbage. This also includes uncontaminated soils that are designated as geotechnically unsuitable or excess excavation.
- C. Hazardous/Dangerous Waste: As defined by Chapter 70.105.010 Revised Code of Washington and 40 Code of Federal Register 261 and by Washington Administrative Code 173-303.
- D. Proper Disposal: As defined by the jurisdiction receiving the waste.
- E. Recyclable Materials: Products and materials that can be recovered and remanufactured into new products.
- F. Recycling: The process of sorting, cleaning, treating and reconstituting materials for the purpose of using the material in the manufacture of a new product. Can be conducted on-site (as in the grinding of concrete).
- G. Recycling Facility: An operation that is permitted to accept materials for the purpose of processing the materials into an altered form for the manufacture of a new product.
- H. Salvage for Reuse: Existing usable product or material that can be saved and reused in some manner on the project site or other projects off-site.
- I. Salvage for Resale: Existing usable product or material that can be saved and removed intact (as is) from the project site to another site for resale to others without remanufacturing.
- J. Source-Separated Materials: Materials that are sorted at the site into separate containers for the purpose of reuse or recycling.
- K. Sources Separation: Sorting the recovered materials into specific material types with no, or a minimum amount of, contamination on site.
- L. Time-Based Separation: Collecting waste during each phase of construction or deconstruction that results in primarily one major type of recovered material. The material is removed before it becomes mixed with the material from the next phase of construction.
- M. Garbage: Product or material typically considered to be trash or debris that is unable to be salvaged for resale, salvaged and reused, returned, or recycled.

1.03 SUBMITTALS

- A. Waste Management Plan
- B. Waste Management Final Report

1.04 PERFORMANCE GOALS

- A. General: Divert CDL waste to the maximum extent practicable from the landfill by one or a combination of the following activities:
 - 1. Salvage
 - 2. Reuse
 - 3. Source separated CDL recycling
 - 4. Co-mingled CDL recycling
- B. CDL waste materials that can be salvaged, resold, reused or recycled, include, but are not limited to the following:
 - 1. Clean dimensional wood, pallet wood, plywood, OSB, and particleboard
 - 2. Ferrous and non-ferrous metals
- C. Hazardous/Dangerous Wastes, contaminated soils and other hazardous materials such as paints, solvents, adhesives, batteries, and fluorescent light bulbs and ballasts shall be disposed of at applicable permitted facilities.

1.05 WASTE MANAGEMENT PLAN

- A. Submit to the Engineer a Waste Management Plan narrative in accordance with these specifications. Provide a Waste Management Plan in a format as approved by the Engineer.
- B. The Waste Management Plan shall include the following:
 - 1. Name of designated Recycling Coordinator;
 - 2. A list of waste materials that will be salvaged for resale, salvaged for reuse, recycled, and disposed;
 - 3. Identify waste handling methods to be used, including one or more of the following:
 - a. Method 1 - Contractor or subcontractor(s) hauls recyclable materials to an approved recycling facility,
 - b. Method 2 - Contracting with diversion/recycling hauler to haul recyclable material to an approved recycling or material recovery facility,
 - c. Method 3 - Recyclable material reuse on-site, and
 - d. Method 4- Recyclable material salvage for resale;
 - 4. Identification of each recycling or material recovery facility to be utilized, including name, address and types of materials being recycled at each facility;
 - 5. Description of the method to be employed in collecting, and handling, waste materials; and
 - 6. Description of methods to communicate Waste Management Plan to personnel and subcontractors.

1.06 WASTE MANAGEMENT FINAL REPORT

- A. Provide a Waste Management Final Report, in a format approved by the Engineer. The Waste Management Final Report shall list the following for the project:

1. A record of each waste material type and quantity recycled, reused, salvaged, or disposed from the Project. Include total quantity of waste material removed from the site and hauled to a landfill.
 2. Percentage of total waste material generated that was recycled, reused, or salvaged.
- B. Quantities shall be reported by weight (tons) unless otherwise approved by the Engineer.
- C. Submit copies of manifests, weight tickets, recycling/disposal receipts or invoices, which validate the calculations or a signed certification of completeness and accuracy of the final quantities reported.

1.07 QUALITY ASSURANCE

- A. Regulatory Requirements: The Contractor shall maintain compliance with all applicable Federal, State, or Local laws that apply to Construction Waste Management and material salvage, reuse, recycling and disposal.
- B. Disposal Sites, Recyclers and Waste Materials Processors: All facilities utilized for management of any materials covered under this specification must maintain all necessary permits as required by federal, state and local jurisdictions.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 SOURCE-SEPARATED CDL RECYCLING

- A. Provide individual containers for separate types of CDL waste to be recycled, clearly labeled with a list of acceptable and unacceptable materials.

3.02 CO-MINGLED CDL RECYCLING

- A. Provide containers for co-mingled CDL waste to be recycled, clearly labeled with a list of acceptable and unacceptable materials.

3.03 LANDFILL

- A. Provide containers for CDL waste that is to be disposed of in a landfill clearly labeled as such.

3.04 REMOVAL OF CDL WASTE FROM PROJECT SITE

- A. Transport CDL waste off Port's property and legally dispose of them.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures
 - 2. Final completion procedures
 - 3. Warranties
 - 4. As-Built Drawings

1.02 ACTION SUBMITTALS

- A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

1.03 PROJECT SUBMITTALS

- A. Submittal of Project Warranties
- B. Record Drawings
 - 1. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous recordkeeping requirements and submittals in connection with various construction activities.
- C. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.04 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list) indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request:
 - 1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Port unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by the Contract Document or Engineer. Label with manufacturer's name and model number where applicable.
 - 4. Submit test/adjust/balance records.
 - 5. Submit changeover information related to Port's occupancy, use, operation, and maintenance.

- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request:
 - 1. Complete startup and testing of systems and equipment
 - 2. Perform preventive maintenance on equipment used prior to Substantial Completion
 - 3. Instruct Port's personnel in operation, adjustment, and maintenance of products, equipment, and systems
 - 4. Terminate and remove temporary facilities from Project site
 - 5. Complete final cleaning requirements
- D. Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to the date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Notice of Substantial Completion after inspection or will notify Contractor of items, either on the Contractor's list or additional items identified by the Engineer, that must be completed or corrected before notice will be issued.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for final completion.

1.05 PUNCH LIST (LIST OF INCOMPLETE ITEMS)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of Construction.
 - 1. Organize list of spaces in sequential order.
 - 2. Organize items applying to each space by major elements.

1.06 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete and submit the following:
 - 1. Submittal of all remaining items, including as-built documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, surveys, and similar final record information and all other submittals defined in the Contract Documents.
 - 2. List of Incomplete Items: Submit copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (Punch List). Copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be complete and ready for final inspection and tests. On receipt of request, the Engineer will either proceed with inspection or notify contractor of unfulfilled requirements.
 - 1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.07 FINAL ACCEPTANCE PROCEDURES

A. Submittals Prior to Final Acceptance:

1. Receipt and approval of application for final payment; due within seven (7) days of receipt of Final Completion by the Engineer;
2. Execution of all Change Orders;
3. Contractor's signed waiver and release of claims on the Engineer provided form;
4. Contractor's submittal of list of all suppliers and subcontractors and the total amounts paid to each on the Engineer provided form; and
5. Contractor's submittal of a list of all subcontractors and suppliers requiring Affidavits of Wages paid on the Contract and certify that each of companies will submit an approved Affidavit of Wages paid to the Port within 30 days.

B. The Engineer will issue the Final Acceptance Memo upon receipt of the required submittals.

PART 2 - PRODUCTS

2.01 CONTRACTOR'S WARRANTY

A. The Contractor warrants the labor, materials and equipment delivered under the contract to be free from defects in design, material, or workmanship, and against damage caused prior to final inspection. Unless otherwise specified, this warranty extends for a period of one (1) year from the date of Substantial Completion.

1. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit the Port's rights under warranty.
2. Submit Warranties to the Engineer as a submittal, as described in 01 33 00 – Submittal Procedures.
3. Provide additional copies of each warranty in Operation and Maintenance Manuals as described in 01 78 23 – Operation and Maintenance Manuals.

B. In the event of equipment failure, during such time or in such a location that immediate repairs are mandatory, the Contractor shall respond promptly (within 48 hours), irrespective of day of the week. If the Contractor is not available, the Port will affect repairs. The Contractor shall then reimburse the Port for parts and labor necessary to correct deficiencies as defined within the warranty clause and time.

2.02 AS-BUILT DRAWINGS

A. Project As-Built Drawings: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

B. Project As-Built Drawings shall be compiled by the Contractor and submitted to the Engineer for translation to the Record Drawings on a monthly basis.

1. The Project As-Built Drawings will be submitted on paper full-sized (ANSI D) copy.
2. Drawings shall be kept current and shall be done at the time the material and equipment is installed. Annotations to the record documents shall be made with an erasable colored pencil conforming to the following color code:

- a. Additions – Red
 - b. Deletions – Green
 - c. Comments – Blue
 - d. Dimensions – Graphite
- 3. Project As-Built Drawings must be complete and accepted by the Engineer before Final Completion is issued.
 - 4. As-Built Drawings shall be in accordance with horizontal and vertical control as shown on the drawings.

PART 3 – EXECUTION

3.01 MAINTENANCE OF AS-BUILT DRAWINGS

- A. The Contractor shall maintain at the Project site, in good order for ready reference by the Engineer, one complete copy of the Contract Documents, including Addenda, Change Orders, other documents issued by the Port, a current Progress Schedule, and approved Submittals. The Contractor shall also generate and keep on site all documents and reports required by applicable permits.
- B. The Contractor's As-Built Drawings shall be updated to record all changes made during construction. The location of all existing or new underground piping, valves and utilities, and obstructions located during the Work shall be appropriately marked until the Contractor incorporates the actual field dimensions and coordinates into the as-built drawings. The as-built drawings shall be updated at least weekly and before elements of the Work are covered or hidden from view. After the completion of the Work, the as-built drawings shall be provided to the Port.

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Operation and Maintenance Manual Submittal

1.02 SUBMITTALS

- A. Operation and Maintenance Data:

1. For equipment, or component parts of equipment put into service during construction and operated by the Port, submit completed documents within ten days after acceptance.
2. Submit 1 copy of completed documents 14 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
3. Submit 3 printed sets and 1 electronic set of revised final documents in final form by Final Completion.

PART 2 - PRODUCTS

2.01 OPERATION AND MAINTENANCE MANUALS

- A. For large equipment (such as pumps, generators, machinery), the following information (minimum of 3 printed copies, plus one electronic copy on CD) shall be furnished for all items on the Project requiring operational and/or maintenance procedures and for any additional items indicated by the Engineer. Printed information shall be organized by the Contractor into appropriately sized 3-ring binders (no larger than 3"). The binders shall be sized for material approximately 8-1/2 by 11 inches, and the material in the binders shall not protrude beyond the covers. The binder(s) shall be divided with coversheets for each major item of equipment. The cover sheets shall be typewritten to indicate the name, type of equipment, and location(s) within the Project where installed. A neatly typewritten index shall be provided. Electronic information shall be in PDF format (additional formats where specified) and shall be organized with folders with appropriate file names so information is easily accessible:

1. Equipment Maintenance Summary:
 - a. Provide the following information (as applicable, indicate 'N/A' where an item does not apply) in Excel spreadsheet format:
 - 1) Description
 - 2) Plan Sheet Number
 - 3) Vendor
 - 4) Manufacturer
 - 5) Model Year
 - 6) Serial Number
 - 7) Warranty – Start Date; Finish Date
 - 8) Required Preventative Maintenance
 - 9) Purchase Price
 - 10) Make
 - 11) Model

12) Fuel Used

13) Capacity

2. Lubrication Information: This shall consist of the manufacturer's recommendations regarding the lubricants to be used and the lubrication schedule to be followed. Lubricants shall be described in detail, including type, recommended manufacturer, and manufacturer's specific compound to be used.
3. Control Diagrams: Diagrams shall show internal and connection wiring and as-built wiring diagrams (where applicable).
4. Start-up Procedures: These instructions consist of equipment manufacturer's recommendations for installation, adjustment, calibration, and troubleshooting.
5. Operating Procedures: These instructions consist of the equipment manufacturer's recommended step-by-step procedures for starting, operating, stopping the equipment under specified modes of operation, and for long-term shut-down (moth-balling).
6. Preventative Maintenance Procedures: These instructions consist of the equipment manufacturer's recommended steps and schedules for maintaining the equipment.
7. Overhaul Instructions: These instructions consist of the manufacturer's directions for the disassembly, repair and reassembly of the equipment and any safety precautions that must be observed while performing the work.
8. Parts List: This list consists of the generic title and identification number of each component part of the equipment. This list shall include weights of individual components of each item of equipment weighing over 100 pounds.
9. Spare Parts List: This list consists of the manufacturer's recommendations of number of parts which should be stored by the Port and any special storage precautions which may be required.
10. Exploded View: Exploded or cut views of equipment shall be provided if available as a standard item of the manufacturer's information. When exploded or cut views are not available, plan and section views shall be provided with detailed callouts.
11. Specific Information: Where items of information not included in the above list are required, they will be provided as described in the specifications for the equipment.
12. Complete identification, including model and serial numbers.
13. Submittal information, as specified in Section 01 33 00 Submittal Procedures.
14. Warranty Information: This information consists of the name, address, and telephone number of the manufacturer's representative to be contacted for warranty, parts, or service information.
15. Provide DVDs, and audio-visual training materials utilized in the manufacturer's instruction program for the Port.
16. All operation and maintenance information shall be comprehensive and detailed and shall contain information adequately covering all normal operation and maintenance procedures.
17. All information shall be specific for the items of equipment installed on the project. Material not directly applicable shall be removed, omitted, or clearly marked as inapplicable.

18. If manufacturer's standard brochures and manuals are used to describe operating and maintenance procedures, such brochures and manuals shall be modified to reflect only the model or series of equipment used on this project.
 19. Extraneous material shall be crossed out neatly or otherwise annotated or eliminated. It shall be the responsibility of the Contractor to ensure that all operation and maintenance materials are obtained. Material submitted must meet the approval of the Engineer prior to project final acceptance.
- B. For small equipment and products (such as furnishings or equipment not requiring routine maintenance), the following information (minimum of 3 printed copies, plus one electronic copy on CD) shall be furnished for all items on the Project requiring operational and/or maintenance procedures and for any additional items indicated by the Engineer. Printed information shall be organized by the Contractor into appropriately sized 3-ring binders (no larger than 3"). The binders shall be sized for material approximately 8-1/2 by 11 inches, and the material in the binders shall not protrude beyond the covers. The binder(s) shall be divided with coversheets for each major item of equipment. The cover sheets shall be typewritten to indicate the name, type of equipment, and location(s) within the Project where installed. A neatly typewritten index shall be provided. Electronic information shall be in PDF format (additional formats where specified) and shall be organized with folders and appropriate file names so as to make the information easily accessible:
1. Product Summary:
 - a. Provide the following information (as applicable, indicate 'N/A' where an item does not apply) in Excel spreadsheet format:
 - 1) Description
 - 2) Plan Sheet Number
 - 3) Vendor
 - 4) Manufacturer
 - 5) Model Year
 - 6) Serial Number
 - 7) Warranty – Start Date; Finish Date
 - 8) Purchase Price
 - 9) Make
 - 10) Model
 2. Operating Procedures: These instructions consist of the manufacturer's recommended step-by-step procedures for use of the product.
 3. Maintenance Procedures: These instructions consist of the equipment manufacturer's recommended steps and schedules for maintaining the product.
 4. Specific Information: Where items of information not included in the above list are required, they will be provided as described in the specifications for the equipment.
 5. Complete identification, including model and serial numbers.
 6. Submittal information, as specified in Section 01 33 00 Submittal Procedures.

7. Warranty Information: This information consists of the name, address, and telephone number of the manufacturer's representative to be contacted for warranty, parts, or service information.
8. Provide DVDs, and audio-visual training materials utilized in the manufacturer's instruction program for the Port.
9. All operation and maintenance information shall be comprehensive and detailed and shall contain information adequately covering all normal operation and maintenance procedures.
10. All information shall be specific for the items of equipment installed on the project. Material not directly applicable shall be removed, omitted, or clearly marked as inapplicable.
11. If manufacturer's standard brochures and manuals are used to describe operating and maintenance procedures, such brochures and manuals shall be modified to reflect only the model or series of equipment used on this project.
12. Extraneous material shall be crossed out neatly or otherwise annotated or eliminated. It shall be the responsibility of the Contractor to ensure that all operation and maintenance materials are obtained. Material submitted must meet the approval of the Engineer prior to project final acceptance.

PART 3 - EXECUTION - NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUBMITTALS

- A. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items, location and construction of barricades, fences and temporary work.

1.02 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for demolition work and disposal of debris.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Conform to applicable regulatory procedures if hazardous or contaminated materials are discovered.
- E. Coordinate disruption of Building Utility, Fire or Life safety systems with Owner ten (10) days prior to disruption.

1.03 SCHEDULING

- A. Schedule Work to coincide with new construction and modernization work.
- B. Describe demolition removal procedures and schedule.

1.04 COORDINATION

- A. Coordinate work with Waste Management Plan under Section 01 74 19 Waste Management.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices at locations indicated.
- B. Protect existing landscaping materials and structures that are not to be demolished.
- C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.
- D. Construct and maintain weatherproof closures for existing openings. Protect existing roofing and insulation from water where demolition work exposes material to the weather; route water away from openings.
- E. Protect existing material, structure, and finishes that are not to be demolished.
- F. Disconnect, remove, and cap utility lines within demolition areas. Protect and maintain utilities required to serve occupied portions of building.
- G. Provide means to control dust. Contain all dust within construction area.
- H. Mark location of utilities and protect from disconnection and/or damage.

3.02 DEMOLITION REQUIREMENTS

- A. The general scope of demolition work shall include:
 - 1. Demolition and removal of all items required to accommodate new work.
- B. Conduct demolition to minimize interference with adjacent and occupied areas or buildings.

- C. Cease operations immediately if adjacent structures appear to be in danger. Notify Engineer. Do not resume operations until directed.
- D. Conduct operations with minimum interference to public or private accesses. Maintain egress and access at all times.

3.03 DEMOLITION

- A. Demolish in an orderly and careful fashion. Protect existing supporting structural members, and existing building components, finishes, materials, equipment, furniture, etc., not to be demolished.
- B. Except where noted otherwise, remove demolished materials from site. Deposit material at approved dumping sites. Do not bury or burn material on site.
- C. Demolition of existing work/items shall include removal of all connections and fasteners, foundations, soffits, facework, etc., associated with the work or item to be demolished.
- D. Do not modify or cut any structural member, wall, or condition unless specifically detailed on structural drawings or approved by Engineer in writing.
- E. Remove materials to be reinstalled or retained in manner to prevent damage. Store and protect.
- F. Do not burn or bury materials on site. Leave site in clean condition.
- G. Remove temporary work.

3.04 SCHEDULES

- A. Items to be removed, stored, and protected for reinstallation:
 - 1. Rooftop mechanical equipment as indicated.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCES

- A. ANSI A14.3 Ladders, Fixed, Safety Requirements.
- B. OSHA 1926.1053 - Occupational Safety and Health Administration - Stairways and Ladders.
- C. OSHA 1910.27 - Occupational Safety and Health Administration - Fixed Ladders.
- D. ASTM A36 Structural Steel.
- E. ASTM A53 Hot Dipped, Zinc coated Welded and Seamless Steel Pipe.
- F. ASTM A123 Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
- G. ASTM A153 Zinc Coating (Hot Dip) on Iron and Steel Hardware.
- H. ASTM A283 Carbon Steel Plates, Shapes, and Bars.
- I. ASTM A307 Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
- J. ASTM A385 - Standard Practice for Providing High Quality Zinc Coatings (Hot Dip)
- K. ASTM A500 Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- L. ASTM A501 Hot Formed Welded and Seamless Carbon Steel Structural Tubing.
- M. AWS A2.0 Standard Welding Symbols.
- N. AWS D1.1 Structural Welding Code.
- O. SSPC (Steel Structures Painting Council) Steel Structures Painting Manual.
- P. PCI - Powder Coating Institute.

1.02 SUBMITTALS

- A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
- B. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.
- C. PCI 3000 Certification: The powder coating applicator shall submit current documentation illustrating PCI 3000 Certification.

1.03 COORDINATION

- A. Fabricate steel members in accordance with AISC Code of Standard Practice.
- B. Fabricator: Company specializing in performing the work of this Section with minimum five (5) years documented experience.
- C. Erector: Company specializing in performing the work of this Section with minimum five (5) years documented experience.
- D. Welder(s): Qualified within previous twelve (12) months for type of welding required for this project in accordance with AWS D1.1 and AWS D1.4 and/or WABO (Washington Association of Building Officials) certified as required by local Building Department.

- E. PCI Certified Applicator: The powder coating applicator shall be a Powder Coating Institute, PCI 3000 Certified Company.

1.04 REGULATORY REQUIREMENTS

- A. Welder(s): Qualified within previous twelve (12) months for type of welding required for this project in accordance with AWS D1.1 and AWS D1.4.

1.05 DELIVERY, STORAGE AND PROTECTION

- A. Protect products and fabrications under provisions of Section 01 60 00.

1.06 COLORS

- A. Colors are specified on Colors and Materials Schedule on the drawings.

1.07 WARRANTY - POWDER COATED HIGH-PERFORMANCE (PVDF) FINISH

- A. Manufacturer's Warranty: Furnish ten 10 year warranty providing coverage that coatings:
 - 1. Will not chip, crack or peel (lose adhesion)
 - 2. Will not chalk in excess of ASTM D4214 number 8 rating, determined by procedure outlines in ASTM D4214
 - 3. Will not change color more than five Delta-E Hunter units (square root of the sum of square Delta L, Delta a, and Delta b) as determined by ASTM D2244, Method 6.3. Fading or color changes may not be uniform if surfaces are not equally exposed to sun and elements. Mica and metallic coatings are exempt due to inability to accurately measure color, mica and metallic flakes reflect and scatter light in random patterns.
- B. Applicator's Warranty: Furnish five 5 year warranty providing coverage against failure of PVDF based coating over improper pretreatment where coating was not applied in accordance with ASTM D1730, Type B, Method 5 or ASTM B449, Section 5.

PART 2 - PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36.
- B. Steel Tubing: ASTM A500, Grade B.
- C. Steel Plates: ASTM A283.
- D. Steel Pipe: ASTM A53, Grade B, Schedule 40.
- E. Steel Bolts, Nuts, Acorn Nuts, Threaded Rods and Washers: ASTM A307, galvanized to ASTM A153 for galvanized components.
- F. Welding Materials: AWS D1.1; type required for materials being welded.

2.02 FABRICATION - MISCELLANEOUS ITEMS

- A. Field verify actual dimensions and conditions at site prior to shop fabrication.
- B. Fit and shop assemble items in largest practical sections for delivery to site.
- C. Fabricate items with joints tightly fitted and secured.
- D. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

- E. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- F. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- G. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
- H. Eased edges to be smooth, straight and uniform in appearance.
- I. Welding shall conform to AWS D1.1.
- J. Fabricated Items Include but not limited to the following:
 - 1. Fall Restraint Anchors: Powder-coated galvanized steel anchors, compliant with OSHA 29 CFR 1910 regulations. Anchors shall consist of a steel pipe stanchion with a closed top and fixed loop for attachment of personal restraint systems, welded to a base plate. Guardian Fall Protection CB-18 anchors, model #00657 or approved equal.
 - 2. Fixed Ladders: Furnish and install fixed powder-coated galvanized steel ladders without safety cage including all fasteners for complete installation. One-piece welded assembly meeting or exceeding OSHA 1910.27, OSHA 1926.1053 and ANSI A14.3 standards. Ladders shall comply with IMC 306.5 requirements. Provide stainless steel fasteners, bolts, nuts and washers. Refer to roof plan for ladder locations.
 - a. Manufactured Fixed Ladders: Cotterman Co, FS Industries, A-Mezz Industrial Structures Inc. or approved.
 - 1) Fixed Roof Access Ladders: Cotterman Co. F-series, heavy-duty welded steel fixed walk-thru ladder with walk-thru handrails at top of landing surface. Gray powder-coated hot-dipped galvanized finish.
 - b. Minimum Design and Fabrication Requirements:
 - 1) Loading: At least two loads of 250 pounds each, concentrated between any two consecutive attachments, (the number and position of additional concentrated loads of 250 pounds each, determined from anticipated usage of the ladder, shall be included), plus anticipated loads caused by ice buildup, winds, rigging, and impact loads resulting from the use of ladder safety devices.
 - 2) Ladders shall have rung or step spacing not to exceed 14 inches on center. The uppermost rung shall be a maximum of 24 inches below the upper edge of the roof hatch, roof or parapet as applicable.
 - 3) Ladders shall have a toe spacing not less than 6 inches deep.
 - 4) The minimum perpendicular clearance between fixed ladder rungs or steps and any obstruction behind the ladder shall be 7 inches.
 - 5) There shall be a minimum of 18 inches between rails.
 - 6) Each rung or step shall be capable of withstanding at least a single concentrated 300-pound load applied to the middle of the rung or step.
 - 7) Each corrugated rung shall have a minimum 0.75-inch diameter.
 - 8) Rungs or steps of fixed metal ladders shall be corrugated, knurled, dimpled, coated with skid-resistant material or otherwise treated to minimize slipping.

- 9) The side rails of through or side-step fixed ladders shall extend 42 inches above the top of the access level or landing platform served by the ladder.

2.03 FINISH - STEEL

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Clean surfaces prior to finishing.
- C. Do not prime surfaces in direct contact with concrete or where field welding is required.
- D. Protective Coatings:
 1. Galvanized Coating: All metal exposed to outdoor atmosphere or shown on drawings shall be hot-dipped galvanized coated to minimum 2.0 oz/sq. ft. zinc coating in accordance with ASTM A385 and ASTM A123.
- E. Shop-Applied Finish: Powder Coated High-Performance (PVDF) Fluoropolymer Resin Finish:
 1. Materials shall be in accordance with the (PCI) Powder Coating Institute's published recommendations, specifications and performance standards.
 2. The powder coating applicator shall be a Powder Coating Institute, PCI 3000 Certified Company.
 3. Shop-Applied Finish: Powder Coated High-Performance (PVDF) Fluoropolymer Resin Finish. Fluoropolymer finish containing minimum 70 percent PVDF resins, four coat system, minimum 1.2 mils dry film thickness, complying with PCI and AAMA 2605 specification and performance standards. Finish material component surfaces after fabrication process.
 4. Color: Gray.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Beginning of installation means erector accepts existing conditions.
- C. Clean and strip primed steel items to bare metal where site welding is required.

3.02 INSTALLATION - MISCELLANEOUS ITEMS

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1.
- E. No field welding of shop-applied powder coated finished components permitted. Field assembled components with bolted connections in accordance to Contract Documents.
- F. Obtain approval prior to site cutting or making adjustments not scheduled.
- G. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.03 ERECTION TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out of Position: 1/4 inch.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCES

- A. APA - American Plywood Association.
- B. AWPB - American Wood Preservers Association) Book of Standards.
- C. WCLIB - West Coast Lumber Inspection Bureau.
- D. WWPA -Western Wood Products Association.
- E. SPIB - Southern Pine Inspection Bureau.
- F. Structural General Notes.

1.02 DELIVERY, STORAGE, AND PROTECTION

- A. Transport, handle, store, and protect products from weather and moisture damage.

1.03 COORDINATION

- A. Coordinate and provide solid blocking for wall and ceiling mounted items.

PART 2 - PRODUCTS

2.01 LUMBER MATERIALS

- A. Lumber Grading Rules: WCLIB or WWPA.
- B. Lumber Materials:
 - 1. All 2 inch nominal lumber shall be kiln dried (kd). Members shall be S4S (surfaced on 4 sides). Each piece of lumber shall bear stamp of West Coast Lumber Inspection Bureau (WCLIB) and/or Western Wood Products Association (WWPA) showing grade mark. Provide cut washers or M.I.W. where bolt heads, nuts, and lag screw bear on wood.
 - a. Framing, Blocking, Plates, Beams, Stringers, Columns and Joists: Framing lumber shall be #2 and better Hem-Fir sawn lumber; joists, beams and headers shall be #1 and better Douglas Fir-Larch or as shown on the drawings.
 - 2. Maximum Moisture Content: 19%.

2.02 SHEATHING MATERIALS

- A. Plywood Grade and Species: Each sheet shall bear the trademark of the American Plywood Association; all grading shall conform to PS 1-83 and Report No. NER-108 thickness, number of plies, and layup as shown. All plywood shall be C-D interior with exterior glue or as noted on the drawings and shall be Group I or II species. Except as otherwise shown, provide the following minimum nailing; panel edges 10D at 6 in. o.c., intermediate support 10D at 12 in. o.c.

2.03 ACCESSORIES

- A. Nail Fasteners: See Structural General Notes; use hot-dipped galvanized steel (American or Canadian manufacture).
- B. Anchors Bolts, Bolts, Nuts, Threaded Rods and Washers: Refer to Structural General Notes. Non-structural anchor bolts shall conform to ASTM A307.
 - 1. Use hot-dipped galvanized type at exterior locations or where exposed to exterior environment.

2. Use stainless steel type where fasteners installed into concrete, brick masonry units and concrete masonry units.

PART 3 - EXECUTION

3.01 FRAMING

- A. Set structural members level and plumb, in correct position.
- B. Place horizontal members, crown side up.
- C. Construct framing members full length without splices to extent possible.

3.02 PLYWOOD SHEATHING

- A. Secure sheathing with longer edge perpendicular to framing members and with ends staggered and sheet ends over bearing.

3.03 COORDINATION

- A. Coordinate opening sizes required for work of other trades.
- B. Coordinate drilling, cutting, and notching performed by other trades so that structural integrity of framing members is not violated.

3.04 TOLERANCES

- A. Faces of Abutting Framing Members: Flush alignment.
- B. Framing Members: 1/8-inch maximum from true position.
- C. Misalignment of Framing Members: 1/8-inch maximum between adjacent members at center of span/length.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCES

- A. NWCB - Northwest Wall and Ceiling Bureau
- B. ASTM - American Society of Testing Materials

1.02 COORDINATION

- A. Coordinate installation with flashing installation.
- B. Coordinate sequencing and installation of finish siding materials.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 2 years production of similar products.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations
 - 2. Storage and handling requirements and recommendations
 - 3. Installation methods
 - 4. Manufacturer standard installation details

1.05 DELIVERY, STORAGE AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 - PRODUCTS

2.01 MATERIALS - MEMBRANE FLASHING (SELF-ADHERING)

- A. Membrane Flashing (Self-Adhering): Grace Construction Products or approved equal.
 - 1. Grace Perm-A-Barrier Wall Flashing: 40 mil thickness. Use: Base of wall detail areas, parapet wall detail areas, vertical leg of metal flashings.

2.02 MATERIALS - WEATHER RESISTIVE BARRIER

- A. Weather Resistive Barrier (Sheet-Applied Membrane):
 - 1. Weather Resistive Barrier (Vapor Permeable Air Barrier): Grace Construction Products or approved equal. Perm-A-Barrier VPS (Vapor Permeable Sheet). Sheet-applied, self-adhering, vapor-permeable, water-resistant, flexible air barrier membrane consisting of a breathable carrier film with specially designed adhesive which permits the transfusion of water vapor. Impermeable to liquid water. Provide related primers, transition membrane flashings, tapes, membrane flashings, sealants and other accessory components for complete system.

2.03 ACCESSORIES

- A. Manufacturer's tape compatible with exterior plywood sheathing, weather resistive barrier and membrane flashing materials.
- B. Sheet Metal Flashing and Trim: As specified in Section 07 62 00
- C. Joint Sealants: Silicone sealant as specified in Section 07 92 00
- D. Adhesives: Manufacturer's recommended adhesives

- E. Primers: Manufacturer's recommended primers

PART 3 - EXECUTION

3.01 INSTALLATION WEATHER RESISTIVE BARRIER SHEET-APPLIED MEMBRANE

- A. Do not use materials with defects that impair quality of product.
- B. Tape exterior sheathing butt joints prior to installation of weather resistive barrier.
- C. Cover exterior sheathing with weather resistive barrier.
- D. Coordinate weather resistive barrier installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- E. Extend weather resistive barrier coverage to interior side of wall openings at stud framing (heads / jambs / sills) prior to installation of membrane flashings at rough openings.
- F. Install in accordance with manufacturer's application instructions.

3.02 INSTALLATION MEMBRANE FLASHING AND ACCESSORIES

- A. Rough openings in exterior walls shall have membrane flashing placed on wall surfaces as indicated on drawings and as listed below:
 - 1. Membrane flashing shall extend to interior side of wall opening (full depth of opening) at all sides of opening. Membrane flashing shall extend a minimum of 9 inches beyond face of opening at all sides, lapping over weather resistive barrier.
 - 2. Frames shall have membrane flashing adhesively attached to the frame.
 - 3. Openings shall have metal head and sill flashing installed in accordance to drawings.
- B. Install membrane flashing at all wall penetrations. Comply with manufacturer's standard installation details and in accordance to drawings.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCES

- A. AISI (American Iron and Steel Institute) Stainless Steel Uses in Architecture.
- B. ASTM A525 Steel Sheet, Zinc Coated, (Galvanized) by the Hot Dip Process.
- C. SMACNA Architectural Sheet Metal Manual.
- D. AAMA - American Architectural Manufacturers Association.

1.02 SUBMITTALS

- A. Shop Drawings: Indicate siding material and panel material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- B. Samples: Submit one (1) siding material and panel material samples, illustrating typical material and finish.

1.03 QUALIFICATIONS

- A. Fabricator and Installer: Company specializing in sheet metal flashing work with three (3) years' experience.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Stack preformed material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that may cause discoloration or staining.

1.05 COLORS

- A. Colors are specified on Colors and Materials Schedule on the drawings.

PART 2 - PRODUCTS

2.01 METAL WALL PANEL MATERIAL (MWP)

- A. Acceptable manufacturers, products:
 - 1. AEP Span, Box Rib.
 - 2. Morin, BR7-35.
 - 3. Or approved equal.
- B. Metal Wall Panel: Fabricated from minimum 24 gauge sheet metal conforming to ASTM A792 aluminum-zinc alloy-coated steel, 1 ½" deep profile, with minimum 35" coverage.
- C. Finish: Duratech 5000 factory paint coating or equivalent 70% PVDF (polyvinylidene fluoride) coating.

2.02 ACCESSORIES

- A. Exposed Fasteners: Stainless steel self-tapping screws with soft neoprene washers. Factory finished (Color Coated); manufacturer's standard color similar to existing gray metal siding color.
- B. Sheet Metal Flashings and Trim: Fabricated of same material, gauge and finish as metal siding material, unless noted otherwise on drawings. Provide inside and outside corner trim.

- C. Profiles and Closures: Provide manufacturers standard profiles and closure strips. Provide closure strips at corners.
- D. Isolation Tape (Dissimilar Metal Tape): Provide manufacturers standard separation tape.
- E. Accessories: Provide manufacturer's standard outside closure, inside closure, retention clips, metal flashings, metal trim profiles and other accessories as required for complete installation.
- F. Membrane Flashings: Type as specified in Section 07 25 00.
- G. Weather Resistive Barrier: Type as specified in Section 07 25 00.
- H. Joint Sealant: Silicone sealant. Type as specified in Section 07 92 00.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means acceptance of substrate.

3.02 INSTALLATION

- A. General: Comply with metal siding and metal panel manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply. Center fasteners in elongated slots without binding metal siding and metal panel to allow for thermal movement. Overlap joints to shed water away from direction of prevailing wind.
- B. Install horizontal metal siding, trim, flashing and accessories according to manufacturer's installation instructions.
- C. Install metal flashings and accessories according to SMACNA - Architectural Sheet Metal Manual.
- D. Install metal siding plumb and true and in proper alignment.
- E. Install metal siding systems without waves, warps, buckles or distortion, allow for thermal movement.
- F. Secure metal siding and metal panels without warp or deflection.
- G. Install metal profiles and trim pieces at end conditions of horizontal metal siding; including wall openings, outside corners, inside corners and base of wall conditions.
- H. Refer to Section 07 62 00 for exterior wall assembly metal flashing installation requirements prior to installation of horizontal metal siding.
- I. Isolate dissimilar metals by separating with rubber gaskets or elastomeric sealant. Use rubber washers where fasteners made from dissimilar metal penetrate panels. Isolate dissimilar metals behind panels by covering with polyethylene film.

3.03 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective panel materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to panel manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCES

- A. ANSI/ASTM D412 - Rubber Properties in Tension.
- B. ANSI/ASTM D746 - Brittleness Temperature of Plastics and Elastomers by Impact.
- C. ASTM D624 - Rubber Property - Tear Resistance.
- D. ASTM D822 - Practice for Operating Light and Water-exposure Apparatus (Carbon-Arc Type) for Testing Paint, Varnish, Lacquer, and Related Products.
- E. ASTM D1004 - Initial Tear Resistance of Plastic Film and Sheeting.
- F. ASTM D2240 - Rubber Property - Durometer Hardness.
- G. ASTM E96 - Water Vapor Transmission of Materials.

1.02 SYSTEM DESCRIPTION

- A. 45 mil thick or 60 mil thick Reinforced Thermoplastic Polyolefin (TPO) membrane roof assembly to conform to UL requirements for a Class A rated assembly and UL requirements for uplift resistance. Manufacturer / installer shall provide all components required to meet UL Class A rated assembly.

1.03 QUALITY ASSURANCE

- A. Membrane Manufacturer: Company specializing in sheet roof membranes with five (5) years' experience.
- B. Applicator: Company specializing in installation of sheet roof membranes with three (3) years' documented experience approved by membrane manufacturer.
- C. All materials used in or in conjunction with the roofing system shall be manufactured by or approved by one manufacturer.
- D. Each Bidder shall be prepared to provide documentation for Class-A assembly provided by their product;

1.04 REGULATORY REQUIREMENTS

- A. Underwriters Laboratories, Inc. (UL): Class - A Fire Hazard Classification.

1.05 SUBMITTALS

- A. Product Data: Submit specifications, installation instructions, and general recommendations from manufacturers of sheet roofing system materials, for types of roofing required. Include data substantiating that materials comply with requirements.
- B. Shop Drawings: Submit complete shop drawings showing roof configuration and sheet layout, details at perimeter, and special conditions:
 - 1. Indicate layout of tapered insulation materials and thicknesses.
 - 2. Indicate layout of all mechanical fasteners.
 - 3. Submit manufacturer's standard details, modified standard details or special details. Submit letter (prior to roofing installation) from manufacturer stating that all materials and details used by the installer meet the manufacturer's requirements to be warranted by the manufacturer for twenty (20) years.
- C. Samples: Submit samples of all roofing materials and accessories.

- D. Pre-Roofing Conference: Submit copies of pre-roofing conference records.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store materials in weather protected environment clear of ground and moisture. Protect foam insulation from direct sunlight exposure.

1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply membrane during inclement weather or when air temperature is below 40 degrees F.

1.08 PRE-INSTALLATION CONFERENCE

- A. Convene a pre-installation conference one (1) week prior to commencing work of this Section.
- B. Require attendance of parties directly affecting work of this Section. Include Port of Tacoma representative and manufacturer's representative.
- C. Review conditions of installation, installation procedures, and coordination required with related work.

1.09 WARRANTY

- A. Provide minimum twenty (20) year manufacturer's warranty. Warranty shall be provided by the manufacturer of the system, not the marketer.
- B. Warranty: Include coverage of materials (entire system, including fasteners) and installation and resultant damage resulting from failure to resist penetration of moisture; defective materials and workmanship.
 - 1. Warranty Period: Minimum twenty (20) years after date of Final Acceptance. Warranty shall not exclude damage from improper application or environmental contaminants.

1.10 PRECAUTIONS

- A. Adhesives, primer, and caulks as indicated are extremely flammable and/or toxic. Use precautions indicated on can and carton labels.
- B. Surfaces to be bonded shall be dry and clean. Suitable surfaces are usually considered to be smooth, solid masonry, wood, and metal plus well-fastened insulation board that is considered water resistant and accepted for adhered applications by roofing manufacturer.
- C. After exposure to sunlight for 24 hours or longer, membranes may have achieved a "surface curing". Prior to hot air welding an application of primer is required to achieve a proper weld. The need for primer is determined by a test weld.
- D. All fasteners should be installed with a depth-sensing screw gun to prevent overdriving.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - MEMBRANE

- A. Carlisle SynTec, Sure-Weld, Reinforced Thermoplastic Polyolefin (TPO) membrane, mechanically fastened system.
- B. GAF, Everguard TPO, 60-mil reinforced membrane, mechanically fastened system. Bid Option in accordance with Bid Form: 45-mil reinforced membrane, mechanically fastened system.

- C. Firestone, UltraPly TPO, 60-mil reinforced membrane, mechanically fastened system. Bid Option in accordance with Bid Form: 45-mil reinforced membrane, mechanically fastened system.
- D. Or approved equal
- E. Material specifications and installation details are based upon Sure-Weld TPO by Carlisle SynTec. Mechanically attached.

2.02 MEMBRANE MATERIALS

- A. Base Bid in accordance with Bid Form:

Membrane: White, 60 mils thick, Sure-Weld Reinforced Thermoplastic Polyolefin (TPO) membrane and scrim reinforcement, minimum 8 feet wide roll conforming to the following criteria.

PROPERTIES	TEST	RESULTS
Breaking strength, minimum (Grab method)	ASTM D751	250 lbf
Tear strength, minimum (Tongue tear)	ASTM D751	55 lbf
Brittleness	ASTM D2137	-40 deg C Pass
Heat aging, 32 days at 240 degrees F, (reinforced)	ASTM D573	90% breaking strength, 90% elongation
Water absorption psi minimum (Method A) 158 degrees F, 7 days	ASTM D471	Plus 3% weight change
Ozone resistance 100 deg F – 70 hours	ASTM D1149	Pass
Dimensional stability 24 hours at 54 deg C	ASTM D1204	+/- 0.3%
Puncture resistance, minimum	FTM 101C Method 2031	300 lbf

- B. Bid Option in accordance with Bid Form:

Membrane: White, 45 mils thick, Sure-Weld Reinforced Thermoplastic Polyolefin (TPO) membrane and scrim reinforcement, minimum 8 feet wide roll conforming to the following criteria.

PROPERTIES	TEST	RESULTS
Breaking strength, minimum (Grab method)	ASTM D751	225 lbf
Tear strength, minimum (Tongue tear)	ASTM D751	55 lbf
Brittleness	ASTM D2137	-40 deg C Pass
Heat aging, 32 days at 240 degrees F, (reinforced)	ASTM D573	90% breaking strength, 90% elongation
Water absorption psi minimum (Method A) 158 degrees F, 7 days	ASTM D471	Plus 3% weight change
Ozone resistance 100 deg F – 70 hours	ASTM D1149	Pass
Dimensional stability 24 hours at 54 deg C	ASTM D1204	+/- 0.3%
Puncture resistance, minimum	FTM 101C Method 2031	250 lbf

- C. Seaming and Adhesive Materials: As recommended by membrane manufacturer.
- D. Flexible Flashing: 60 mil thick unreinforced TPO membrane; white color; manufactured by membrane manufacturer.
- E. Prefabricated Perimeter Flashing: TPO coated metal flashing flanges.

2.03 INSULATION MATERIALS

- A. Rigid Insulation: Confirm that rigid insulation is compatible with single-ply membrane and shall be approved by membrane manufacturer. Polyisocyanurate insulation, ASTM C1289 Type II, Class I, Grade 2.
- B. Rigid Insulation: Approved by membrane manufacturer for mechanically fastened application in a Class-A assembly.
- C. Tapered Rigid Insulation: Factory tapered polyisocyanurate insulation with a minimum slope of 1/4 in./ft. unless otherwise noted.
- D. Fasteners: Metal plates and screws as recommended by insulation manufacturer for deck type and complying with fire rating assembly requirements. Fasteners approved by primary sheet roofing manufacturers.

2.04 TAPERED INSULATION CRICKETS

- A. Tapered Insulation System: Factory tapered perlite with a minimum slope of 1/4 in./ft unless otherwise noted; ASTM C728; approved for use with single-ply mechanically attached membrane roofing. Compression resistance: 35 psi, water absorption 1.2%; ASTM C209; weight: 0.9lbs/SF.
 - 1. Provide tapered cricket insulation over rigid foam insulation cover board.
 - 2. Provide roofing membrane manufacturer's written approval of system layout and fastening.

2.05 ACCESSORIES

- A. Sealants: As recommended by membrane manufacturer.
- B. Cover Board: Georgia-Pacific, DensDeck cover board, minimum 1/4 inch thickness, ASTM C1177 as recommended and provided by membrane manufacturer. 4 ft x 8 ft boards, or approved equal.
- C. Reglet and Counter Flashing: As specified in Section 07 62 00.
- D. Coping Flashing: As specified in Section 07 62 00.
- E. Exposed Scuppers: As specified in Section 07 62 00.
- F. Metal Edge Flashing at Eaves, Rakes and Gutters: Membrane manufacturer's membrane-coated metal drip edge with continuous cleat. SecurWeld 200/300 TPO-Coated Drip Edge or approved equal. Color: gray.
- G. Insulation Joint Tape: Manufacturer's standard glass fiber reinforced; 4 to 6 inch wide; self-adhering.
- H. Traffic Surfacing Walkway: Sure-weld heat weldable walkway rolls heat welded to the membrane surface provided by membrane manufacturer, or approved equal.

- I. Mechanical Fasteners for Insulation: Appropriate to purpose intended and approved by UL; length required for thickness of material; with metal washers; manufactured by membrane manufacturer.
- J. Disc Washers and Screws: Membrane manufacturer's standard.
- K. Flashing Materials: Manufacturer's standard system compatible with sheet membrane. Including premolded inside and outside corners, pipe flashing and square tube wraps.
- L. All roof accessories to be installed per sheet roofing membrane manufacturer's approved details.

2.06 WOOD TREATMENT

- A. Preservative treatments are not acceptable for use with membrane.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Membrane manufacturer's technical advisor shall field inspect prepared roof surface prior to membrane application and compile a written report to the Engineer prior to roofing membrane application.
- B. Contractor shall verify that insulation and other systems have been installed complying with membrane manufacturer's recommended practices.
- C. Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains.
- D. Verify roof openings and penetrating elements through roof are solidly set, wood cant strips, wood nailing strips, and reglets are in place. Verify deck is supported and secured.
- E. Do not apply roofing materials to damp, frozen, dirty, dusty, or deck surfaces unacceptable to manufacturer.
- F. Verify deck surfaces are dry and free of snow or ice. Confirm dry deck by moisture meter with 12 percent moisture maximum.
- G. Ensure flatness and verify tight joints of wood deck.
- H. Beginning installation means acceptance of substrate.

3.02 PREPARATION

- A. Seal joints of plywood deck with tape. Fill knotholes with latex filler.
- B. Install metal reglets flashing and mechanically fasten rigid. Apply sealant to top edge continuous.

3.03 INSULATION APPLICATION

- A. Place layers of insulation and cover board in accordance with insulation manufacturer's instructions. Insulation shall be placed in a minimum of two layers, with joints staggered (offset) between layers.
- B. Insulation shall be installed in compliance with the flamespread and smoke density requirements of Section 2603 of the IBC.
- C. Lay insulation boards to moderate contact without forcing joints. Cut insulation to fit neatly to perimeter blocking and around protrusions through roof.

- D. Lay tapered boards to establish pitch to scuppers. Provide positive slope (minimum 1/4 in./ft; unless otherwise noted; from horizontal).
- E. Mechanically or adhesively fasten insulation boards per roofing manufacturer's recommendations.
- F. Tape joints of insulation in accordance with insulation manufacturer's instructions.

3.04 MEMBRANE INSTALLATION

- A. Install membrane roofing in accordance with membrane manufacturer's instructions.
- B. Roll out membrane. Minimize wrinkles and bubbles.
- C. Overlap edges and ends minimum 4-1/2 inch and heat seal. Apply uniform bead of sealant to cut edges.
- D. Install mechanical fasteners in accordance with manufacturer's recommendations.
- E. Shingle joints on sloped substrate in direction of drainage.
- F. Seal adjoining surfaces.
- G. Continue membrane up vertical surfaces minimum 8 in. unless otherwise noted.
- H. Seal items penetrating membrane with counterflashing membrane material.
- I. Install flashings. Seal watertight to membrane.
- J. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or moving
- K. Place traffic surfacing (walkway roll) at locations noted on roof plan. As a minimum, install continuous walkway extending from roof ladder to each HVAC mechanical unit. Install walkway along all sides of HVAC mechanical units.
- L. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

3.05 PROTECTION

- A. After installation, close off area to prevent unauthorized traffic.

3.06 FIELD QUALITY CONTROL

- A. Manufacturer's technical representative shall provide final inspection report to the Engineer. This inspection will verify acceptance of installation by manufacturer for issuance of manufacturer's warranty. If any deficiencies are found to effect final acceptance by manufacturer, then the Contractor shall make any repairs; changes required for final acceptance by manufacturer; at his own expense with no cost to Owner.

3.07 CLEANING

- A. Remove trash, debris, equipment, and parts from job site.
- B. Repair damage and remove stains caused by work of this Section.

3.08 MAINTENANCE

- A. Instruct Owner's Representative in periodic maintenance of roof membrane. Provide maintenance manuals, warranties and information required for future maintenance.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCES

- A. AISI (American Iron and Steel Institute) Stainless Steel Uses in Architecture.
- B. ASTM A653 - Steel sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- C. ASTM A792 - Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- D. ASTM B32 Solder Metal.
- E. ASTM B486 Paste Solder.
- F. FS O F 506 Flux, Soldering, Paste and Liquid.
- G. NRCA (National Roofing Contractors Association) Roofing Manual.
- H. SMACNA Architectural Sheet Metal Manual.

1.02 SUBMITTALS

- A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- B. Samples: Submit one (1) samples, illustrating typical material, color and finish.

1.03 QUALIFICATIONS

- A. Fabricator and Installer: Company specializing in sheet metal flashing work with three (3) years' experience.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Stack preformed material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that may cause discoloration or staining.

1.05 COLORS

- A. Colors are specified on Colors and Materials Schedule on the drawings.

PART 2 - PRODUCTS

2.01 MATERIALS - SHEET METAL

- A. Steel Sheet: ASTM A792, AZ-55 Zinalume / Galvalume (Aluminum-Zinc hot dip coating) steel sheet, minimum yield 50,000 psi, minimum 24 gauge thickness if not specified under components. Factory Finish.
- B. Steel Sheet: ASTM A653, G90 Galvanized (Zinc hot dip coating) steel sheet, minimum yield 50,000 psi, minimum 24 gauge thickness if not specified under components. Factory Finish.
- C. Stainless Steel Sheet: ASTM A167, alloy 316 stainless steel sheet, minimum 24 gauge thickness if not specified under components. Factory Finish.

2.02 COMPONENTS

- A. Coping: As shown on drawings. Including continuous cleat. Coping seam as shown in SMACNA figure 3-3 #24 (Standing seam with snap lock). Steel sheet material. Minimum thickness of 20 gauge. Color and finish as specified under Materials.

- B. Flashing, Trim and Break Shapes: Steel sheet material. Minimum thickness of 24 gauge.
- C. Gutters: Fabricate gutter profile as indicated on drawings. Steel sheet material. Minimum thickness of 20 gauge. Form gutters in sections as long as possible, but not less than 10 feet in length complete with end pieces, outlet tubes and special pieces as required.
 - 1. Gutters (Installation): Install gutter with continuous cleat, brackets and spacers. Brackets and spacers installed at 36" o.c. maximum. Material, gauge, color and finish same as gutters. Gutter installation similar as shown in SMACNA figure 1-13A. Fabricate strap profile and coordination strap installation to allow for removable gutter screen.
 - 2. Gutter Outlet Tubes: Shape and sized to fit into downspouts. Material, gauge, color and finish same as gutters. Downspout to gutter connection similar as shown in SMACNA figure 1-33B, detail 2.
- D. Downspouts: Round 4-inch diameter, smooth, non-corrugated. Steel sheet material. Minimum thickness of 20 gauge. Mitered and welded or soldered for watertight fabrication. Form downspouts in sections as long as possible, but not less than 10 feet in length complete with special pieces as required. Factory Finish.
 - 1. Downspout Hangers: 3" wide flat stock. Material, color and finish same as downspouts. Minimum thickness of 20 gauge. Hanger profile as shown in SMACNA figure 1-35E.
- E. Reglet and Counter Flashing: Fry Reglet Architectural Metals, Springlok Flashing System, Type SM (Surface Mounted Reglet), or approved equal. Provide 24 gauge galvanized steel for flashing and reglet. Manufacturer's prefabricated corners. Provide all accessories, components and fasteners for complete installation.
 - 1. Factory Finish:
 - a. Galvanized Steel: Kynar 500 / Hylar 500 finish or factory applied powder coating in standard Fry Reglet colors.
 - 2. Shop-Fabricated Reglet and Counter Flashing: Shop-fabricated two-piece reglet and counter flashing system; with counter flashing spring action contact and profile as shown in SMACNA figure 4-4, FIG 4-4D. Steel sheet material. Minimum thickness of 24 gauge. Surface mounted reglet with vertical leg. Shop-fabricated corners. Factory Finish.
- F. Conductor Head: Fabricate shape as shown on drawings. Mitered and welded or soldered for watertight fabrication. Steel sheet material. Minimum thickness of 24 gauge. Factory Finish.
- G. Through-Wall Scuppers: Fabricate similar to SMACNA figure 1-27A. Mitered and welded or soldered for watertight fabrication. Stainless Steel sheet material. Minimum thickness of 24 gauge.
- H. Through-Wall Overflow Scuppers: Fabricate similar to SMACNA figure 1-30A. Mitered and welded or soldered for watertight fabrication. Stainless Steel sheet material. Minimum thickness of 24 gauge.

2.03 ACCESSORIES

- A. Fasteners: Stainless steel screws with soft neoprene washers. Stainless steel rivets.
- B. Sealant: As specified in Section 07 92 00.
- C. Plastic Cement: ASTM D4586, Type I.
- D. Neoprene Tape (Weather Stripping): Kelcom Inc or equal. Neoprene tape. Compressible closed cell used for sealing and weather stripping.

- E. Butyl Tape (Sealing): Kelcom Inc or equal. Butyl tape. Used for watertight seal between two substrates.

2.04 FABRICATION

- A. Shop-fabricate work to greatest extent possible and comply with details shown and with applicable requirements of SMACNA Architectural Sheet Metal Manual.
- B. Field measure site conditions prior to fabricating work.
- C. Form the work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material.
- D. Fabricate with required connection pieces.
- E. Form sections square, true, and accurate in size and shape, in maximum possible lengths but not less than 10 feet in length and free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints where required by SMACNA recommendations. Keep joints to minimum, but any joint that is required, shall be provided with butt seam with concealed backup plate at joints unless specified otherwise. Coordinate joint layout with Engineer prior to installation of sections.
- F. Hem exposed edges of metal.
- G. Mitered and soldered or welded fabricated components.
- H. Seam and install sealant at metal joints watertight.
- I. Fabricate through-wall scuppers, conductor heads, downspouts and related components; seal watertight.
- J. Fabricate copings in minimum of 10 ft sections and jointed to allow for longitudinal expansion. Corners on copings shall be mitered, lap-seamed and sealed. Install copings with continuous concealed cleat at the side of exterior walls opposite of the roof.
- K. Fabricate corners from one piece with minimum 18 to 24 inch long legs; seal corner watertight.
- L. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated with exposed edges folded back to form hems.
- M. Fabricate sheet metal flashing, trim and components of specified profiles and shapes such that all visible exposed surfaces shall be of color and finish as specified. Conditions where both sides of the sheet metal material surface is visibly exposed to view; Contractor has option to provide single-piece of sheet metal material with specified color and finish on both visibly exposed surfaces or provide 2-pieces of sheet metal material with specified color and finish on one surface, fabricate the item with the two sheet metal material pieces back-to-back such that all visible exposed surfaces are of color and finish specified.

2.05 FINISH - STEEL

- A. All visible exposed surfaces shall be of color and finish as specified.
- B. Factory Finish: Kynar 500 / Hylar 5000 High-Performance (PVDF) Fluoropolymer Resin Finish (minimum 70% Polyvinylidene Fluoride (PVDF) resins) complying with AAMA 2605 specification requirements. Color as specified in Colors and Materials Schedule.

2.06 FINISH - STAINLESS STEEL

- A. All visible exposed surfaces shall be of color and finish as specified.

- B. Factory Finish: 2B mill finish.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets in place, and nailing strips located.
- C. Verify roofing termination and base flashings are in place, sealed, and secure.
- D. Beginning of installation means acceptance of substrate.

3.02 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Install surface-mounted reglets true to lines and levels. Seal top of reglets with sealant.

3.03 INSTALLATION

- A. Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with SMACNA Architectural Sheet Metal Manual.
- B. Install conductor heads, through-wall scuppers, flashing, trim and break shapes, reglets and counter flashing system, copings, saddles, gutters, downspouts, eave and rake flashings, and accessories in accordance with manufacturer's instructions and SMACNA manual. Coordinate installation of flashings with other sections.
- C. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
- D. Apply plastic cement compound between metal flashings and felt flashings.
- E. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- F. Install work with laps, joints and seams that will be permanently watertight and weatherproof.
- G. Drip edge flashing shall be provided with butt seam with concealed backup plate at joints; form drip edge flashing in sections as long as possible, but not less than 10 feet in length. Coordinate joint layout with Engineer prior to installation of drip edge flashing.
- H. Trim, flashing and break shapes shall be provided with butt seam with concealed backup plate at joints; form trim, flashing and break shapes in sections as long as possible, but not less than 10 feet in length. Coordinate joint layout with Engineer prior to installation of trim, flashing and break shapes.
- I. Join lengths with seams of joint type allowing flush alignment of adjacent lengths, sealed watertight and allowing for thermal movement. Flash and seal gutters to downspouts and accessories.
- J. Slope gutters 1/16 inch per foot towards downspouts for positive drainage.
- K. Seal and seal metal joints watertight. Coordinate with Section 07 92 00 for sealants.
- L. Install downspout hangers at 12 inch maximum distance from each end of downspout in contact with exterior wall and maximum 10 feet o.c. vertical spacing. Install a minimum of (3) hangers for each downspout.

- M. Secure flashings in place using concealed fasteners and cleats.
- N. Terminate downspouts at concrete splash blocks.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCES

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.
- B. ASTM C834 Latex Sealants.
- C. ASTM C920 Elastomeric Joint Sealants.
- D. ASTM C1248 - Test Method for Staining of Porous Substrate by Joint Sealants.
- E. ASTM C1311 - Standard Specification for Solvent Release Sealants.
- F. ASTM C1330 - Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
- G. ASTM D2240 - Standard Test Method for Rubber Property - Durometer Hardness.
- H. FDA (U.S. Food and Drug Administration) - 21 CFR 177.2600: Title 21 Part 177 Indirect Food Additives: Polymers
- I. NSF (NSF International) - Standard 51: Food Equipment Materials.
- J. SWRI (Sealant, Waterproofing and Restoration Institute) Sealant and Caulking Guide Specification.
- K. SWRI (Sealant, Waterproofing and Restoration Institute) - Validation Program.

1.02 SUBMITTALS

- A. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability. Colors will be selected by Engineer from manufacturer's full line of available colors.
- B. Samples for Color Selection: For each joint sealant type.

1.03 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five (5) years documented experience.
- B. Applicator: Company specializing in performing the work of this Section with minimum five (5) years' experience.

1.04 ENVIRONMENTAL REQUIREMENTS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.05 WARRANTY

- A. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal and exhibit loss of adhesion or cohesion, or do not cure.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which joint sealant manufacturer agrees to furnish joint sealants to repair or replace those that demonstrate deterioration or failure under normal use within warranty period specified.
 - 1. Warranty Period for Silicone Sealants: Twenty (20) years from date of Substantial Completion.

1.06 COLORS

- A. Colors are specified on Colors and Materials Schedule on the drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Compatibility: Provide joint sealants and accessory materials that are compatible with one another and with materials in close proximity under use conditions, as demonstrated by sealant manufacturer using ASTM C1087 testing and related experience.

B. Liquid Joint Sealants:

1. Single-Component, Nonsag, Neutral-Curing Sealant:

ASTM C 920, Type S, Grade NS, Class 50, for Use NT, G, M, A, and O; SWRI validation. Hardness, ASTM D 2240: 35 durometer Shore A, minimum.

- a. Dow Corning Corporation, 756 SMS Building Sealant, or approved equal.

Use in the following locations:

- a. Exterior joints in metal panel cladding systems.

2. Single-Component, Nonsag, Non-Staining, Neutral-Curing Silicone Sealant:

ASTM C920, Type S, Grade NS, Class 100/50, for Use NT, G, M, A, and O; SWRI validation. Hardness, ASTM D2240: 15 durometer Shore A.

Staining, ASTM C1248: None on concrete, granite, limestone, and brick.

- a. Dow Corning 790 Silicone Building Sealant.
- b. Tremco Spectrem 3.
- c. Or approved equal.

Use in the following locations:

- a. All exterior non-traffic joints. Above-grade.

3. Single-Component, Nonsag, Neutral-Curing Silicone Sealant:

ASTM C 920, Type S, Grade NS, Class 25, for Use NT; SWRI validation. Hardness, ASTM D 2240: 45 durometer Shore A, minimum.

- a. Dow Corning Corporation, 758 Silicone Building Sealant, or approved equal.

Use in the following locations:

- a. Exterior concealed watertight joints in cladding systems.

4. Single Component Silicone Sealant:

- a. Dow Corning 799 Silicone Glass and Metal Building Sealant, or approved equal.

Use in the following locations:

- a. Clear sealant at exposed bolt and fastener connections in exterior exposed metal fabrications.

5. Single Component High Performance Neutral Cure Silicone Sealant:

- a. Dow Corning 780 Plumber and Roofing Sealant, or approved equal.

Use in the following above-grade locations:

- a. Sealant for sheet metal and aluminum roofing, flashing, gutters and rainwater accessories.

C. Sealant Color: Match adjacent surface color if joint is visible.

2.02 ACCESSORIES

- A. Joint Substrate Primers: Substrate primer recommended by sealant manufacturer for application.
- B. Cylindrical Sealant Backing: ASTM C 1330, Type B non-absorbent, bi-cellular material with surface skin, Type C closed cell polyethylene or Type O open-cell polyurethane, as recommended by sealant manufacturer for application. Diameter 1/3 to 1/2 greater than width of joint where it is to be installed.
 - 1. Polystyrene foam not acceptable.
- C. Bond Breaker Tape: Polymer tape compatible with joint sealant materials and recommended by sealant manufacturer.
- D. Joint Cleaner: Non corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- E. Bond Breaker: Pressure sensitive polyethylene tape/plastic tape recommended by sealant manufacturer, applied to sealant contact surfaces where bond to substrate or backer rod must be avoided for proper performance of sealant.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces and joint openings are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that might impair adhesion of sealant.
- B. Clean joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with ASTM C804 for solvent release and ASTM C790 for latex base sealants.
- D. Verify that joint backing and release tapes are compatible with sealant.
- E. Protect elements surrounding the work of this Section from damage or disfiguration.

3.03 PRIMER APPLICATION

- A. General: Install primer wherever recommended by sealant manufacturer for conditions/materials being sealed to achieve manufacturer's published joint performance criteria including applicable federal specifications.

3.04 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.

- B. Measure joint dimensions and size materials to achieve required width/depth ratios. Minimum joint width for exterior joints not indicated otherwise shall be 1/4in.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- G. Tool joints concave, unless noted otherwise.
- H. Remove improperly applied sealant and replace with new.

3.05 FIELD QUALITY CONTROL

- A. Perform adhesion tests for replacement silicone sealant joints and preformed silicone seal in accordance with manufacturer's instructions and ASTM C1193, Method A, Field-Applied Sealant Joint Hand-Pull Tab.
 - 1. Perform 5 tests for first 1,000 linear feet of applied silicone sealant and 1 test for each 1,000 feet sealant thereafter or perform 1 test per floor per building elevation minimum.
 - 2. For sealants applied between dissimilar materials, test both sides of joint.
- B. Sealants failing adhesion test shall be removed, substrates cleaned, seals re-installed, and re-testing performed.
- C. Maintain test log and submit report to Engineer indicating tests, locations, dates, results, and remedial actions.

3.06 CLEANING

- A. Clean adjacent soiled surfaces.

3.07 PROTECTION OF FINISHED WORK

- A. Protect sealants until cured.
- B. Repair or replace defaced or disfigured finishes caused by work of this Section.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including Divisions 00 and 01 Specification Sections, apply to work of this section.

1.02 SECTION INCLUDES

- A. Post and Wire Grid Seagull Bird Deterrent System
- B. Bird Deterrent Spikes
- C. Bird Deterrent Umbrella

1.03 SYSTEM DESCRIPTION

- A. Post and Wire Bird Deterrent: Bidder-designed manufactured wire grid seagull deterrent system consisting of steel cable spanning between posts at a regular grid spacing. Components and accessories to be by a single manufacturer.
- B. Bird Deterrent Spikes: Spike system that can be mounted in a linear pattern to discourage bird landings on parapets, gutters, beams, etc.
- C. Bird Deterrent Umbrella: System designed to protect smaller raised areas from bird landings, such as HVAC equipment and small penthouses above the roof plane.

1.04 SYSTEM DESIGN RESPONSIBILITY

- A. Seagull Deterrent System: The layout indicated on the Drawings is conceptual only and intended only to show certain design requirements and minimum quantities of posts and wires. Provide a final design and system layout to ensure a functional seagull deterrent for the existing roofs. Provide the required elements for a complete and functional seagull deterrent system.
- B. Existing roofs, Buildings 407 and 532:
 - 1. The existing post and wire bird deterrent system shall be enhanced by adding diagonal cross wires in the horizontal grids (in an 'X' pattern), by adding bird spikes and a horizontal wire above the spikes between poles at the perimeter, and by adding intermediate horizontal wires between poles at the roof perimeters.
 - 2. The existing systems were manufactured by Seagull Control Systems, and products shall either be supplied by the original manufacturer, or products of other manufacturers (if approved by substitution request) shall be connected to the existing systems. If other manufacturers are approved, components, including poles, of the existing systems may be replaced as part of the bid cost, but in no case shall new penetrations of the existing roof assembly be permitted.
 - 3. Perimeter poles shall be provided on Building 532, and anchored to the fascia, with wires connected to the existing end of line poles.
 - 4. New roof membrane penetrations are not acceptable, whether the existing system is enhanced or replaced with a new system.

1.05 SUBMITTALS

- A. Submittals Prior To Beginning Work:

1. Product Data: Submit current product literature describing the proposed products with adequate specificity to determine compliance with the specifications. Where product data sheets, with multiple products, circle or otherwise indicate proposed products.
2. Shop Drawings - Dimensioned plan layout showing relevant roof conditions, dimensions, system components and general layout.
3. Sample warranty language.

1.06 PRODUCT DELIVERY STORAGE AND HANDLING

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

1.07 WARRANTY

- A. Warranty: Provide manufacturer's 10 year material warranty on the system components, except for wires, for new system on Building 326.

PART 2 - PRODUCTS

2.01 SEAGULL DETERRENT SYSTEM

- A. Manufacturer: Seagull deterrent systems designed and manufactured by Seagull Control Systems (contact info@seagullcontrol.com) are the basis of design and are the standard of quality and function required for this project. Post and wire type seagull deterrent systems that are designed and manufactured by other manufacturers that meet or exceed this standard of quality and function shall submit a substitution request for review in accordance with the requirements of Section 00 26 00.
- B. Post and Wire System: Products shall be manufactured and supplied by the post and wire seagull deterrent manufacturer. System shall provide a minimum clearance to wires of 6 feet above the roof surface. Basis of Design product: Seagull Control Systems Grid Wire Deterrent system.
 1. Posts: Heavy duty aluminum or stainless steel, 6 to 8-feet high. Hole and slot with nylon plug for connecting the wire arrays.
 2. Post Mounting Brackets: Provide custom fabricated welded aluminum brackets with welded aluminum pole holder with stainless steel set screw, fabricated by the manufacturer. Coordinate the required diameter and length of aluminum rods to fit within the manufacturer's standard heavy duty posts.
 3. Guy Wire Mounting Brackets: Provide custom fabricated welded aluminum brackets as needed, fabricated by the manufacturer.
 4. Wire: Nylon coated stainless steel wire with nickel coated copper crimps.
 5. Guy Wires: Nylon coated stainless steel wire with nickel coated copper crimps.
 6. Other Components: Provide as required for complete and functional seagull deterrent system.
 7. Accessories, Fasteners and Miscellaneous: Provide as required for installing a complete and functional seagull deterrent system.
- C. Spikes: Stainless steel spikes shall be nominal 7 inch height, minimum, and 8 ½ -inch width coverage. Basis of Design product: Seagull Control Systems Stainless Steel Gull Spikes (Extra Tall Spikes), or approved equal.

- D. Umbrella: Permanent mounting base and stainless steel wires that arch out from the base and move in a light breeze. Provide arch diameter of approximately 6 feet to cover rooftop mounted HVAC equipment. Basis of Design product: Seagull Control Systems Seagull Deterrent Spider, or approved equal.
- E. Materials: All materials shall be corrosion-resistant in a marine environment. Uncoated galvanized steel is not permitted. Uncoated stainless steel shall be Type 316 to withstand corrosion in salt air.

PART 3 - EXECUTION

3.01 COORDINATION

- A. Review, coordinate and accommodate work of other trades that interface with, affect or are affected by the work of this section so as to facilitate the execution of the overall Work of this project in a coordinated and efficient manner.

3.02 INSTALLATION

- A. Install seagull deterrent system in accordance with the manufacturer's design and installation requirements. The installed system shall effectively prevent seagulls from landing anywhere on the roof.
- B. Pole spacing shall be determined by manufacturer, but shall not be more than 40 feet apart. Wires shall be placed at a minimum in a rectangular grid from pole to pole, and diagonally crossing (in an 'X' pattern) within each grid from pole to pole. Additional intermediate horizontal wires shall be strung pole to pole around the perimeter, above the bird spikes.
- C. New poles shall be mounted at the perimeter by brackets permanently attached to the parapet face. New internal poles shall be mounted to brackets permanently attached to concrete pavers that shall be adhered to walkway pads installed on the roof membrane surface as specified in Section 07 54 23. Existing poles on Buildings 407 and 532 may be used as currently installed.

3.03 WORKMANSHIP

- A. Bird control devices shall be installed using the best workmanship in conformance with manufacturer's best practices.
- B. Any part of the bird control devices installed with improper or poor workmanship shall be removed and replaced at Contractor's expense.

3.04 FIELD QUALITY CONTROL

- A. Contractor Quality Control: Employ / assign quality control personnel to monitor the work of this section for conformance to the requirements of this section and to good construction practices.
 - 1. Contractor is solely responsible for managing and controlling the quality of the work and conformance with the requirements of this section.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Unions
- B. Flexible Connectors

1.02 SUBMITTALS

- A. Product Data: Submit product information data for all items to be used.

1.03 REFERENCES

- A. ANSI Z21.24: Connectors for Gas Appliances.
- B. ASME B16.39: Malleable Iron Threaded Pipe Unions: Classes 150, 250, and 300.
- C. IFGC: International Fuel Gas Code.
- D. IMC: International Mechanical Code.
- E. UPC: Uniform Plumbing Code.

1.04 GENERAL REQUIREMENTS

- A. System Requirements: Products shall comply with additional requirements cited for the specific systems the products are being installed in; see specific system specification sections.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Unions: Anvil, Nibco, Watts, Epco, Victaulic, Ward, Jefferson Union, or approved equal.
- B. Flexible Connectors: Universal, Mason, Dormont, OPW, Unisource, Twin City Hose, or approved equal.

2.02 UNIONS

- A. Dielectric Unions: Shall not be used. Provide "dielectric connector" with standard union where union is required at connection point of dissimilar materials.
- B. Unions on Copper Pipe:
 - 1. General: Pressure and temperature ratings to match (or exceed) piping system being installed in; minimum Class 125.
 - 2. 2-Inch Pipe and Smaller: Wrought copper solder joint copper to copper union, complying with ASTM B16.18.
 - 3. 2-1/2-Inch Pipe and Larger: Brass flange unions.
- C. Unions on Steel Pipe:
 - 1. General: Pressure and temperature ratings to match (or exceed) piping system being installed in; minimum Class 150.
 - 2. Threaded: Malleable iron union, threaded connections, with ground joints, complying with ASME B16.39. Provide with brass-to-iron seat (except provide iron-to-iron seat where the conveyed material is detrimental to brass).
 - 3. Welded and Flanged: Flange unions; see individual system specification sections.

- D. Dielectric Connector: Schedule 40 steel pipe nipple, zinc electroplated, with internal thermoplastic lining which is NSF/FDA listed and meeting all code requirements for potable water applications. Suitable for continuous use up to 225 deg F and 300 psi. "Clearflow" dielectric waterway (or approved equal). For systems operating at temperatures greater than 225 deg F provide flanged connections with insulating gaskets.

2.03 FLEXIBLE CONNECTORS

A. Piping Flexible Connectors:

1. Fuel Gas Piping 1-1/4 inch and Smaller: Factory fabricated flexible gas connector, constructed of type 304 stainless steel tubing, corrugated, with brass or stainless steel threaded end fittings, and heavy PVC coating. Listed for use in fuel gas piping systems; complying with ANSI Z21.24 and IFGC. Size flexible connector to match pipe size shown on plan, with reducer after the flexible connector to match the equipment connection size (where connecting to equipment). Length as required to accommodate equipment movement relative to piping; minimum 18-inch length for sizes 1/2-inch diameter and less; minimum 24-inch length for larger sizes. Where used on appliances that require to be moved for cleaning or servicing, provide type listed for mobile appliance application, with adequate length to allow for appliance movement, and with a restraining cable and mounting hardware to prevent strain applied to gas connector.
2. Fuel Gas Piping Larger than 1-1/4 inch: Factory fabricated flexible gas piping connector, constructed of series 304 or 321 stainless steel, with braided exterior, carbon steel (or stainless steel) threaded or flanged end connections, rated for 350 psig working pressure, For use with fuel gas piping systems and complying with IFGC. Size flexible connectors to match pipe size shown on plan, with reducer after the flexible connector to match the equipment connection size.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Unions: Install unions in pipe connections to control valves, coils, regulators, reducers, all equipment, and where it may be necessary to disconnect the equipment or piping for repairs or maintenance; and as indicated. Where flanged connections occur at equipment additional unions are not required unless indicated otherwise. Dielectric unions shall not be used.
- B. Dielectric Connectors: Install connectors between all connections of copper and steel piping (or equipment), and other dissimilar metals. Where flanged connections occur use insulating type flanges. Dielectric unions shall not be used.
- C. Flexible Connectors - Piping: Install at pipe connections to equipment with rotating elements (except not required at hydronic heating/cooling coils unless specifically noted), at building expansion joints, and where indicated. Provide flexible connector in gas piping connections to all equipment; size flexible connectors to match pipe size shown on plan, with reducer after the flexible connector to match the equipment connection size.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Natural Gas Piping.
- B. Natural Gas Valves.
- C. Natural Gas Regulators.
- D. Natural Gas Accessories.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for all items to be used.

1.03 REFERENCES

- A. ASME B 6.5: Steel Pipe Flanges and Flanged Fittings.
- B. ASME B16.9: Steel Butt - Welding Fittings.
- C. ASME B16.11: Forged Steel Fittings, Socket Welding and Threaded.
- D. ASTM A53: Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless.
- E. ASTM A105: Carbon Steel Forgings for Piping Applications.
- F. ASTM A234: Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
- G. ASTM B88: Seamless Copper Water Tube.
- H. ASTM B280: Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.
- I. IFGC: International Fuel Gas Code.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Pipe and Fittings: Domestic Manufacturers only.
- B. Valves: Milwaukee, Flowserve (Nordstrom), Stockham, Conbraco/Apollo, Nibco, Resun, ASCO, or approved equal.
- C. Regulators: Fisher, American Meter, Equimeter, or approved equal.

2.02 PIPE AND FITTINGS - ABOVEGROUND

- A. Pipe: Black steel pipe conforming to ASTM A 53, Grade A or B, Type E or S. Schedule 40 unless indicated otherwise.
- B. Fittings:
 - 1. 2 Inches and Smaller - Exposed: Black malleable iron threaded type, Class 150 conforming to ASME B 16.3 and ASTM A 234.
 - 2. 2 Inches and Smaller - Concealed: Steel butt weld type, conforming to ASTM A 234, ASME B 16.9; or steel socket weld type, conforming to ASTM A 105 and ASME B 16.11.
 - 3. 2-1/2 Inches and Larger: Steel butt weld type, conforming to ASTM A 234, ASME B 16.9; or steel socket weld type, conforming to ASTM A 105 and ASME B 16.11.
 - 4. Flanges: Steel socket or welding neck type, Class 150, conforming to ASME B 16.5.

- C. Vent Pipe: Same as gas piping; except where routed exposed in mechanical rooms, may be hand drawn or annealed seamless copper conforming to ASTM B 280 or UNS number C12200 copper conforming to ASTM B 88, with wrought copper fittings, bronze fittings, and soldered joints.

2.03 VALVES

- A. General: Valves shall be designed for use on natural gas system and suitable for the pressures and temperatures to be encountered. Valves shall be UL listed (or CSA certified) for fuel gas use.
- B. Ball Valves: Bronze body, two piece body, blowout proof stem, full port, reinforced TFE seats, chrome plated brass ball, threaded connections, UL listed for LP gas and natural gas shut-off, 250 psi non-shock LP or natural gas working pressure. Nibco T-585-70-UL (or approved equal).
- C. Plug Valves: Lubricated, wrench operated, regular pattern full port type plug valve. Gray iron body and plug per ASTM A 126, Class B. Rated for minimum 175 psi wog. Valves shall have a sealing and lubrication system for maintaining valve seals and operation. Valve shall be factory serviced with manufacturers recommended sealant suitable for the valve application. Valves 2 inch and smaller shall have threaded end connections; larger valves shall have flanged connections. Provide one standard lever type hand wrench for each valve. Resun Figure D-125, D-126 (or approved equal).

2.04 ACCESSORIES

- A. Piping Specialties: See Section 22 05 19.
- B. Pressure Regulator: Cast iron body, die cast aluminum alloy diaphragm case, Buna-N diaphragm disc, 125 psi maximum pressure rating with over pressure positive tight lock-up, internal relief valve, and gray polyester paint finish. Regulator shall be sized by manufacturer based on inlet pressure, desired outlet pressure, and flow requirements. Regulators with vent openings located within 20 feet of ventilation air intakes or where the venting of gas would be unsafe shall be equipped (and labeled for use with) a vent limiting device. Provide with low pressure cut-off where indicated. Shuts off gas flow on low pressure--requires manual reset
- C. Flexible Connectors: See Section 22 05 19. Size flexible connectors to match pipe size shown on plan, with reducer after the flexible connector to match the equipment connection size.

PART 3 - EXECUTION

3.01 GENERAL

- A. General: Comply with Section 23 05 00. Install in accordance with manufacturer's written installation instructions, code, applicable standards and best construction practices.
- B. Complete System: Provide all piping as indicated and as required to allow connections to all equipment requiring gas connections, and to provide complete and operational gas piping systems.
- C. Coordination: Coordinate installation of items with all trades that are affected by the work to avoid conflicts. Review all drawings for location of pipe spaces, ducts, electrical equipment, ceiling heights, door openings, window openings, and other details and report discrepancies or possible conflicts to Engineer before installing pipe.

3.02 PIPE AND FITTINGS

- A. General: Install all piping in a neat, workmanlike manner. Horizontal exposed straight runs of piping shall not deviate from straight by more than 1/4-inch in ten feet.
- B. Joints: Prior to the joining of any section of pipe to a pipe run, the section shall be thoroughly cleaned inside and out, the ends shall be reamed to remove any cutting burrs and piping prepared as recommended by pipe and fitting manufacturer.
- C. Threaded Connections: Cut piping carefully, ream, thread and work into place without springing. Use TFE tape or lead and graphite lubricant (on male threads only).
- D. Welding: Shall conform to ASME B31.1 and ASME B31.9. Welders and welding operators shall be qualified as required by ASME B31.1, ASME B31.9, and governing code. Welded joints on piping system shall be continuous, without backing rings, and pipe ends beveled for butt weld connections. Gas cuts shall be square and free from burned material. Before welding, surfaces shall be thoroughly cleaned. Piping shall be carefully aligned, with no weld material projecting inside the pipe.
- E. Unions: Install unions in pipe connections to equipment and other items where it may be necessary to disconnect the item from piping for repairs or maintenance; and as indicated. Where flanged connections occur at equipment additional unions are not required unless indicated otherwise.
- F. Equipment Drip Legs: Provide drip legs in pipe connections to all equipment. Drip legs shall be located downstream of equipment isolation valves, and upstream of unit flexible connectors or unions. Provide adequate clearance for removal of drip leg cap.
- G. Regulators: Provide drip legs with removable caps upstream of all regulators; provide test tee with capped valve 10 pipe diameter downstream of all regulators.
- H. Flexible Connectors: Provide flexible connectors in piping at connections to all equipment. Size flexible connectors to match pipe size shown on plan, with reducer after the flexible connector to match the equipment connection size.
- I. Provide flexible connectors at crossing of building seismic or expansion joints. Install in a manner to allow for 1-inch movement in any direction.
- J. Vents: Pipe regulator vent lines and all equipment gas train vents full size to outside of building; terminate with vent cap.
- K. Outdoor Piping - Painting: All aboveground piping outside of building shall be cleaned and prime painted with two coats of a rust-inhibiting paint and a final coat of finish paint (color yellow).

3.03 VALVES AND ACCESSORIES

- A. Type: Ball type.
- B. Applications: Provide isolation valves at piping connections to all equipment, at inlet of all pressure regulators, and where indicated.

3.04 TESTING AND INSPECTION

- A. General: All piping shall be tested, inspected, and approved by the AHJ prior to being concealed or covered.
- B. Witnessing: Testing shall be witnessed by the AHJ and the Engineer (at his option). Notify Engineer minimum 72 hours prior to date of testing, and mutually agree upon times arranged.

C. Testing:

1. Piping shall be inspected, purged and pressure tested in accordance with IFGC (except where more restrictive requirements are specified herein, the most restrictive shall prevail).
2. Test pressure shall be not less than 150 percent of the maximum to which the pipe will ordinarily be subjected; but in no case less than 50 psig.
3. Components that may be damaged by the test pressure shall be removed or isolated from the piping system during testing.
4. Portions of the system that are reconnected after system testing that could not be tested (e.g. low pressure equipment connections, separate portions of the system, etc.) shall be specifically tested with a non-corrosive leak detection fluid acceptable to the AHJ.
5. Any leaks or defective piping disclosed by testing and inspection shall be repaired with new materials and the system re-tested.

- D. Documentation: Provide documentation to the Engineer indicating that the system has been completely pressure tested, and all portions inspected and accepted by the AHJ.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. General Mechanical System Requirements
- B. Mechanical System Motors
- C. Identification and Labeling

1.02 REFERENCES

- A. ASME A13.1: Scheme for the Identification of Piping Systems.

1.03 GENERAL REQUIREMENTS

- A. Scope: Furnish all labor, materials, tools, equipment, and services for all mechanical work. This section applies to all Division 22 and 23 specifications and to all project mechanical work.
- B. Code:
 - 1. Compliance: All work shall be done in accordance with all applicable codes and ordinances. Throughout the Project Documents, items are shown or specified in excess of code requirements; in all such cases, the work shall be done so that code requirements are exceeded as indicated.
 - 2. Documentation: Maintain documentation of all permits and code inspections for the mechanical work; submit documentation showing systems have satisfactorily passed all AHJ inspections and requirements.
 - 3. Code Knowledge: Contractor and workers assigned to this project shall be familiar and knowledgeable of all applicable codes and ordinances. Code requirements are typically not repeated in the Contract Documents. By submitting a bid, the Contractor is acknowledging that the Contractor and workers to be utilized on this project have such knowledge.
 - 4. Proof of Code Compliance: Prior to final completion, satisfactory evidence shall be furnished to show that all work has been installed in accordance with all codes and that all inspections required have been successfully passed. Satisfactory evidence includes signed inspections by the local code authority, test lab results, qualified and witnessed field tests, and related acceptance certificates by local code authorities, and field notes by the Contractor as to when all inspections and tests occurred.
- C. Complete Systems: Furnish and install all materials, appurtenances, devices, and miscellaneous items not specifically mentioned herein or noted on the drawings, but which are necessary to make a complete working installation of all mechanical systems. Not all accessories or devices are shown or specified that are necessary to form complete and functional systems.
- D. Review and Coordination:
 - 1. General: To eliminate all possible errors and interferences, thoroughly examine all the Drawings and Specifications before work is started, and consult and coordinate with each of the various trades regarding the work. Such coordination shall begin prior to any work starting, and continue throughout the project.
 - 2. Suppliers: Suppliers of products shall review the documents to confirm that their products are suitable for the application and that all manufacturer's requirements and

recommendations have been satisfactorily addressed in the Contract Documents. Where not addressed the supplier shall notify the Engineer prior to bidding to resolve any issue.

- E. Conflicts and Discrepancies: Notify the Engineer of any discrepancies or conflicts before proceeding with any work or the purchasing of any materials for the area(s) of conflict until requesting and obtaining written instructions from the Engineer on how to proceed. Any work done after discovery of such discrepancies or conflicts and prior to obtaining the Engineer's instructions on how to proceed shall be done at the Contractor's risk and expense.
- F. Drawings and Specifications: Drawings and specifications are complementary and what is called for in either is binding as if called for in both. The drawings are diagrammatic and show the general arrangement of the construction and therefore do not show all offsets, fittings and accessories which are required to form a complete and operating installation. Mechanical work is shown on multiple drawings and is not limited to a particular set of sheets, or sheets prefaced with a particular letter.
- G. Offsets/Fittings:
 - 1. Piping Systems: Include in bid all necessary fittings and offset to completely connect up all systems, maintain clear access paths to equipment, and comply with all project requirements. Offsets are required to route piping around building structural elements, roof slopes, mechanical systems, electrical systems, and numerous other items. Due to the schematic nature of the plans such offsets are typically not shown. Contractor is responsible to determine the quantity of offsets and fittings required, and the labor involved. No added payment or "extras" will be granted for the Contractor's failure to correctly estimate the number of offsets and fittings and labor required.
 - 2. Duct Systems: Include in bid all necessary fittings, offsets, and transitions to completely connect all systems, maintain clear access paths, and comply with all project requirements. Due to the schematic nature of the plans such offsets are typically not shown. Contractor is responsible to determine the quantity of offsets and fittings required, and the labor involved. No added payments or "extras" will be granted for the Contractor's failure to correctly estimate number of offsets, fittings, transitions and labor required. Contractor is advised that transitions are required at connections to all equipment, to all air inlets/outlets, crossing of beam lines, at crossing with piping, and similar locations.
- H. Design: The level of design presented in the documents represents the extent of the design being furnished to the Contractor; any additional design needed shall be provided by the Contractor. All design by the Contractor shall be performed by individuals skilled and experienced in such work, and where required by local code (or elsewhere in the documents) shall be performed by engineers licensed in the State where the project is located. Include in bid the costs of all such project design; including engineering, drafting, coordination, and all related activities and work. Such designs services are required for many building systems; including but not limited to ductwork at equipment, piping at fixtures and equipment, hanger/support systems, temporary duct/piping systems, mechanical offsets/adjustments to suit other system, and for methods/means of accomplishing the work.
- I. Special Tools: Furnish to the Owner one complete set of any and all special tools such as odd size wrenches, keys, etc. (allen wrenches are considered odd), which are necessary to gain access to, service, or adjust any piece of equipment installed under this contract. Each tool shall be marked or tagged to identify its use. Submit a written record listing the special tools provided, date, and signed by the Owner's representative receiving the tools.
- J. Standards and References: Shall be latest edition unless a specific edition, year, or version is cited, or is enforced by the AHJ.

K. Warranties:

1. General: Products and workmanship shall be warranted to be free from all defects, capable of providing satisfactory system operation, and conforming to the requirements of the Contract Documents. Include in the project bid all costs associated with project warranties to ensure that the warranty extends for the required period; possible project delays and failure by others to complete their work may cause the start of the warranty period to be delayed. The Contractor shall be responsible for increasing the warranty dates by corresponding amounts to provide the required warranty periods.
2. Special Warranties: See individual specification sections for special warranty requirements and extended warranty periods beyond the basic project warranty.

L. Permits and Fees:

1. Obtain and pay for all permits, licenses, fees and inspections as required by the Code and as specified herein (unless noted otherwise).
2. Pay all charges made by any utility company or municipality for material, labor or services incident to the connection of service (unless noted otherwise).

- M. Commissioning: All mechanical systems are to be commissioned per Section 23 08 00. The Contractor has specific responsibilities for scheduling, coordination, startup, test development, testing and documentation. At a minimum, the Contractor shall provide a documented and signed record to verify that all equipment and systems installed under this contract have been inspected and functionally tested to verify full compliance with the contract specifications

1.04 QUALITY ASSURANCE

- A. Experience: All work shall be performed by individuals experienced and knowledgeable in the work they are performing, and experienced with the same type of systems and building type as this project. By virtue of submitting a bid, the Contractor is acknowledging that workers to be utilized on this project have such experience and knowledge. Upon request of the Engineer, submit resumes showing the work history, training, and types of projects worked on, for individuals assigned to this project.
- B. Code: Utilize workers experienced and knowledgeable with codes pertaining to their work; verify code compliance through-out the project.
- C. Quality Assurance Checks: Prior to ordering products and making submittals, confirm the following for each:
1. General: Product is suitable for the intended purpose and complies with the Contract Documents.
 2. Manufacturer: Product's manufacturer is listed as an acceptable manufacturer in the Contract Document's or a substitution request (where allowed) has been submitted and the manufacturer has been listed as acceptable.
 3. Electrical (for products requiring electrical power):
 - a. Product is for use with the voltage/phase as indicated on the electrical plans (or for the electrical circuit the item will be connected to).
 - b. Product's ampacity requirements (MCA) do not exceed that indicated on the electrical plans (or for the electrical circuit the item will be connected to).
 4. Weight: Product's weight is no greater than that indicated.

5. Space Verification: Product will fit in the space available, and along the path available to install the item, will have adequate service clearances, and will not impede on any clearances required for other items in the space the item will be located.
6. Installation: A suitable method for installing the product has been selected which meets the project schedule and other requirements.
7. Lead Time: The product's fabrication, shipping, and delivery period meets the project schedule requirements.
8. Controls: Item is compatible with the controls it will be connected to and has been coordinated with the firm providing the project control work.
9. Listing: Item is Listed when required to be as such. And if the item is to be installed as part of a Listed system or assembly, it is compliant with the Listing of the overall system or assembly.

1.05 SUBMITTALS - GENERAL

- A. Quality Assurance: By submitting an item for review, the Contractor is claiming that all "Quality Assurance Checks" (see paragraph 1.06 this specification Section) have been performed and satisfactorily passed and no further comment from the submittal reviewer is required for the "Quality Assurance Checks".
- B. Product Submittals - Information Required:
 1. Manufacturer's catalog information, containing product description, model number, and illustrations. Mark clearly to identify pertinent information and exact model and configuration being submitted.
 2. List of accessories and options provided with product.
 3. Product dimensions and clearances required.
 4. Product weight.
 5. Submittal identified with product name and symbol (as shown on the drawings or written in the specifications) and specification Section and paragraph reference.
 6. Performance capacity and characteristics showing compliance with the Contract Documents.
 7. Manufacturer's and local manufacturer's representative names, addresses, and phone numbers.
 8. For equipment requiring piping or duct connections:
 - a. Type of connections required.
 - b. Size and locations of connections.
 9. For electrically operated equipment:
 - a. Number and locations of electrical service connections required.
 - b. Voltage required.
 - c. Fuse or circuit breaker protection requirements.
 - d. Motor starter requirements; if motor starter is furnished with the equipment, submit product information on motor starter.

10. For equipment requiring control connections:
 - a. Type of control signals required.
 - b. Information on control devices furnished with equipment.
 - c. Location of control connections.
11. Manufacturer's installation instructions.
12. See each specification Section for additional submittal requirements.

1.06 JOB CONDITIONS

A. Special Requirements:

1. Coordinate startup and shutdown of all mechanical systems and utilities with related trades and the Owner's representative.
2. Coordinate all construction activities with the Owner's Representative and cooperate fully so as to minimize conflicts and to facilitate Owner usage of the premises during construction.
3. Provide temporary services to occupied areas to accommodate Owner's use during construction. All temporary work shall comply with same specifications as for new work and be of same quality.

1.07 ENGINEER REVIEWS AND WITNESSING

- ##### A. Access: Provide ladders, any special tools and safety equipment to allow Engineer's access to areas and equipment. Remove and reinstall ceiling tiles, access panels, and similar items where requested to allow for reviews.
- ##### B. Review of Systems with Equipment:
1. Prior to Engineer's review, system's equipment shall have received specified start-up and be substantiated by a written report.
 2. Prior to Engineer's review, systems shall have been operating properly for at least five consecutive days prior to the scheduled review date.
 3. Personnel shall be present to operate the system's equipment and controls, and to vary system settings as directed by the Engineer to allow for a review of operation over a range of settings.

PART 2 - PRODUCTS

2.01 IDENTIFICATION AND LABELS

- ##### A. General: All piping, valves, and mechanical equipment shall be labeled. Labels in concealed accessible spaces shall be reviewed and verified by Engineer prior to being concealed.
- ##### B. Piping:
1. Type: Self-sticking colored identification markers, lettered to identify the pipe contents, and banded at each end with arrow tape indicating the direction of flow. Markers shall be similar and equal to Brady "System 1" and Seton "Opti-Code" markers. Spray painted stencil labeling is not acceptable. Some labels may be special order.
 2. Identification Colors: Comply with ASME A13.1, and as follows:

<u>Conveyed Material/System</u>	<u>Background</u>	<u>Letters</u>
---------------------------------	-------------------	----------------

- | Flammable | Yellow | Black | | | | | | | | | | | | | | | | | | |
|---|----------------------------------|------------------------|---|----------------------------------|------------------------|---------------------|----------|------------|-------------------|----------|------------|-------------------|-----------|--------------|----------------|-----------|--------------|----------------|-----------|--------------|
| <p>3. Lettering: Lettering shall identify the material conveyed in each pipe and shall match the designation used on the plans, but without abbreviations. Systems which have supply and return piping shall have piping labeled as such (i.e. heating water return, heating water supply, etc.). Systems that have different pressures shall be labeled to indicate such (i.e. Steam-Low Pressure, Steam- Medium Pressure, Natural Gas-Low Pressure, Natural Gas-Medium Pressure, etc.).</p> | | | | | | | | | | | | | | | | | | | | |
| <p>4. Size: Size of letters and color field shall comply with ASME A13.1, repeated here for convenience:</p> <table border="0"> <thead> <tr> <th style="text-align: left;"><u>Outside Diameter of
Pipe or Covering</u></th> <th style="text-align: left;"><u>Length of
Color Field</u></th> <th style="text-align: left;"><u>Size of Letters</u></th> </tr> </thead> <tbody> <tr> <td>3/4 to 1-1/4 Inches</td> <td>8 Inches</td> <td>1/2 Inches</td> </tr> <tr> <td>1-1/2 to 2 Inches</td> <td>8 Inches</td> <td>3/4 Inches</td> </tr> <tr> <td>2-1/2 to 6 Inches</td> <td>12 Inches</td> <td>1-1/4 Inches</td> </tr> <tr> <td>8 to 10 Inches</td> <td>24 Inches</td> <td>2-1/2 Inches</td> </tr> <tr> <td>Over 10 Inches</td> <td>32 Inches</td> <td>3-1/2 Inches</td> </tr> </tbody> </table> | | | <u>Outside Diameter of
Pipe or Covering</u> | <u>Length of
Color Field</u> | <u>Size of Letters</u> | 3/4 to 1-1/4 Inches | 8 Inches | 1/2 Inches | 1-1/2 to 2 Inches | 8 Inches | 3/4 Inches | 2-1/2 to 6 Inches | 12 Inches | 1-1/4 Inches | 8 to 10 Inches | 24 Inches | 2-1/2 Inches | Over 10 Inches | 32 Inches | 3-1/2 Inches |
| <u>Outside Diameter of
Pipe or Covering</u> | <u>Length of
Color Field</u> | <u>Size of Letters</u> | | | | | | | | | | | | | | | | | | |
| 3/4 to 1-1/4 Inches | 8 Inches | 1/2 Inches | | | | | | | | | | | | | | | | | | |
| 1-1/2 to 2 Inches | 8 Inches | 3/4 Inches | | | | | | | | | | | | | | | | | | |
| 2-1/2 to 6 Inches | 12 Inches | 1-1/4 Inches | | | | | | | | | | | | | | | | | | |
| 8 to 10 Inches | 24 Inches | 2-1/2 Inches | | | | | | | | | | | | | | | | | | |
| Over 10 Inches | 32 Inches | 3-1/2 Inches | | | | | | | | | | | | | | | | | | |
| <p>5. Applications: Install on all exposed piping adjacent to each shut-off valve, at branches to indicate changes of direction, where pipes pass through walls and floors, on 20 foot centers.</p> | | | | | | | | | | | | | | | | | | | | |
| <p>6. Other Requirements: See other specification Sections for additional requirements.</p> | | | | | | | | | | | | | | | | | | | | |

C. Equipment:

1. Labels: Phenolic material, 1/16-inch thick, with black surface layer and white (unless other color indicated) sub-layer, with engraving through to expose white sub-layer. Minimum 2-inch high (unless indicated otherwise or required due to equipment size) with length to contain required lettering. Label shall be pre-drilled and be mechanically fastened to the equipment. Prior to making labels, submit a list of all proposed labels.
2. Lettering: All caps, engraved on label, with equipment designation (same designation as used on Contract Drawings; e.g. HVAC-101, EF-22, CP-1A). Air handling equipment (i.e. VAV terminal units, fans, etc.) labels shall include the room names and numbers or area of building served (use final installed room designations). Where systems serve portions of the building (i.e. wings or floors), include on label the area served. Lettering shall be in multiple rows, with equipment label on top row. Equipment lettering to be 5/8-inch high; area served lettering to be 3/8-inch high (except that smaller lettering may be used if necessary to fit label size).
3. Application: All scheduled mechanical equipment shall be labeled. The label shall be located on a side of the equipment so as to be easily read, with the marking visible to a person standing at the access level near the equipment (assuming any necessary access to a concealed unit has been made).

D. Electrical Devices:

1. Labels: Minimum 1/4-inch high (unless indicated otherwise) lettering, all caps, engraved on laminated phenolic material, at least 1/16-inch thick. Phenolic label shall have black surface layer and white (unless other color indicated) sub-layer, with engraving through to

expose white sub-layer. Label shall be pre-drilled and be mechanically fastened to the item; where mechanical fastening is not possible use 3M VHB double sided specialty tape No. 4945. Prior to making labels, submit a list of all proposed labels.

2. Lettering: Label shall identify the item served (using the same designation as indicated on the Contract Drawings), the source of power (by panel and circuit breaker), and comply with code.
3. Application: Variable frequency drives, motor starters, disconnects, contactors, relays and similar items which control power to equipment and system components shall be labeled. The label shall be located so as to be easily read. See Section 23 09 33 for labeling of low voltage control components.

PART 3 - EXECUTION

3.01 GENERAL

- A. Workmanship: Furnish and install products to provide complete and functioning systems with a neat and finished appearance. If, in the judgment of the Engineer, any portion of the work has not been installed in accordance with the Contract Documents and in a neat workmanlike manner, or has been left in a rough, unfinished manner, the Contractor shall be required to revise the work so that it complies with the Contract Documents, at no increase in cost to the Owner.
- B. Coordination: Coordinate the work with all trades that may be affected by the work to avoid conflicts and to allow for an organized and efficient installation of all systems.
- C. Examination and Preparation: Examine installation conditions and verify they are proper and ready for the work to proceed. Verify compatibility of materials in contact with other materials, and suitability for conditions they will be exposed to. Do not proceed with the work until unsatisfactory conditions have been corrected. Prepare area to accept the work and prepare products for the installation.
- D. Field Conditions: Check field conditions and verify all measurements and relationships indicated on the drawings before proceeding with any work. In verifying existing conditions, the Contractor shall verify by direct physical inspection, complete tracing out of systems, by applying test pressures, by excavation and inspection, use of pipeline cameras, and other suitable absolute certain methods to confirm the actual physical conditions that exist.

3.02 INSTALLATION

- A. General: Work shall be in accordance with manufacturer's written installation instructions, code, applicable standards, and best construction practices.
- B. Space Verification: Prior to ordering materials verify that adequate space exists to accept the products, and along the installation path. Such verification shall be by direct field measurement of the actual space available and use of manufacturer's final submittal dimensions. Review maintenance and service access space required and confirm requirements will be met. No submittals shall be made until such space verification work has been performed, and confirmed that adequate space is available. By virtue of making a submittal that Contractor affirms he has completed this verification.
- C. Installation Locations: Unless dimensioned locations for items are shown, select the precise location of the item in accordance with the Contract Documents, coordinated with other trades and item connection locations, and subject to the Engineer's review. No allowances will be granted for failure to obtain the Engineer's review, failure to coordinate the work, and failure to comply with Contract Document requirements.

- D. Replacement and Maintenance: Install mechanical equipment to permit easy access for normal maintenance, and so that parts requiring periodic replacement or maintenance (e.g. coils, heat exchanger bundles, sheaves, filters, bearings, etc.) can be removed. Relocate items which interfere with access or revise item installation location, orientation, or means of access.
- E. Manually Operated Components: Valves, damper operators, on/off switches, keypads, controls, and other devices which are manually adjustable or operated shall be located so as to be easily accessible by a person standing on the floor. Any such items which are not in the open shall be made accessible through access doors in the building construction. See individual specification sections for additional requirements.
- F. Accessible Installation: If circumstances at a particular location make the accessible installation of an item difficult or inconvenient, the situation shall be discussed with the Engineer before installing the item in a location that will result in poor access.
- G. Rotating Parts: Belts, pulleys, couplings, projecting setscrews, keys and other rotating parts which may pose a danger to personnel shall be fully enclosed or guarded in accordance with Code, and so as not to present a safety hazard.
- H. Dissimilar Metals: Provide separations between all dissimilar metals. Where not specified in another way, use 10 mil plastic tape wrapped at point of contact or plastic centering inserts.
- I. Electrical Offsets: Provide offsets around all electrical panels (and similar electrical equipment) to maintain space clear above and below electrical panels to structure, and clearance of 3.5 feet directly in front of panel, except where indicated otherwise or required by code to be more. Such required offsets are typically not shown on the plans but are to be provided per this paragraph. Include in bid offsets for all systems near electrical panels.
- J. Pressure Tests: Maintain documentation of all pressure (and leakage) tests performed on systems and submit with project closeout documents. Records shall contain (as a minimum): date of test, system name, description portion of system being tested, method of test, initial and final test pressures (or of measured leakage rates, as applicable), indication of test pass or fail, name and signature of individual performing (or documenting) the test, initials of independent witness of test.

3.03 PAINTING

- A. The following painting shall be provided under Division 22 and 23:
 - 1. All exposed metallic surfaces (includes piping, ducts, hangers, conduits, etc.) provided by this Contractor (except equipment with factory finish or items specifically excluded) shall receive one coat of rust inhibiting primer and two (2) coats of selected finish paint.

3.04 PENETRATION PROTECTION

- A. Exterior and Watertight Penetrations: Where any work pierces the building exterior (or construction intended to be watertight) the penetration shall be made watertight and weatherproof. Provide all necessary products (e.g. caulking, flashing, screens, gaskets, backing materials, siding, roofing, trim, etc.). Where not detailed or indicated how to install submit shop drawings of the proposed methods. Flashing arrangements shall be per SMACNA Architectural Sheet Metal Manual unless noted otherwise. Caulking alone is not an acceptable means of sealing penetrations.
- B. Equipment: Equipment or products located outdoors shall be watertight (except for provisions designed to intentionally accept water and having drain provisions) and shall be designed and intended by the manufacturer to be used outdoors at the project location. Where any work

pierces the unit casing exposed to the outdoors the penetration shall be made watertight and weatherproof; provide all necessary products (e.g. caulking, flashing, gaskets, backing materials, etc.).

- C. Animal Protection: Mechanical system openings, overhangs, shrouds, coverings, gaps below units, and other elements where animals could enter or occupy shall be protected with screens to prevent animal entry or occupation. Screening shall be installed in a neat professional manner, square to the adjacent construction, and be securely attached with removable fasteners.

3.05 START-UP

- A. General: Provide inspections, start-up and operational checks of all mechanical systems and equipment. Maintain documentation of all start-up work and submit with project closeout documents. See individual specification Sections for additional requirements.
- B. Personnel: Inspection and start-up services shall be done by individuals trained in the operation, and knowledgeable with, the systems being started-up. Equipment start-up shall be by the manufacturer's authorized service representative where indicated (see individual specification Sections).
- C. Scheduling and Agenda: Submit a proposed detailed start-up schedule with proposed dates and times at least 30 days prior to the earliest proposed system start-up. Revise dates and times as mutually agreed upon with trades involved, and witnesses, before submitting a final start-up schedule.
- D. Witnessing: Start-up may be witnessed by the Engineer and Owner's representative (at their option). Notify the Engineer and Owner 7 days prior to the proposed start-up time.

3.06 OWNER INSTRUCTION

- A. General: Provide instruction to the Owner on the operation and maintenance of all installed mechanical systems.
- B. Personnel: Instruction on the operation and maintenance of products shall be by individuals trained and experienced in the installation, operation and maintenance of these products. Instruction shall be by the product manufacturer's authorized service representative where indicated (see individual specification Sections).
- C. Scheduling and Agenda: Submit a proposed instruction schedule (with proposed dates and times) and an instruction agenda at least 30 days prior to the earliest proposed instruction period. Coordinate Owner and Engineer review and arrange mutually agreed upon instruction schedule and the instruction agenda, and submit a final instruction schedule and agenda. Organize instruction by sub-systems corresponding to the project specifications (or similar logical grouping).
- D. Instruction: Demonstrate and explain normal start-up, normal shut-down, normal operation, normal settings, adjustments, signs of abnormal operation, emergency shut-down, safety concerns, and related information. Demonstrate and explain system maintenance requirements with references to the O&M Manual. Show how maintenance is performed, including how items are accessed, maintenance procedures, tools and parts required, and related information. Review typical repairs and explain how performed.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Protection of Items from Damage
- B. Maintaining Utilities and Building Services
- C. Cleaning
- D. Review of Existing Conditions
- E. Mechanical Demolition and Disposal
- F. Salvage and Reinstallation

PART 2 - PRODUCTS

2.01 GENERAL

- A. Materials: All materials used for capping, temporary piping, repairs, reconnecting, reinstalling, and related work shall be same as specified for new systems.

PART 3 - EXECUTION

3.01 GENERAL

- A. Protection: Existing items not being demolished shall be protected against damage. Where necessary to prevent damage or necessary to accomplish other work, items shall be disconnected and moved to a suitable protective storage location during the project and then reinstalled to their original location.
- B. Utilities and Building Systems: Maintain existing utilities and building systems in service (unless indicated otherwise) and protect from damage during project. Where utilities or building systems must be shut-off to accomplish the work, see drawing notes and Division 01 for downtime limitations and Owner coordination and notification requirements; coordinate interruptions with other trades.
- C. Equipment and System Contents: Equipment and systems contain fluids that are typical for such items (e.g. HVAC units contain refrigerant, oils; hydronic systems contain ethylene glycol, corrosion control chemicals, etc.) and require special removal methods and disposal.
- D. Existing Items:
 - 1. Information and Field Verification: Routing, locations, and identification of existing items on plans are approximate and are limited. The relative location of systems shown on plans has not been verified, and is schematic only. Field verify locations, contents, and flow direction of all piping and ducts prior to performing any work associated with such systems (see also Section 23 05 00). Do not rely on existing labeling of systems; such labeling shall be considered wrong until verified by other physical evidence.
 - 2. Work Around: Existing building cavities (ceiling spaces, walls, etc.) contain a multitude of systems (e.g. conduit, wiring, fire suppression, light fixtures, low voltage system components, piping, ducts, etc.) typical for buildings of the type of this project. Added effort is required to identify and locate these systems, to work around such systems, and to temporarily disconnect and reconnect (and possibly remove and store) various building components to accommodate the work. Existing building elements may also require the work to be installed in smaller sections (i.e. shorter pipe or duct lengths) than normally possible, and to make system connections in awkward or cramped locations.

3. Revisions: Revise existing systems as needed to accommodate project work and new finishes. Work shall include adjusting locations of items to suit revisions to building element locations and other changes.
 4. Electrical: Verify voltage, phase, horsepower, panel circuits, and other electrical parameters of existing items prior to beginning work and ordering replacement products. Electrical data listed on the drawings for such items has not been field verified.
 5. Controls: Verify existing communication protocol, existing component manufacturers, and model numbers, LAN type(s), software, location of devices, quantity of system points, methods used in terminating communication wiring, overall system performance, and sequences.
- E. Disposal: Dispose of all demolished items and all waste materials off site in accordance with code and legal requirements.

3.02 REVIEW OF EXISTING CONDITIONS

- A. General: Provide field investigation of all systems and existing conditions to confirm extent of demolition, routing of existing systems, existing building materials of construction, mechanical system types and materials involved, areas where cutting and patching is required, site access, sizes of existing system components, and all other aspects of existing building and systems and their relationship to the Work.
- B. Review Timing: Review existing conditions prior to bidding (optional), again prior to commencing any work or ordering materials, and continually throughout the project.
- C. Review for Space and Routing:
 1. Review existing conditions (including dimensions) where equipment must be moved through to confirm adequate space and path.
 2. Review existing conditions (including dimensions and locations of existing systems) where work will occur to determine impact on the locations and routing of new systems; include time to develop shop drawings and revisions to routing shown on the design drawings to accommodate existing conditions.

3.03 DEMOLITION

- A. General: Review site conditions and identify all demolition work; include in bid all costs for demolition and disposal. Demolish all items indicated. Demolish all mechanical items located in walls and other building elements which are being demolished, and as required to accomplish the work. Where existing building systems are to be reused to serve new items, carefully execute the demolition work to prevent damage to items to be reused and to prevent the demolition of items that are intended for reuse.
- B. Scope: Not all items to be demolished are necessarily shown on the drawings, but are covered by notes and specifications. All existing items associated with demolished items shall be removed (unless indicated otherwise). This includes such items as hangers, insulation, control wiring/conduit, unions, valves, piping, and similar accessories.
- C. Depth: Abandoned items, anchors, inserts, and other projections not being concealed by new construction shall be removed to 1" below the adjacent finished surface, and the disturbed area patched.
- D. Equipment Services: Where equipment is being demolished and replaced with new at the same location, but new control or power devices (or other utility services) are not indicated to be provided; salvage and reuse the existing utility services (i.e. control devices, wiring,

disconnects, starter, plumbing, etc.) that served the demolished item to serve the new item. Carefully remove items to prevent damage, and in a manner to allow reuse. Clean items that are going to be reused and all accessories to like new condition. Revise utility services as needed to serve the new equipment.

3.04 REMOVAL AND REINSTALLATION

- A. General: Where items are required to be removed to allow for other work and then be re-installed when the other work is done, comply with the following.
- B. Removal: Carefully remove items to prevent damage and in a manner to allow for reinstallation. Remove all related items to the extent needed to allow for the Work.
- C. Package: Package item to allow for transport and storage without damaging. Label packaging to identify contents; include unique identifier number, brief description, and location (room number) item was removed from.
- D. Documentation: Compile list of removed items and documentation needed to allow for their reinstallation.
- E. Storage: Store items in secure and protective area until ready for reinstallation.
- F. Reinstallation:
 - 1. Reinstall items and accessories as completion of other work allows. Provide all necessary connections and services to allow item to function properly; not all such connections are illustrated on the plans.
 - 2. Provide new fasteners, supports, anchors, gasketing, seals, pipe connectors, unions and related items to allow for complete and proper connections and operation of reinstalled items.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Pipe Hangers and Supports
- B. Duct Hangers and Supports
- C. Mechanical Equipment Anchors and Supports

1.02 QUALITY ASSURANCE

- A. Pipe Hanger Standards: Manufacturers Standardization Society (MSS) Standards SP-58, SP-89, SP-69, and SP-90.
- B. General: All methods, materials and workmanship shall comply with Code; including IBC, IMC, UPC, NFPA Standards, and ASME standards.

1.03 SUBMITTALS

- A. Product Data: Submit product data for all hangers, supports, and anchors. Data to include finish, load rating, dimensions, and applicable agency listings. Indicate application for all items by system type, size, and other criteria as appropriate to project.
- B. Shop Drawings:
 - 1. General: Shop drawings shall clearly indicate dimensions, anchor and support type, anchor and support size, anchor and support spacing, finish, configuration, and systems/equipment to be applied to.
 - 2. Attachments: Submit shop drawings for proposed attachment methods to building structure where the method of attachment has not been shown on the drawings, or where attachment methods other than those shown on the drawings are desired to be used.
 - 3. Fabricated Supports: Submit shop drawings for all fabricated supports.
 - 4. Finished Areas: Submit shop drawings for all supports that will be exposed in finished areas.

1.04 GENERAL REQUIREMENTS

- A. Seismic: Provide adequate hangers, supports, anchors, and bracing to serve as seismic restraints. Seismic anchoring and bracing methods shall comply with SMACNA SRM, Mason SRG, and code. Seismic restraints system shall be able to withstand seismic forces as required by code; provide seismic restraint calculations as required by the AHJ.
- B. Design and Manufacture: All pipe hangers and supports shall be designed and manufactured in accordance with MSS-SP 58.

1.05 REFERENCES

- A. ADC: Air Duct Council - Flexible Duct Performance and Installation Standard, 5th Edition.
- B. ASHRAE-F: American Society of Heating, Refrigeration, and Air Conditioning Engineers, Handbook of Fundamentals.
- C. ASME B31.1: Power Piping.
- D. ASME B31.9: Building Services Piping.
- E. ASTM A36: Standard Specification for Carbon Structural Steel.
- F. ASTM A108: Standard Specification for Steel Bar, Carbon and Alloy, Cold - Finished.

- G. ASTM A123: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- H. ASTM A153: Standard specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- I. ASTM A653: Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
- J. ASTM A924: Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot Dip Process.
- K. IBC: International Building Code.
- L. IMC: International Mechanical Code.
- M. Federal Spec QQ-W-461H: Wire, Steel, Carbon (Round, Bare, and Coated).
- N. Mason SRG: Mason Industries Seismic Restraint Guidelines for Suspended Piping, Ductwork, Electrical Systems and Floor Mounted Equipment, 6th Edition.
- O. MSS SP-58: Pipe and Hangers and Supports - Materials, Design and Manufacture.
- P. MSS SP-69: Pipe and Hangers and Supports - Selection and Application.
- Q. MSS SP-89: Pipe Hangers and Supports - Fabrication and Installation Practices.
- R. MSS SP-90: Guidelines on Terminology for Pipe Hangers and Supports.
- S. SMACNA-DCS: HVAC Duct Construction Standards Metal and Flexible, 3rd Edition.
- T. SMACNA SRM: Seismic Restraint Manual Guidelines for Mechanical Systems, 2nd Edition.
- U. UPC: Uniform Plumbing Code.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Hangers and Supports: Grinnell, B-Line Systems, Unistrut, Erico, PHD, Basic-PSA, Pate, Caddy, Unisource, Metraflex, American Insulation Sales, or approved equal.
- B. Anchors: Rawplug, Phillips, Hilti, Michigan, Simpson, Fastenal, Grinnell, B-Line Systems, Unistrut, PHD, Basic-PSA, Metraflex, or approved equal.

2.02 GENERAL

- A. Finish:
 - 1. Salt-Water Exposure: All support components shall be fabricated of type 304 or type 316 stainless steel.
- B. Identification: Steel pipe hangers and supports shall be stamped with the manufacturer's name, part number, and size.
- C. Hanger Straps: Galvanized steel, minimum 1" x 22 gauge (except where required by Code to be heavier or noted otherwise), of lock-forming grade conforming to ASTM A924, G90 (minimum) galvanized coating conforming to ASTM A 653. Minimum yield strength of 30,000 psi. Straps shall be sized so that the total load imposed does not exceed the following:

<u>Strap Size</u>	<u>Maximum Load</u>
1" x 22 Gauge	230 Pounds

1" x 20 Gauge	290 Pounds
1" x 18 Gauge	380 Pounds
1" x 16 Gauge	630 Pounds
1-1/2" x 16 Gauge	990 Pounds

- D. Beam Attachments: Constructed of malleable iron or steel, MSS standard types designed for clamping to building structural support beam. "C" clamp type shall have cup point set screws with locknuts and retaining straps. Center loaded type beam clamps shall have horizontally adjustable clamping bolt (or rod with nuts).
- E. General Anchors (Screws, Nuts, Bolts, Fasteners):
1. General: Constructed of materials suitable for the conditions exposed to and materials being joined, with minimum 50 year service life. Stainless steel construction where exposed to corrosive conditions. Configuration, size and grade to suit application, accommodate expected forces, and provide anchoring to structural element (or allow for proper fastening of items). Minimum safety factor of 2.5 (or as required by code, whichever is greater). Comply with ASTM A307, SAE J429, SAE J78, or ASTM A 563; bolts and nuts shall have unified inch screw threads (course, UNC).
 2. Test Reports: Provide independent test report indicating fastener strength (pullout and shear) as installed in the materials and applications of this project.
 3. Finish: In finished areas, the portion of fastener exposed to view shall match the exposed finish of item being fastened.
- F. Steel: Structural steel per ASTM A 36.
- G. Wood: Only allowed to be used where building structural elements are of wood construction same type, grade used for building structural members. Where located outdoors shall be the pressure treated type; with all cut portions of wood painted with wood preservative.
- H. Field Galvanizing Compound: Brush or spray applied galvanizing treatment; consisting of a premixed ready to apply liquid organic zinc compound, with 95% metallic zinc content by weight in dry film. ZRC worldwide "ZRC Cold Galvanizing Compound".
- I. Rooftop Pipe Supports: Designed for rooftop support of piping to distribute load evenly over roof surface; factory fabricated. Shall be constructed of thermoplastic, polycarbonate, or polyethylene material, with attached strut support for anchoring of pipe, pipe attachment hardware, and sized to suit piping used with and so that pressure on roof does not exceed 150 pounds per square foot. Provide style with height to match pipe height requirements above the roof. Strut and hardware shall be hot-dipped galvanized or have electro-galvanized finish. Plastic materials shall have UV stabilizers to resist UV deterioration. For piping systems subject expansion and contraction, provide roller type support allowing pipe movement, having a foam bottom to minimize roof abrasion. Caddy "Pyramid ST", Pyramid 50", "Pyramid 150", Pyramid RL".

2.03 DUCT HANGERS AND SUPPORTS

- A. Hangers: As shown in SMACNA-DCS except that wire shall not be used and all materials used shall comply with these specifications.
- B. Hanger Attachments to Structure: As shown in SMACNA-DCS to suit building construction and as allowed on structural drawings. Provide washers at all fasteners through hanger straps

(regardless of SMACNA-DCS allowances). Where C-clamps are provided, retainer clips shall be used. Friction beam clamps shall not be used.

- C. Hanger Attachments to Ducts: As shown in SMACNA-DCS except that wire shall not be used as any form of support or attachment for ducts.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

- A. General: Provide all necessary bolts, nuts, washers, fasteners, turnbuckles, hanger rods, rod connectors, stanchions, wall/roof/floor backing and attachments, bridging between structural members, and any other miscellaneous accessories required for the support and anchoring of all pipes, ducts, and mechanical equipment. All supports, whether from floor, walls, or hung from structure, are Contractor's responsibility. Anchors and supports shall be adequate to accommodate forces equipment will be exposed to. Any field cut pieces of galvanized materials shall be hot-dip galvanized after cutting; or be solvent and wire brushed clean and receive field applied galvanizing treatment. Field applied galvanizing shall be multiple coats to provide as near equal protection as possible to factory (or hot-dip) applied coatings. All exposed galvanized surfaces shall be painted with two coats of exterior rust inhibiting paint, color as selected by Engineer.
- B. Backing: Install steel or wood backing in walls (anchored to studs) and in ceiling (anchored to joists or trusses), as required to provide support for items.
- C. Installation: Install all inserts, anchors, and supports in accordance with manufacturer's instructions, code requirements, and best professional practices. The most restrictive criteria governs.
- D. Welded Assembly Finish: All welded steel support assemblies shall have a power wire brush and hot dip galvanized finish. Provide two coats of exterior rust inhibiting paint, color as selected by Engineer.
- E. Attachments: Attach to building structure (or concrete pads) as shown on drawings (reference structural drawings). Where not detailed on the drawings, the Contractor shall design and submit shop drawings of proposed attachment methods to the Engineer for review.
- F. Application:
 - 1. Where not detailed on the drawings (or otherwise indicated), the selection and design of supports is the Contractor's responsibility, in compliance with code and Contract Document requirements; subject to submittal review and acceptance by the Engineer.
 - 2. Exposed supports in finished areas shall be arranged to minimize their visibility; be free of dents, scratches and labels, and be configured in a manner to match the decorum and finish of the room they are installed in. Exposed supports in finished areas shall be cleaned to allow for field painting (unless a chrome, stainless steel, or similar finish has been indicated).
- G. Seismic: Provide hangers, supports, anchors and bracing as required by code and as necessary to accommodate forces in a seismic event. Seismic bracing is not required for piping sized 2-inch and less, or for horizontal piping where the distance from the top of the pipe to the support attachment point to the building structure is less than 12-inches (unless noted otherwise). Seismic bracing is not required for ductwork less than 28-inch in diameter or having across sectional area less than 6 square feet, or for horizontal ductwork where the distance from the top of the duct to the support attachment point to the building structure is less than 12-inches (unless noted otherwise). All equipment shall be seismically anchored.

- H. Building Structural Loads: Where installed items incur loads that exceed the building's structural capacity (i.e. the carrying capacity as indicated on the drawings or otherwise noted in the documents), provide support types to transmit the loads to floors or other parts of structure that can carry load (e.g. bridging between joists to distribute load, added structure between walls to allow walls to carry load, etc.). Such supports shall consist of all welded steel angle iron supports, pipe columns, or similar custom fabricated items. Provide with base plates, U bolts, or similar type accessories to allow proper anchoring and seismic hold-down for all items supported. Maximum spans between supports may be significantly less than the maximum spans allowed by code or by manufacturers due to limitations of allowable loads on building members; reference limitations indicated on the drawings (or otherwise noted in the documents); the most restrictive criteria governs.

3.02 INSTALLATION OF PIPE HANGERS AND SUPPORTS

- A. General: Aboveground pipe shall be anchored to the structure to prevent sagging, to keep pipe in alignment, and to resist the forces the pipe will be exposed to; piping shall be supported independent of equipment so that no loads bear on the equipment.
- B. Adjustment: All pipe supports shall be provided with a means of adjustment for the aligning and leveling of the pipe after installation.
- C. Applications: Selection, sizing, and installation of pipe supports and accessories shall be in accordance with the manufacturers recommendations, standards MSS SP-89 and MSS SP-69, UPC, and IMC.
- D. Support Spacing: Provide piping support spacing according to the most restrictive of the following: UPC, IMC, ASME B31.1, B31.9, local codes, manufacturers recommendations or Contract Documents specific requirements. Provide supports at each change in direction of piping and at each side of concentrated loads (such as in-line pumps, valves greater than size 5", and similar items).

3.03 INSTALLATION OF DUCT HANGERS AND SUPPORTS

- A. General: Provide anchors and supports for all ductwork. Supports and hangers shall comply with SMACNA-DCS, except that hanger spacing and hanger maximum loads shall be governed by whichever is more restrictive between these specifications or SMACNA-DCS.

- B. Hanger Spacing -- Rectangular Duct:

<u>Duct Area</u>	<u>Maximum Spacing</u>
Up to 4 Square Feet	8 Feet
4.1 to 10 Square Feet	6 Feet
10 Square Feet and Up	4 Feet

- C. Fittings: Provide supports at each change in direction of duct for ducts with 4 square foot area or more, or for ducts larger than 24 inch diameter. Locate hangers at inside and outside corners of elbows--or at each end of fitting on each side.
- D. End of Duct: At end of duct run, hanger shall be located no more than 1/2 the allowed hanger spacing from the end of the run.

3.04 MECHANICAL EQUIPMENT ANCHORS AND SUPPORTS

- A. General: Provide anchoring and supports for all mechanical equipment. All equipment shall be anchored to (or supported from) the building structure. In lieu of anchoring to the building, anchor outdoor equipment to the concrete pad serving the equipment.

- B. Roof Mounted Equipment: Install on roof curbs or roof sleepers as indicated. Anchor equipment to the curb (or sleeper), with the curb (or sleeper) in turn anchored to the building structure.
- C. Vibration Isolation: Equipment shall be supported and anchored in such a way so that no equipment vibration is transmitted to the building structure.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Air Balancing
- B. Report

1.02 SUBMITTALS

- A. Company: Submit name of Company proposed to do the balancing and sample balancing forms.
- B. Personnel: Submit list of personnel that will be assigned to the project and their qualifications, and list of past projects.
- C. Reports: Preliminary and final balancing reports.

1.03 REFERENCES

- A. AABC-NS: Associated Air Balance Council, National Standards for Field Measurements and Instrumentation.
- B. ASHRAE: Handbook of Fundamentals.
- C. ACGIH-IV: American Conference of Governmental Industrial Hygienists, Industrial Ventilation, A Manual of Recommended Practice.
- D. NEEB-PS: National Environmental Balancing Bureau Procedural Standard for Testing, Adjusting and Balancing Environmental Systems.

1.04 GENERAL REQUIREMENTS

- A. General: Balancing shall be done by a company which specializes in this type of work and is totally independent and separate from the Company which has installed the systems to be balanced.
- B. Balancer Qualifications:
 - 1. Work of this section shall be performed by an Associated Air Balance Council (AABC) member balancer or National Environmental Balancing Bureau (NEBB) certified balancer, subject to review and acceptance of firm's qualifications and experience of staff assigned.
 - 2. Experience: Firm shall have satisfactorily completed the balancing work for at least 5 similar projects in the last 3 years. Similar is defined to mean: within 10% of the same quantity of units and air inlets/outlets, involve same type of systems, be the same type of facility (i.e. school, hospital, etc.). The lead field balancer (i.e. the individual who will be on site directing and participating in the balancing efforts) shall have at least 5 years of experience performing balancing work on similar projects.
- C. Balancing Issues: Notify the Engineer in writing of all problems or discrepancies between actual conditions and what design documents show as work proceeds.
- D. Engineer's Authority: The Balancer shall be directly responsible to the Engineer and shall perform this work and make system adjustments as directed by the Engineer.
- E. Lead Balancer: The Balancer shall assign an individual as "lead balancer" to work in the field to directly supervise the balancing work and field technicians. This lead field balancer shall have at least 5 years of experience performing balancing work on similar projects.

1.05 SCOPE OF AIR BALANCING

- A. Balance new AHU for total exhaust and supply airflows indicated. Adjust VFD's and adjust/replace fan sheaves as necessary. Sheaves will be furnished by AHU supplier, and be installed by balancer. Balancer shall return previously used sheaves to AHU supplier.
- B. Measure unit component pressure drops, fan pressure, and fan motor operating characteristics.
- C. Measure heating performance and cooling performance.
- D. Check overall unit operation in response to thermostat heating/cooling demands.

PART 2 - PRODUCTS

2.01 GENERAL INSTRUMENTATION

- A. General: Balancing equipment shall comply with Associated Air Balance Council recommendations for field measurement instrumentation.
- B. Calibration: All measuring instruments shall be accurately calibrated and maintained in good working order. Calibration dates and certifications shall be available at Engineer's request.
- C. Instruments: Shall be capable of:
 - 1. Air velocity instruments, direct reading in feet per minute with 2% accuracy.
 - 2. Static pressure instruments, direct reading in inches water gauge with 2% accuracy.
 - 3. Tachometers, direct reading in revolutions per minute with 1/2% accuracy; or revolution counter accurate with 2 counts per 1,000.

PART 3 - EXECUTION

3.01 GENERAL

- A. Workmanship: All measurements and adjustments shall be in accordance with AABC-NS, NEEB-PS, and ACGIH-IV and recognized best balancing procedures. Measurements and adjustments of equipment shall be executed in a manner consistent with the manufacturer's recommendations.
- B. Flow Rates:
 - 1. General: All air and water systems shall be completely balanced and adjusted to provide the flow rates indicated (within tolerances indicated in this specification Section), and to produce an even heating and cooling effect and control response.
 - 2. Balancer Determined: Where flow rates have not been indicated the balancer shall determine such flow rates using acceptable practices in accordance with AABC-NS, NEEB-PS, and ASHRAE standards and submit the proposed flow rates to the Engineer for review.
 - 3. Confirmation: Prior to beginning balancing confirm any flow rate changes since design with the submittals and flow rates indicated therein, and with the Engineer to confirm changes made since design. Assume that new flow rates will be issued.
- C. Controls: Consult and coordinate with the Control Contractor for the adjustment and setting of all control devices to allow for the balancing work, and for proper system operation and proper flow rates. Set all controls and valves as required to maintain design flow rates and

temperatures as shown on the drawings. Make measurements and provide data to the Control Contractor to allow for proper control of items.

- D. Comfort Adjustments: Make final adjustments for flow rates in order to optimize each space's comfort, including such considerations as temperature, drafts, noise, pressurization, and air changes. Where variances are made from design values, state reasons in report (e.g., "too noisy", "too drafty," etc.). All such variances are subject to approval by the Engineer.
- E. Deficiency Reports: Submit deficiency reports where the work does not allow balancing to occur or balancing issues develop. Indicate date, system and equipment involved, location, description of deficiency, and related information to allow for diagnosing the problem. Provide suggestions for resolution where possible.

3.02 AIR BALANCING

- A. Pre-check of System: Prior to beginning balancing, perform, as a minimum, the following:
 - 1. Verify that clean filters have been installed, that system is free from debris, and that all inlets/outlets are not obstructed.
 - 2. Check all fans and equipment to verify that proper start-up and system preparation has been done by the installing contractor.
 - 3. Check all door/window and similar building opening status to insure building is ready and proper pressurization can be obtained.
 - 4. Open all dampers to full flow position, check positions and operation of all motorized dampers to allow full system flows.
 - 5. Review controls and sequences of operation.
- B. Tolerances: All air flow rates (supply, return, and exhaust) shall be adjusted to within plus 5 percent and minus 5 percent of the values shown in the contract documents, except that relative space-to-space pressure relationships shall always be maintained (e.g., restrooms shall be negative relative to other areas, general offices shall be positive, etc.).
- C. Draft and Noise Adjustments: All diffusers, grilles, and registers shall be adjusted to minimize drafts and to eliminate objectionable noise.
- D. Filters: Air balancing shall be done with new, clean air filters installed. Adjust air deliveries so that design quantities will be obtained when filters are half dirty. This condition shall be simulated by covering a portion of the filter area.
- E. Fan Speeds and Drives: Adjust fan speeds and fan drives (adjustable sheaves) as required to produce design flow rates.
- F. Marking: Upon completion of flow readings and adjustments permanently mark the balanced position of all balancing valves by stamping the indicator plate of the valve.
- G. Duct Traverse: Rectangular duct traverses shall measure the center of equal areas in the air flow stream, with centers not more than 6 inches apart. Round duct traverses shall measure at least 20 locations, with locations being the centers of equal annular area. Reference ACGIH Industrial Ventilation Manual.
- H. One Open Run: Balance each branch run so that there is at least one wide open run; balance branches relative to one another so that at least one branch damper is wide open (except that where unique conditions exist, and the Engineer gives prior approval, one open damper on runs or branches is not required).

- I. Data: Data to be measured/recorded and provided in report for all air handling systems and equipment:
 - 1. Design air flow rates and percentage final air flow rates are of design values.
 - 2. The connected voltage and corresponding nameplate full load amps, and the initial and final amperages of all fan motors.
 - 3. Initial and final RPMs of all fans.
 - 4. Static pressures on inlet and outlet of all fans.
 - 5. Fan initial and final CFMs.
 - 6. Outdoor air CFMs (record minimum and maximum values).
 - 7. Entering and leaving air temperatures across coils with coils operating at 100% capacity.
 - 8. Static pressure drop across each filter bank and coil.
 - 9. Final position of any speed controls (as percent of full).
 - 10. In addition to data noted elsewhere, provide the following for all equipment which are part of balanced systems:
 - a. Equipment name and number (as used on drawings).
 - b. Service.
 - c. Equipment manufacturer and model number.
 - d. Filters sizes and quantities (where applicable).
 - e. Motor manufacturer and complete nameplate data.
 - f. Design operating conditions.
 - g. Actual operating conditions (flows, pressure drops, rpm, etc.).
- J. Main Duct Airflows: Air flow measurements in main ducts shall be made with a duct traverse using a pitot tube and micromanometer. Summation of air terminal outlets and inlets is not sufficient. Quantity of duct leakage (difference between main duct airflow and sum of air inlets/outlets) shall be indicated.

3.03 BALANCING REPORT

- A. General: A balancing report shall be submitted as specified herein, documenting all balancing procedures and measurements.
- B. Report Organization: The report shall be divided into logical sections consistent with the building or system layout (i.e. by floors, building wings, air handling units, or other convenient way). Tabulate data separately for each system. Describe balancing method used for each system.
- C. Preliminary Report: Two preliminary review copies of the balancing report shall be submitted to the Engineer when the balancing work is 90% complete (or as near 90% complete as possible due to uncompleted work of other trades). In addition to containing all the information required of the final report, the preliminary report shall contain a list of all the work required of other trades in order to allow the balancing work to be completed. The Engineer will review the preliminary report and inform the Contractor of any additional items or revisions required for the final report. Preliminary reports may be omitted where the Engineer grants approval.

- D. Final Report: Shall be included in the Operation and Maintenance Manual. Submit reports to Contractor for inclusion in Manuals (or, when manuals have been already sent to Engineer, send report to Engineer who will insert report into Manual).
- E. Format: 8-1/2" x 11" size, neat, clean copies, drawings accordion folded. Report shall be typed, shall have a title page, table of contents, and divider sheets with identification tabs between sections. Information shall be placed in a three hole notebook, with the front cover labeled with the name of the Job, Owner, Engineer, Balancing Contractor, and Report Date.
- F. Electronic Copy: Provide copy of reports in *.pdf format; submit final report with closeout documents.
- G. General Balancing Information Required:
 - 1. At the beginning of the report, include a summary of problems encountered, deviations from design, remaining problems, recommendations, and comments.
 - 2. List of instruments used in making the measurements and instrument calibration data.
 - 3. Names of personnel performing measurements.
 - 4. Explanation of procedures used in making measurements and balancing each system.
 - 5. List of all correction factors used for all diffusers, grilles, valves, venturi meters, and any other correction factors used.
 - 6. Areas where difficulties were encountered in obtaining design flow rates, or where unstable operating conditions may exist.
 - 7. Note any parts of the system where objectionable drafts or noises may be present and efforts made to eliminate same and why they may still be present.
 - 8. Note where variances from design values occur; explain why.
 - 9. All specified measurements, balancing data, any additional recorded data, and observations.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Duct Insulation

1.02 QUALITY ASSURANCE

- A. All insulation and materials shall have a fire hazard rating not to exceed 25 for flame spread and 50 for smoke development, as tested by ASTM E 84, NFPA 255, and UL 723.

1.03 SUBMITTALS

- A. Product Data: Provide product data on all insulation materials to be used. Indicate thicknesses to be used.

1.04 GENERAL REQUIREMENTS

- A. Code Compliance: Contractor shall insulate all systems with the materials and thicknesses as required by code, but in no case shall the insulation be less than that specified herein. In some cases the specified insulation exceeds code, and shall be provided as specified. Not all systems requiring insulation by code are specified, but shall be provided with insulation where required by code.

1.05 REFERENCES

- A. ASTM C 411: Standard Test method for Hot-Surface Performance of High Temperature Thermal Insulation.
- B. ASTM C 1136: Standard Specifications for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
- C. ASTM C 1290: Standard Specification For Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts.
- D. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. NCIIS: National Commercial & Industrial Insulation Standards, published by Midwest Insulation Contractors Association, 5th Edition.
- F. NFPA 255: Standard Method of Test of Surface Burning Characteristics of Building Materials.
- G. UL 723: Tests for Surface Burning of Building Materials.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Insulation: Johns Manville, Armacell, Owens-Corning, Knauf, Rubatex, Aeroflex, Pittsburgh Corning, GLT, Halstead, Gilsulate, or approved equal.
- B. Accessories: Johns Manville, Armacell, Owens-Corning, Knauf, Rubatex, Aeroflex, Pittsburgh Corning, GLT, Halstead, Duro Dyne, Gustin Bacon, Childers, or approved equal.

2.02 DUCT INSULATION

- A. Flexible Glass Fiber:
 - 1. Type: Flexible blanket type, constructed of inorganic glass fibers bonded by a thermosetting resin, complying with ASTM C 1290, Type III. Johns Manville "Microlite" (or approved).

2. Jacket: FSK type, vapor proof, consisting of an aluminum foil cover reinforced with glass fiber mesh, and laminated to kraft. Water vapor permeance shall not exceed 0.05 perms. Provide with joint sealing tape, minimum 2 inches wide, constructed of jacket material with adhesive to seal all joints.
 3. Thermal Conductivity: Shall not exceed 0.27 Btu-in/hr-sq ft-deg F at 75 deg F.
 4. Operating Limits: 40 degrees F to 250 deg F.
- B. Duct Insulation Types:
1. Aboveground-Inside Buildings: Flexible glass fiber.
- C. Duct Insulation Thickness:
1. General: Provide insulation densities and thicknesses to achieve the following R values. R values are for the insulation only, in their installed thickness, considering installed duct wrap stretch and in accordance with code.
 2. Lining: Where ducts have internal lining, the insulating properties of the lining may be credited toward meeting the required insulation R value; use R-3.65 per inch of installed liner.
 3. Supply Air Ductwork:
 - a. Inside Building and Within Building's Thermal Envelope: R-3.3 (except where ran exposed in conditioned spaces, no insulation is required).
 - b. Inside Building But Not Within Building's Thermal Envelope: R-7.3.
 4. Return Air Ductwork:
 - a. Inside Building and Within Building's Thermal Envelope: No insulation required; except where duct contains air that may vary by 10 deg F or more from the space the duct passes through, R-3.3 insulation shall be provided.
 - b. Inside Building But Not Within Building's Thermal Envelope: R-7.3.

2.03 ACCESSORIES

- A. Adhesive, Caulks, Mastics, and Coatings: As recommended by insulation material manufacturer and suited for the application.
- B. Bands: 1/2-inch wide, of stainless steel, galvanized steel, or aluminum construction, to match with materials used with.
- C. Weld-Attached Anchor Pins and Washers: Copper-coated steel pin for capacitor-discharge welding and galvanized speed washer. Pin length shall be as required for insulation thickness used with. Welded pin holding capacity 100 lb, for direct pull perpendicular to the attached surface. Style and type to suit application.
- D. Adhesive-Attached Anchor Pins and Speed Washers: Galvanized steel plate, pin, and washer manufactured for attachment to duct and plenum with adhesive. Pin length sufficient for insulation thickness used with. Adhesive as recommended by the anchor pin manufacturer as appropriate for surface temperatures and materials used with, and to achieve a holding capacity of 100 lb for direct pull perpendicular to the adhered surface. Style and type to suit application.

PART 3 - EXECUTION

3.01 GENERAL

- A. Pre-Insulation Review: No covering materials shall be applied until systems to be covered have had all tests satisfactorily completed, have had all required inspections, and have been satisfactorily reviewed by the Engineer. All systems shall be examined by the Contractor to confirm cleanliness and other conditions are appropriate to allow for insulation installation.
- B. Insulation Work Review: No insulated items shall be concealed in the building structure or buried until the insulation work has been satisfactorily reviewed by the Engineer, and has had all required inspections.
- C. Standards: Materials shall be installed in accordance with manufacturer's written instructions, NCIS, and shall comply with materials and methods specified herein. The more stringent requirements govern.
- D. Joints/Seams: Joints shall be staggered on multi layer insulation. Locate seams and joints in least visible location.
- E. Insulation Protection: Insulation shall be kept clean and dry and shall be protected from dirt, damage, and moisture. Insulation that becomes dirty, damaged, or wet and cannot be restored to like new condition will be rejected, and shall immediately be removed from the jobsite.
- F. Insulation Interruptions: Insulation shall be neatly finished at all supports, protrusions and interruptions. Provide adhesive and tape seal to maintain vapor barrier integrity.
- G. Equipment and Floor Protection: Cover existing equipment and finished floors to protect such items from insulation fiber and dust. Keep all such existing areas in a "broom clean" condition at the end of each day. Take precautions in these areas to prevent glass fiber and insulation dust from entering ventilation systems or areas adjacent to the work.
- H. Glass Fiber Insulation - General:
 - 1. Finish all insulation ends with joint sealing tape or vapor barrier mastic, no raw edges allowed.
 - 2. Joints: Tightly butt adjacent insulation sections together without any voids. Provide overlap of jacket material over all joints.
- I. Items To Be Insulated: Provide insulation on all ductwork, except where such insulation has been specifically excluded.

3.02 DUCT INSULATION INSTALLATION

- A. Types and Thickness: Insulate all ducts with insulation type and thickness (to provide the required R value) as specified in "Part 2 - Products".
- B. General: Insulation shall be firmly butted at all joints. All longitudinal seams for flexible insulation shall overlap a minimum of 2 inches. All joints and seams shall be finished with appropriate joint sealing tape. Installation shall provide a continuous sealed vapor barrier over all surfaces; seal all jacket penetrations with vapor barrier mastic or vapor barrier jacket tape.

- C. Attachment: For rectangular ducts over 24 inches wide, duct insulation shall be additionally secured to the bottom of the ductwork with mechanical fasteners on 18 inch centers to reduce sagging. Washers shall be applied without compressing the insulation. Protruding ends or fasteners shall be cut off flush after washers are installed. All seams, joints, penetrations, and damage to the facing shall be sealed with joint sealing tape or vapor retardant mastic or appropriate joint sealing tape.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Commissioning of Mechanical Systems
- B. Documentation

1.02 SUBMITTALS

- A. Qualifications: Submit qualifications of the firm proposed to perform the commissioning work and for the individuals that will be assigned.
- B. Commissioning Data:
 - 1. Commissioning plan.
 - 2. Commissioning preliminary report.
 - 3. Commissioning final report.

1.03 GENERAL REQUIREMENTS

- A. General: Commissioning shall be done by a Company which specializes in this work and independent and separate from the Companies installing the systems to be commissioned.
- B. Company Experience: The Company providing the commissioning work shall be experienced in commissioning HVAC control systems, and have commissioned at least five similar projects in the last three years.
- C. Individual Experience: The individuals performing the commissioning work shall have at least five years experience in commissioning, with the individual in the field in charge or the work having commissioned at least five similar projects in the last three years.

1.04 REFERENCES

- A. AABC: Associated Air Balance Council.
- B. AEE: Association of Energy Engineers.
- C. BCA: Building Commissioning Association.
- D. NEBB: National Environmental Balancing Bureau.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 GENERAL

- A. General: Provide commissioning as required by code and as specified herein.

3.02 HVAC SYSTEMS

- A. General: HVAC equipment and HVAC control systems shall be tested to ensure that control devices, components, equipment and systems are calibrated, adjusted and operate in accordance with approved plans and specifications.
- B. Sequences: Sequences of operation shall be functionally tested to ensure they operate in accordance with approved plans and specifications.
- C. Conditions: Testing shall affirm operation during actual or simulated winter and summer design conditions and during full outside air conditions.

- D. HVAC Equipment: Equipment functional performance testing shall demonstrate the installation and operation of components, systems, and system-to-system interfacing relationships in accordance with approved plans and specifications such that operation, function, and maintenance serviceability for each of the commissioned systems is confirmed. Testing shall include all modes and sequence of operation, including under full-load, part-load and the following emergency conditions:
 - 1. All modes as described in the sequence of operation.
 - 2. Redundant or automatic back-up mode.
 - 3. Performance of alarms.
 - 4. Mode of operation upon a loss of power and restoration of power.
- E. HVAC Controls: HVAC control systems shall be tested to document that control devices, components, equipment, and systems are calibrated, adjusted, and operate in accordance with approved plans and specifications. Sequence of operation shall be functionally tested to document they operate in accordance with approved plans and specifications.
- F. Economizers: Air economizers shall undergo a functional test to determine that they operate in accordance with manufacturer's specifications.

3.03 DOCUMENTATION

- A. Format:
 - 1. Hard Copy: Provide reports in 8-1/2 x 11 format, in 3 ring notebooks, with labeled cover and spine, clean legible, and logically organized with table of contents, divider tabs, and names of companies involved in the project, commissioning company name, commissioning personnel, and contact information.
 - 2. Electronic: Provide copy in *.pdf format; submit with closeout documents
- B. Preliminary Commissioning Report:
 - 1. General: A preliminary report shall be issued to identify issues preventing the commissioning work from being completed. If all commissioning work can be fully completed and the final report completed, a preliminary report is not required.
 - 2. Report: Compile all system and commissioning data; including all reviews, inspections, test procedures, and tests. Report shall include field notes of commissioning activities, equipment and system data, test procedures, tests performed, actual results as compared to expected (or specified) results, WSEC and any AHJ required commissioning forms (completed to the extent possible).
 - 3. Items to Complete: The preliminary report shall identify items needed in order to complete the commissioning, including:
 - a. Deficiencies found during testing required by this Section, which have not been corrected at the time of report preparation.
 - b. Deferred tests which cannot be performed at the time of report preparation due to climatic (or other) conditions.
 - c. Climate (or other) conditions required for performance of the deferred tests, and the anticipated date of each deferred test.
 - d. Proposed schedule for completion of report.

- C. Final Commissioning Report: Complete all commissioning work not previously completed and included in the preliminary report. Provide a complete final report with all systems and commissioning data; including test plan, all reviews, inspections, test procedures, tests, and results. Final report shall include all documentation required for the preliminary report and documentation regarding resolution of previous coted deficiencies.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Control System Design.
- B. Control System for Building Heating, Venti-lation, Air Condition-ing, Exhaust.
- C. Control Devices, Components, and Wiring.
- D. Testing, Adjustment, and Commissioning.
- E. Owner Training.

1.02 SUBMITTALS

- A. Product Data: Submit product information on all items to be used.
- B. Labeling: Submit list of proposed component labeling.

1.03 GENERAL REQUIREMENTS

- A. Design and Installation: The entire control system shall be designed and installed by skilled control system designers, electricians and mechanics, all of whom are properly trained and qualified for the work they perform.
- B. Sole Responsibility: One single Contractor shall be responsible to design, furnish and install the complete Section 23 09 33 control system.
- C. Sequence: System shall have sequence of operation as specified in Section 23 09 93.

1.04 WARRANTY

- A. Warranty: After completion of the installation of the control system and acceptance by the Owner, the system shall be warranted as free against defects in manufacturing, workmanship and materials for a period of two years from date of substantial completion. In addition, the system shall be warranted to provide the sequence of operation and basic features specified, with the accuracy and flexibility also specified. The system shall be repaired or replaced, including materials and labor, if in Owner's and Engineer's reasonable opinion, system is other than as warranted.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Thermostats and Time Clocks (Non DDC): Honeywell, or approved equal.
- B. Control Accessories: Idec, Hoffman, McDonnell, Tridelta, Edwards, Mamac, Penn, Belimo, Honeywell, Johnson Controls, Leviton, Arrow-Hart, Alerton, or approved equal.

2.02 BASIC SYSTEM

- A. System Type: The system shall be an electronic or electric type.

2.03 THERMOSTAT AND TIMECLOCK (NON DDC)

- A. Programmable Thermostat: Shall be 7-day programmable solid state type, specifically designed for commercial use. Unit (and related relay module, and controls) shall allow for 1st-stage economizer cooling, 2nd stage unit cooling, 1st stage heating, 2nd stage heating and provide other features as required by the sequence of operation. Thermostat shall have means to bypass time clock, have Auto-Cool-Off-Heat switching, setpoint adjustments, and time/day adjustments. Unit shall also have capability for averaging multiple remote thermostat sensors.

Honeywell T7351 Series, other Honeywell series (as required to provide sequence and match unit furnished), or approved equal.

- B. Logic module: Solid state control package to provide economizer functions. Shall include logic module, sensors, and accessories necessary to provide a complete and operational system, and shall be compatible for use with specified HVAC equipment and programmable thermostat.
- C. Accessories: Provide duct temperature sensors required for mixed air applications; shall be the averaging type with a sensor element type so as to sense a representative sample of the medium being controlled. Provide sensors as required to work with economizer controls.

2.04 ACCESSORIES

- A. Wiring and Conduit: Shall comply with Division 26 specifications and with code. Wiring that performs code required life safety shutdown of equipment or fire alarm interface shall comply with NFPA standards and local codes for fire alarm system wiring.
- B. Control Cabinet: Wall mounted, NEMA construction type to suit application, minimum 14 gauge sheet metal, hinged front door with latch. Size as required to house controls.
- C. Relays: Shall be rated for the application, with a minimum of two sets of Form C contacts, enclosed in a dust-proof enclosure. Relays shall have Hand-Off-Auto switch, and LED's (or pilot lights) to indicate the energized mode. Relays shall be rated for a minimum life of one million cycles. Operating time shall be 20 milliseconds or less, with release time of 10 milliseconds or less. Relays should be equipped with coil transient suppression devices to limit transients to 150% of rated coil voltage. Contact rating, and configuration selected to suit application.
- D. Miscellaneous Components/Sensors/Transmitters/Transformers: Shall be manufacturer's standard, designed for application in commercial building HVAC control systems, compatible with other components so as to provide sequence of operation specified.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Provide all devices, sensors, relays, switches, dampers, actuators, conduit, tubing, wiring, motor starters and all other devices required to provide a complete integrated control system with the sequence of operation and features as specified. It is the Contractor's responsibility to coordinate with other trades for the installation of control devices in systems installed by others.
- B. Installation: Install all control components in accordance with manufacturer's instructions and recommendations and best professional practices.
- C. Space Requirements and Locations: Carefully check space requirements and coordinate with other trades to ensure that items can be installed in the allotted spaces, including above finished suspended ceilings. Adjust locations of panels, equipment, devices, and the like, to accommodate work and prevent interferences. Determine the exact route and location of wiring, conduit and other control devices prior to beginning work.
- D. Thermostats: Room thermostats shall be mounted 4'-6" above finished floor unless indicated otherwise. Thermostats shall connect to the HVAC unit serving the space the thermostat is located in, unless indicated otherwise. Not all thermostats are shown on the drawings and those shown are preliminary only. Contractor shall indicate all final thermostat locations on submittal drawings. Contractor is responsible to coordinate locations to avoid tackboards, casework, and other interferences.

- E. Power: It shall be the responsibility of this Contractor to provide power for all control devices requiring power. Coordinate with the Division 26 Contractor to arrange for necessary power circuits. All control devices shall obtain power from circuits dedicated to control power.
- F. Wiring, Conduit and Electrical:
1. General: Provide all electrical wiring and devices in accordance with applicable codes and Division 26 requirements.
 2. Conduit: All wiring shall be installed in conduit and in accordance with Division 26 specifications, except that low voltage wiring within ceiling plenum spaces, mechanical mezzanines, and attics may be installed without conduit. Wiring in walls shall be in conduit.
 3. Wire Labeling: Label or code wiring at each end to show location of the opposite end. Each point of all field terminal strips shall be permanently labeled or coded to show the instrument of item served. Color coded cable with cable diagrams may be used to accomplish cable identification and terminal strip.
 4. Service Loop: Provide minimum of 6" extra wiring at all wiring terminations for ease of future maintenance/servicing. Such extra wiring shall be neatly coiled/bundled to allow for uncoiling when the connected equipment is serviced.
 5. Workmanship: Install all conduit and wiring parallel to building lines, in neat bundles, supported at not less than 5 foot intervals.
- G. Component Labeling: All control components, except regular room thermostats, shall be equipped with name plates to identify each control component. Components in finished rooms shall be labeled as to generic item controlled for better user understanding; other devices shall be labeled with the same designation which appears on the Control Diagrams. Contractor shall submit list of proposed labeling prior to installing. Reference Section 23 05 00.
- H. Thermostat Setpoints: Thermostat Setpoints (all adjustable) shall be as follows unless indicated otherwise:
- | | |
|--------------------|--------------|
| Occupied Heating | 70 degrees F |
| Unoccupied Heating | 65 degrees F |
| Occupied Cooling | 75 degrees F |
| Unoccupied Cooling | 85 degrees F |
- I. Miscellaneous Controls: Provide all miscellaneous control items as noted in the Contract Documents. Provide all necessary control wiring between items for proper control.

3.02 INSTALLER COMMISSIONING

- A. Commissioning Report: Provide a report documenting all commissioning activities. Report shall be formatted and contain sufficient information so that an independent third party can understand the commissioning that occurred, the results, and the results can be duplicated by following the procedures noted.
- B. Commissioning:
1. General: Check all system connections and control components for proper installation. Provide testing of the control system to verify proper system operation and that the specified sequences of operation are provided. Commissioning shall include checking system under all modes of operation, documenting system performance, making

- corrections as required for proper operation, and re-testing as needed to obtain final proper operation.
2. Dampers: Verify all dampers operate through their full range of motion and in the proper direction in response to controls signals.
 3. Sensors/Thermostats: Check measurements of temperature sensors, thermostats, pressure sensors and other devices against independent readings to confirm proper operation and sensor locations. Readjust sensor locations as necessary to account for field conditions that may cause inaccurate measurements.
 4. Calibration: Calibrate items as necessary to allow for their proper operation.
 5. Adjustments: Adjust system settings as needed to allow for best system operation, consistent with the specified sequences and for facilities of the type the system serves.
- C. Start-Up: Coordinate all system and equipment start-up with other trades. Start-up systems in accordance with equipment manufacturer's instructions and in conjunction with trades that installed the items being controlled, so that they (or manufacturer's representatives) are present at start-up. Operate and configure the controls for safe equipment start-up and so that equipment operates in a controlled manner. See equipment specification sections for equipment start-up requirements. Test and observe all equipment being controlled during start-up to confirm proper controls operation.

3.03 OWNER INSTRUCTION

- A. Owner Instruction: Provide instruction to Owner on the operation and maintenance of the control system. Provide field demonstrations and show Owner the locations of all control devices; explain and demonstrate how system adjustments are made; explain and demonstrate system sequences of operation.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Sequence of Operation.

1.02 SUBMITTALS

- A. Sequence: Submit complete description of sequence of operation. Sequence submitted shall not be a direct copy of the sequence specified herein, but shall be written to reflect the actual control sequence provided.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

- A. General: Provide complete system with sequences of operation as specified herein.
- B. Time Control: Control system shall provide time clock schedule control (i.e. occupied/unoccupied/ warm-up modes switching) for all HVAC and exhaust equipment. Provide independent occupied/unoccupied schedules and optimum start (i.e. warm-up) cycle for each HVAC unit (unless noted otherwise), all fans having time clock control, and all heaters. Except that exhaust fans serving adjacent restroom areas may share time schedules.
- C. Warm-up Control: Control system shall provide warm-up switching for all HVAC units and items indicated as having a warm-up cycle.
- D. Adjustability: All temperature setpoints and time control settings shall be adjustable.
- E. Thermostats: Various thermostats are not shown on the drawings but are required per the sequence of operation specified. Coordinate with Engineer for location of all such thermostats prior to installing. Indicate proposed locations on submittals.

3.02 HVAC UNITS

- A. General:
 - 1. Controls shall control the units cooling, heating, system dampers (economizer), in proper sequence to provide a supply air temperature that will satisfy space conditions.
 - 2. Heating and cooling shall be properly sequenced so that there is no overlap between the use of heating and cooling.
- B. Occupied Mode:
 - 1. Fan shall run continuously.
 - 2. Unit shall cycle in heating or cooling modes as required to satisfy space thermostat.
 - a. Heating: HVAC unit shall utilize gas heating system.
 - b. Cooling: HVAC units with economizers shall use outside air as the first stage of cooling. Economizer shall be dry bulb or enthalpy type, using Outside Air (OA) temperature sensor, mixed air temperature sensor and supply air temperature control scheme. Economizer shall be enabled only when OA temperature (or enthalpy) is less than the units Return Air (RA) temperature (or enthalpy). The OA/RA dampers shall be modulated as required to satisfy the supply air temperature control scheme. HVAC unit shall operate in the cooling mode as the final stage of cooling. Motorized relief dampers (where applicable) shall operate in unison with the OA dampers to

progressively open as the OA dampers open; provide with an offset control so that the relief dampers do not begin opening until the OA dampers are at least 15% open.

3. OA dampers shall be in the minimum position when unit is in heating and under economizer control when unit is in cooling. OA damper shall not close below the minimum airflow setting indicated on the plans; coordinate with balancer for minimum setting.
- C. Unoccupied Mode: Fan shall not run continuously. Unit's fan and heating/cooling shall cycle on and off as required to maintain setback temperatures. Outdoor air dampers shall be fully closed.
- D. Warm-up Mode: Unit shall run as in the unoccupied mode (outdoor air dampers fully closed) until the space temperature has warmed up to the occupied mode heating setpoint, then unit shall operate as specified for the occupied mode.
- E. Mode Control: Units' mode of operation shall be determined by unit thermostat time schedule and time schedule override; warm-up mode shall be initiated by thermostat's optimum start controls.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Environmental Ductwork Systems.

1.02 QUALITY ASSURANCE

- A. All work and materials shall comply with SMACNA-DCS, NAIMA-DLS, ASHRAE-F, IBC, IMC, NFPA-90A, NFPA-90B, and code. The most restrictive criteria governs.
- B. Leakage Criteria: Duct system shall be constructed and sealed so that leakage does not exceed the following:
 - 1. All Systems - Supply Duct: From fan to connection to air outlet 5%.
 - 2. All Systems - Return Duct: 5%.
 - 3. All Systems - Exhaust Duct: 5%.

1.03 SUBMITTALS

- A. Product Data: Submit product data for duct lining, flexible duct, and factory fabricated items.

1.04 DUCT PRESSURE CLASS

- A. Constant Volume Systems: Ductwork shall be constructed to the pressure class corresponding to the static pressure indicated for the fan which serves the duct system or 1-inch pressure class (plus or minus as appropriate), whichever is higher; unless noted otherwise.

1.05 REFERENCES

- A. ASHRAE-F: ASHRAE Handbook of Fundamentals.
- B. ASTM A 653: Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process
- C. ASTM A 924: General Requirements for Steel Sheet Metallic-Coated by the Hot-Dip Process.
- D. ASTM E 84: Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. IMC: International Mechanical Code.
- F. NFPA 90A: Standard for the Installation of Air Conditioning and Ventilating Systems.
- G. NFPA 90B: Standard for the Installation of Warm Air Heating and Air Conditioning Systems.
- H. SMACNA-DCS: SMACNA HVAC Duct Construction Standards.
- I. UL 181: Underwriter Laboratories Factory-Made Air Ducts and Air Connectors.
- J. UL 181A: Underwriter Laboratories Closure Systems for Use With Rigid Air Ducts.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Sheet Metal: All domestic manufacturers.
- B. Gasketing: Preson, Insulfab, Duraco, or approved equal.
- C. Duct Sealant and Tape: Carlisle (Hardcast), Ductmate, Benjamin Foster, Grace Construction Products, United McGill, Polymer Adhesives Sealant Systems, RCD Corporation, Nashua, 3M, or approved equal.

- D. Acoustical Duct Lining: Johns-Manville, or approved equal.

2.02 GENERAL MATERIALS

- A. Ducts: Construct of galvanized sheet steel, suitable for lock forming without flaking or cracking, conforming to ASTM A653 and A924, having a zinc coating of 0.90 ounces total per square foot for both sides of a sheet, corresponding to coating G90.
- B. Fasteners: Steel construction, electroplated zinc coated, having strength properties adequate for the application, compatible with materials being joined, and in accordance with SMACNA-DCS. Where exposed to corrosive conditions shall be of Type 304 or 316 stainless steel. Type to meet duct pressure class and duct leakage requirements. Where used for the support and anchorage of ducts shall comply with Section 23 05 29, with independent test reports regarding strength.
- C. Gasketing: Vinyl nitrile, vinyl neoprene, or neoprene nitrile PVC blend; designed for HVAC use with size to suit the application having minimum 1.5-inch width at equipment roof curb applications. Fire hazard rating not to exceed 25 for flame spread and 50 for smoke development per ASTM E 84.
- D. Duct Sealant/Mastic: Water based duct sealant, listed per UL 181B-M and UL 181A-M, suitable for indoor and outdoor use. Fire resistant with a flame spread rating of 5 or less, and a smoke developed rating of 0. Sealant shall be resistant to ultraviolet radiation and ozone. Fiberglass mesh shall be minimum 0.006-inches thick, with minimum 9x9 weaves per inch, and 2-inch width; for use with mastic in sealing ductwork. Sealant system shall be suitable for duct system pressure class and materials used with. Carlisle Hardcast "Versa-Grip 181", or approved equal.
- E. Foil Tape: Foil back adhesive tape, listed per UL181A-P and UL181B-FX, with listing labeled on tape outer foil face. Minimum 3-inch width for metal-to-metal applications; minimum 2-inch width for flexible duct applications. 3M No. 3340 or Nashua No. 324A., or approved equal.

2.03 DUCT FABRICATION

- A. Duct Gauge and Reinforcement: Shall be as shown in SMACNA-DCS according to the pressure classification of the system and the duct dimensions; with heavier gauge duct used as required to minimize duct reinforcement to suit space available and other project constraints.
- B. Joints and Seams: Construct in accordance with SMACNA -DCS, code requirements, and these specifications (more stringent governs). Ducts shall be constructed and sealed so that the leakage criteria is not exceeded. Round ducts shall be the spiral seam type; except that branch ducts to individual air inlets/outlets less than 16" diameter may be of other types as allowed by SMACNA-DCS. Coordinate joint spacing with duct reinforcement requirements so that transverse joints having the required stiffness may be incorporated in the reinforcement spacing schedule. Round duct transverse joints shall be made with beaded sleeve joints or flanged connections in accordance with SMACNA-DCS; except that branch ducts to individual air inlets/outlets less than 16" diameter may use other joining methods as allowed by SMACNA-DCS.
- C. Elbows and Tees: Shall be long-radius type with a center-line radius not less than 1-1/2 times the width or diameter of the duct. Where space does not permit the use of long-radius elbows, short-radius or square elbows with turning vanes may be used. Elbows in round duct systems with duct pressure class above 2-inches shall be stamped type, welded segmented type, or standing seam segmented type.

- D. Transitions: Increase duct sizes gradually. Transitions for diverging air flow shall be made with each side pitched out not more than 22.5 degrees. Transitions for converging air flow shall be made with each side pitched in not more than 30 degrees. Except that eccentric transitions for round to flat oval may have up to a 45 degree pitch.
- E. Ductmate Systems:
 - 1. Rectangular Duct: Transverse duct joints may be made with Ductmate System, or approved equal. System shall consist of companion flanges of 20 gauge galvanized steel with an integral polymer mastic seal; corner pieces of 12 gauge G90 galvanized steel; 20 gauge G90 galvanized cleats; closed cell, high density gasket type; and galvanized carriage bolts with hex nuts. The flanges shall be securely fastened to the duct walls using self-drilling screws, rivets or spot welding. Fastener spacing shall be as recommended by the manufacturer for the size of duct and the pressure class. The raw duct ends shall be properly seated in the integral mastic seal. A continuous strip of gasket tape, size 1/4" x 3/4", shall be installed between the mating flanges of the companion angles at each transverse joint; and the joint shall be made up using 3/8-inch diameter x 1-inch long plated bolts and nuts. Galvanized drive-on or snap-on cleats shall be used at spacing recommended by the manufacturer.
 - 2. Round Duct: Transverse duct joints may be made with Ductmate "Spiralmate" system, or approved equal. System shall consist of galvanized steel round connector flanges (fitting inside each duct section to be joined) and an exterior galvanized steel closure ring with tightening bolt to form an airtight duct connection and join flanges together. Duct connector flanges shall have non-hardening integral mastic to seal between flanges and duct, and a neoprene gasket to seal flange faces.
- F. Lined Ductwork: Rectangular Ducts: Contractor Fabricated ductwork with interior duct lining. Duct fabrication and liner installation shall comply with NAIMA-DLS. Lining material shall comply with paragraph titled "Duct Lining" in this specification section.

2.04 DUCT LINING

- A. Material: Flexible, inorganic glass fiber material, bonded with thermosetting resin, maximum thermal conductivity of 0.24 Btu-inch/hr-sq. ft.-degree F at 75 degrees F, coated to prevent erosion, conforming to NAIMA-DLS and exceeding that standard as specified herein. Suitable for air temperatures to 250 degrees F, and duct velocities to 6000 feet per minute. Surface shall be coated with an acrylic coating having anti-microbial agents and factory applied edge coating. Johns-Manville "Permacote Linacoustic" (or approved equal).
- B. Thickness: Lining shall be 1-inch thick except where noted otherwise.
- C. Adhesives and Fasteners: Shall conform to NAIMA-DLS, and as suitable for the duct liner material and ductwork.
- D. Fungi and Bacteria Resistance: Conform to ASTM C 1338 and ASTM G21 for fungi resistance and ASTM G 22 for bacteria resistance.

PART 3 - EXECUTION

3.01 DUCTWORK INSTALLATION

- A. General: Install all ductwork with all accessories and connections to provide complete and operable duct systems, in accordance with plans and specifications. See Section 23 05 29 for hangers and supports. Provide quality assurance review of all drawings prior to beginning work (see paragraph titled Quality Assurance, this specification Section and see Section 23 05 00). Provide duct and plenum sizes and locations as shown on the drawings; except as adjusted for

field conditions and work of other trades, and with prior approval of the Engineer. See Section 23 05 00 for offsets and transitions to be included in project.

- B. Coordination: The Contractor shall fully coordinate the work of all trades to avoid interferences and conflicts. Due to the extremely tight spaces in portions of the building, the Contractor shall coordinate duct reinforcement spacing and supports with other trades as necessary to avoid interferences. In addition, the Contractor shall select duct gauge and reinforcement types to avoid interferences. Changes required due to lack of coordination between trades, improper spacing or selection of hangers, or improper duct gauge and reinforcement selection, shall be done at no additional cost to the owner.
- C. Field Measurements: Prior to fabricating any duct materials, the Contractor shall field measure all areas where ducts will be installed to verify room available and all offsets and fittings required. Field verify connection sizes and locations to equipment, louvers, and similar items.
- D. Workmanship: All work shall comply with code, SMACNA-DCS, and other applicable standards. Ducts shall be installed level (unless noted otherwise) and in neat lines with the building construction using best professional practices.
- E. Sealing:
 - 1. General: Use materials listed and approved for the specific application. Foil tape may only be used at duct connections to air inlets/outlets (unless specifically noted otherwise). Clean surfaces to be sealed of moisture and all contaminants. Seal joints in accordance with SMACNA-DCS, sealant manufacturer's instructions, and UL 181.
 - 2. Ductwork: Seal to meet duct leakage criteria as follows:
 - a. Ducts with pressure Class 2": Seal Class B.
 - b. Ducts with pressure Class 1" and less: Seal Class C.
- F. Protective Caps: Provide temporary sheetmetal caps or heavy visqueen covers over all open portions of ductwork to prevent debris, dirt, and dust from entering the ductwork. Such covers shall be installed at the end of each work shift, and shall remain in place until all work activities or events that may cause duct contamination will no longer occur.

3.02 ACOUSTICAL DUCT LINING INSTALLATION

- A. General: Install acoustical duct lining in ducts to extent shown on drawings, covering all interior surfaces. Round ducts shall use factory fabricated double-wall ducts as specified.
- B. Installation: Installation shall comply with NAIMA-DLS and these specifications. The liner shall be cut to assure tightly butted joints.
- C. Liner Attachments: The duct liner shall be applied with a 100% coverage of adhesive. Mechanical Fasteners shall be installed flush with the liner surface, and shall be spaced in accordance NAIMA-DLS.
- D. Horizontal Duct Runs: Tops of ducts over 12" wide and sides of duct over 16" high shall have liner additionally secured with mechanical fasteners.
- E. Vertical Duct Runs: Any side of duct over 12" in size shall have liner additionally secured with mechanical fasteners.
- F. Exposed Edges: All joints, exposed edges and any damaged areas of the liner, shall be heavily coated with fire resistant adhesive/mastic.
- G. Metal Nosing: Install metal nosings on the leading edges of the liner in ducts where the velocity exceeds 4000 feet per minute.

3.03 PREPARATION FOR SERVICE

- A. Cleaning: All ducts shall be wiped or blown clean of all dust and debris prior to the installation of grilles or diffusers. Notify the Engineer to allow for an inspection prior to installing grilles or diffusers.
- B. Contaminated Ducts: Where ducts have been contaminated by dirt or debris during the construction process, the affected duct systems shall be cleaned by an independent firm specializing in the vacuum cleaning of ductwork. All costs associated with such cleaning shall be the responsibility of the Contractor.

3.04 DUCT PRESSURE TESTING

- A. Tested Systems: All supply air duct systems shall be tested.
- B. Duct Pressure Class \leq 2-inches: Air balancers readings will be used to determine percent leakage of ductwork. Where leakage exceeds allowable by 25% or less, sealing shall be provided at all potential leak spots. Where leakage exceeds allowable by more than 25%, the system shall be re-sealed and the Sheetmetal Contractor shall pay the Balancer to re-measure and determine the new leakage rate.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Turning Vanes.
- B. Flexible Connectors.
- C. Duct Access Doors.

1.02 QUALITY ASSURANCE

- A. Workmanship: Construction and installation of all duct accessories shall comply with applicable SMACNA-DCS, and exceed those standards as noted.

1.03 SUBMITTALS

- A. Product Data: Submit product information on all items to be used.

1.04 REFERENCES

- A. AMCA 500D: Laboratory Methods for Testing Dampers for Rating.
- B. SMACNA-DCS: SMACNA HVAC Duct Construction Standards, 3rd Edition.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Turning Vanes: Duro-Dyne, Aero-Dyne, Oil Capital Sheet Metal, Airsan, or approved equal.
- B. Flexible Connections: Ventfabrics, Duro-Dyne Elgen, or approved equal.

2.02 TURNING VANES

- A. Type: Galvanized steel turning vanes to guide airflow through duct elbows to minimize pressure drop.
- B. Construction: Turning vanes shall comply with SMACNA-DCS. Vanes shall be fabricated of minimum 26 gauge galvanized steel; rails shall be fabricated of minimum 24 gauge galvanized steel. For duct widths less than 12 inches, vanes may be single wall construction; for widths 12" and greater, vanes shall be double wall "airfoil" type.
- C. Spacing: Turning vanes shall be equally spaced in accordance with SMACNA-DCS, parallel to each other, and securely attached to runners.
- D. Unequal Elbows: For elbows where the inlet and outlet dimensions are not the same, modify vane shape or angle to provide optimum turning.

2.03 FLEXIBLE CONNECTORS

- A. Type: Flexible fabric type connectors, to provide vibration isolation at equipment duct connections and to allow for movement in duct systems.
- B. Flexible Fabric:
 - 1. General: Flexible glass fiber fabric with an inorganic elastomeric coating.
 - 2. Width: Minimum 3" wide except at equipment 3 hp or larger with external vibration isolators fabric shall be minimum 6" wide.
 - 3. Indoor Applications: Neoprene type, black color, minimum 22 oz/sq. yard, 500 lbs x 500 lbs tensile strength.

- C. Metal Collars: Minimum 24 gauge galvanized steel 3" wide metal edge connectors, each side of fabric, connected to fabric by folded over metal seam.
- D. Temperature Rating: Shall be suitable for temperatures from -40 to 200 deg F.
- E. Fire/Smoke Rating: Material shall have a flame spread rating of not over 25, and a smoke developed rating of not higher than 50, and comply with requirements of IMC and NFPA 90A.

PART 3 - EXECUTION

3.01 TURNING VANES

- A. General: Install turning vanes in all duct elbows and "T" fittings, and at locations shown on the drawings.
- B. Attachment: Securely attach turning vane runners to ductwork.

3.02 FLEXIBLE CONNECTORS

- A. General: Provide flexible connectors at all duct connections to all equipment, where ducts of dissimilar metals are connected, and where shown on the drawings. Except that flexible connectors are not required on internally spring isolated fans where the fan is located in a separate mechanical room and a flexible connector has not been shown.
- B. Slack: Install flexible connections with sufficient slack to permit 1 inch of horizontal or vertical movement of ducts or equipment at flexible connection point without stretching the flexible material.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Roof Caps.

1.02 REFERENCES

- A. ASHRAE-F: ASHRAE Handbook of Fundamentals.
- B. SMACNA-DCS: HVAC Duct Construction Standards, 3rd Edition.

1.03 SUBMITTALS

- A. Product Data: Submit product information for all items to be used.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Wall and Roof Caps: Greenheck, PennBarry, Nutone, Carnes, or approved equal.

2.02 GENERAL REQUIREMENTS

- A. Performance: Air outlet and outlet performance shall be based on tests conducted in accordance with ASHRAE 70.
- B. Construction: Air outlets and inlets shall be of steel or aluminum construction except that:
 - 1. Where noted to be constructed of a specific material, shall be as noted.

2.03 ROOF CAPS

- A. Flat and Low Slope Roofs:
 - 1. Cap: Round roof cap, aluminum construction, with bird screen and curb cap for installation on roof curb. Throat area no less than the connecting duct free area.
 - 2. Roof Curb: Shall be constructed of minimum 18 gauge galvanized steel or 0.063-inch thick aluminum, of all-welded construction, with top wooden nailer (as required by roof/flashing type) held in place by metal wrap-around. Size of curb shall match roof cap used with, with minimum 8-inch high extension above the roof. Provide curb type (i.e., with built-in cant, base flashing, step height to allow for roof insulation, etc.) as required to match roof type (coordinate with Roofing Contractor). Greenheck Model GPR, GPS, GPF, GRS, or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Install air outlets and inlets in locations indicated and so as to conform with building features and coordinated with other work.
- B. Connections: Furnish all necessary screws, clips, duct collars, and transitions required to allow for the installation and connection of ductwork to all air outlets/inlets.
- C. Location Verification: Verify all air inlet/outlet locations with building features and other trades prior to installing any duct systems that will connect to the air outlets/inlets. For locations where air inlet/outlet location is noted to be verified, or location is not clear, develop shop drawings showing the proposed location, or the location that best suits field conditions, and submit for review.

- D. Weather Exposure: All outlets and inlets exposed to the weather shall be adequately flashed and installed in a manner to assure complete weatherproofness. Sealing and caulking of all outlets and inlets exposed to the weather shall conform to Section 23 05 00.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Air Filters.

1.02 SUBMITTALS

- A. Submit product information on all products to be used.
- B. Submit independent test lab data for all filters, showing air filter performance as tested per ASHRAE standards.

1.03 REFERENCES

- A. ASHRAE 52.2: ASHRAE Standard 52.2, Method of Testing General Ventilation Air-Cleaning Devices For Removal Efficiency By Particle Size.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Filters: Camfil-Farr, Air Guard, American Air Filter, or approved equal.

2.02 PLEATED THROW AWAY (PTA) FILTERS

- A. Type: Filters shall be medium efficiency, pleated throw away type.
- B. Efficiency: Filter media shall have efficiency as noted on the drawings, but no less than MERV 8. Efficiency shall be rated per ASHRAE Standard 52.2.
- C. Resistance: Initial resistance of a 24" x 24" x 2" filter handling 2000 cfm shall not exceed 0.25" w.g.
- D. Size: Filters shall be 2" deep (unless indicated otherwise), with number and sizes as required to give minimum nominal face area as indicated on the drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Filters must be in place and sealed properly before using fans.
- B. Provide three (3) complete sets of all filters in addition to any that the Contractor requires for the work (reference Section 23 05 00 and 23 05 94). Store as directed by Owner. One set shall be placed in units at time of that Owner takes building occupancy. Other 2 sets are for future Owner use. All sets shall be clean and new, unused.

END OF SECTION

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Single Package Gas Heat/Electric Cool Units.
- B. Unit Roof Curbs.

1.02 SUBMITTALS

- A. Product Data: Submit product information on HVAC units, including performance data showing cooling capacity (as function of indoor and outdoor temperatures and airflow rates), heating capacity, fan performance, filter information, unit accessories, wiring diagram (distinguishing unit wiring from field wiring) and point of connection of all utilities.
- B. Installation: Submit unit installation instructions.
- C. Start-up Report: Submit equipment completed inspection and start-up reports.

1.03 QUALITY ASSURANCE

- A. Listing: Units shall be UL listed and labeled.
- B. Performance Ratings: Units' cooling performance shall be rated in accordance with ANSI/AHRI 210/240. Units' heating performance shall be rated in accordance with ANSI/AHRI Z21.47.
- C. Codes: Unit and accessories shall conform to applicable codes and standards. Unit efficiency shall comply with code (and exceed code as indicated).
- D. Operating Ability: Unit and all components shall be able to withstand ambient temperatures from 0 deg F to 125 deg F, plus direct exposure to sun and weather elements without adverse affects. Unit shall be able to operate and produce cooled air between ambient temperatures of 45 deg F and 115 deg F. Unit shall be able to operate and produce heated air between ambient conditions of 0 deg F and 80 deg F. Unit shall be able to operate with supply air temperatures between 50 deg F and 125 deg F; and with room temperature setpoints between 65 deg F to 85 deg F.
- E. Electrical: Coordinate equipment electrical voltage/phase, minimum circuit amps, and overcurrent protection requirements with the Division 26 contractor prior to ordering.

1.04 GENERAL REQUIREMENTS

- A. Extended Warranties:
 - 1. Unit compressors shall be warranted by the manufacturer for five years. All labor and materials associated with compressor replacement (or repair) shall be warranted.
 - 2. Gas fired heat exchanger shall be warranted by the manufacturer for ten years. All labor and materials associated with heat exchanger replacement (or repair) shall be warranted.
- B. Spare Parts:
 - 1. Belts: Provide two complete sets of spare belts for all belt driven fans.
 - 2. Filters: Provide two complete spare sets of filters for all units.
- C. Safety Labeling: Units shall have labeling to aid in the service of the unit to indicate caution areas, and hazards.
- D. Seismic:

1. General: Units shall be constructed to withstand the forces that could be imparted to the unit and its components in a seismic event and be able to maintain operation, as required by code. This facility is is not an essential facility.

1.05 REFERENCES

- A. ANSI/AHRI 210/240: Performance Rating of Unitary Air Conditioning & Air-Source Heat Pump Equipment.
- B. ANSI/AHRI 270: Sound Performance Rating of Outdoor Unitary Equipment.
- C. ANSI Z21.47: Gas Fired Central Furnaces.
- D. ANSI/ASHRAE 52.2: Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
- E. ASTM B117: Standard Practice for Operating Salt Spray Apparatus.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Units: Carrier, Trane, JCI/York, Lennox, or approved equal.

2.02 SINGLE PACKAGED GAS HEATING/ELECTRIC COOLING UNITS

- A. General:
 1. Type: Single packaged outdoor gas heating and electric air conditioning unit. Configuration as shown on drawings.
 2. Factory Assembled Package: Units shall be fully factory assembled and shall be complete with casing, coils, fans, compressor(s), piping, wiring, disconnect, controls, gas burner, heat exchanger and all other accessories required to be ready for field connections and operation. Units shall be UL listed and labeled, and be designed for outdoor application.
 3. Capacity: Units shall have minimum cooling and heating capacities as scheduled on the drawings at the conditions shown.
 4. Refrigerant: Units shall be for use with refrigerant R-410A or R-407C, and shall be fully charged at the factory.
 5. Fuel: Unit shall be for use with natural gas.
- B. Unit Casing: Shall be constructed of zinc coated steel with baked on enamel finish. All exterior surfaces shall be cleaned, phosphatized, and finished with a weather resistant baked-on enamel finish. Finish painted surfaces shall successfully pass 500 hours salt spray test in accordance with ASTM B117. Access panels shall provide access to unit controls, coils, fans, compressors, heating section, and all items requiring service. Access panels shall be easily removable, and be gasketed and insulated. Indoor air section shall be completely insulated with minimum 1/2" thick 1-1/2 lb. per cubic foot foil faced or neoprene coated fiberglass insulation, with cleanable foil faced insulation used at the evaporator section and burner heat exchanger section. All screws or holding devices shall be of cadmium plated construction to resist corrosion. Unit shall have knockouts for utility and control connections with rubber grommets to insure water-proof connections. Casing below cooling coil shall have condensate drip pan constructed of non-corrosive material, sloped to drain, drain connection to outside, with PVC P-trap.

- C. Compressor(s): Direct drive hermetic, scroll type. Motor shall be suction gas cooled, and acceptable voltage range plus or minus 10% of unit nameplate voltage. Compressor shall have internal line break overcurrent protection and overtemperature protection, internal high pressure relief or high pressure switch, and crankcase heaters. Compressors shall be mounted on vibration isolators.
- D. Refrigerant Circuit: Shall be fully factory piped and shall include a refrigerant line filter/drier, service gauge ports, and thermostatic expansion valve or fixed orifice metering device.
- E. Evaporator and Condenser Coils: Shall be constructed of seamless copper tubing with aluminum fins mechanically bonded to tubes. Evaporator Coils shall be leak tested to 200 psig minimum; condenser coils shall be leak tested to 400 psig minimum.
- F. Fans:
 - 1. General: Fans shall be statically and dynamically balanced at factory.
 - 2. Evaporator Fan: Shall be forward curved centrifugal type, with belt drive or multi-speed direct drive motor. Motor shall be permanently lubricated type with built-in auto-reset thermal overload protection. Bearings shall be sealed, permanently lubricated type. Belt drive fans shall have quick adjust fan motor mounting plate or adjustable idler-arm assembly for easy belt tension adjustment. Sheaves shall be the adjustable type on belt driven units.
 - 3. Condenser Fan(s): Shall be propeller type, used in draw-through configuration. Fan shall be direct drive, with permanently lubricated totally enclosed weather-proof motor(s) having built-in auto-reset thermal overload protection.
 - 4. Adjustable Sheaves: All belt drive fans shall have adjustable sheaves (except where motors are 5 hp and larger, fixed sheaves may be used). Sheaves shall be selected so that they are at their midpoint at the design conditions.
- G. Heating Section: Shall be gas fired type, with heat exchanger to prevent products of combustion from coming into contact with heated supply air. Heat exchanger shall be constructed of corrosion resistant steel. Heater shall have induced draft or forced draft fans to vent products of combustion; fan shall be interlocked to unit's gas valve and heating controls to allow pre-purge of unit prior to opening gas valve and allowing combustion. Unit shall have code required safeties. Ignition shall be pilotless, and shall use electronic ignition or hot surface ignition system.
- H. Filters:
 - 1. General: Units shall be provided with filter racks for accommodating 2" thick filters (unless noted otherwise), with minimum filter area (or sizes) as scheduled. Access panels to filters shall be hinged, with latches (or equivalent device) requiring no tools to open.
 - 2. Filter Type: See Section 23 40 00.
- I. Electrical Power: Units shall be for use with power of voltage and phase as scheduled on the drawings. Units shall have single source power entry unless indicated otherwise. Units with single source power entry shall require only one field connection and power source. All necessary terminal blocks, fuse blocks, fuses, wiring, junction boxes and accessories shall be factory installed within the unit cabinet to provide power to all unit devices requiring power. Access panels to unit electrical power section shall be hinged with latches (or equivalent device), requiring no tools to open.
- J. Economizer - Factory:

1. General: Unit shall have economizer system manufactured by unit manufacturer to allow use of 100% outside air for economizer cooling. System shall have outside air and return air dampers, each operable from 0% to 100% of unit total airflow capacity. Dampers shall have linkage to allow return air damper to close as outside air damper opens. Outside air inlet shall have an aluminum mesh water entrapment filter and intake hood.
2. Relief: Unit shall have barometric relief damper to allow for pressure relief of building air when outside air damper is 100% open. Relief outlet shall have hood with birdscreen.
3. Powered Exhaust: Where indicated on the plans, unit shall have powered exhaust with fan sized to exhaust no less than 80% of unit supply air. System shall include exhaust fan, exhaust hood, and exhaust fan, backdraft damper. Controls shall be configured to allow operation of fan by Section 23 09 33. Fans shall be direct drive centrifugal type, with permanently lubricated bearings and motor with thermal overloads.

K. Controls:

1. General: Unit shall have factory installed controls which allow for the Section 23 09 33 control system to control unit fan, cooling, heating, and economizer operations. Unit shall be furnished with all necessary relays, starters, wiring terminal strips, timers, safety devices, interface modules, etc. to provide the sequence of operation as specified in Section 23 09 33 using the Section 23 09 33 control system, and allowing unit's safeties to protect unit components. Unit wiring shall be color coded and numbered corresponding to unit's wiring diagram. Access panels to unit controls shall be hinged with latches (or equivalent device) requiring no tools to open.
2. Section 23 09 33 Interface: Unit shall have terminal strip (and associated controls) for connection of Section 23 09 33 wiring. Unit controls shall allow for:
 - a. Fan operation when "common" and "fan" terminals are interconnected (by the Section 23 09 33 control system). For units with variable speed fans, unit shall have control terminals to accept a 4 to 20 mA signal from the Section 23 09 33 control system to allow the Section 23 09 33 control system to control fan speed.
 - b. Cooling operation when "common" and "compressor" terminals are connected (by the Section 23 09 33 control system). Provide "compressor 1", "compressor 2", etc. terminals to match number of compressor cooling stages for units with multiple stages of cooling.
 - c. Heating operation when "common" and "heater" terminals are connected (by the Section 23 09 33 control System). Provide "heater 1", "heater 2", etc. terminals to match number of heating stages for units with multiple stages of cooling. For units with modulating heat capability provide unit with terminals and controls to accept a 4 to 20 mA signal from the Section 23 09 33 control system to allow the Section 23 09 33 control system to control unit heating.
 - d. Economizer operation shall be by Section 23 09 33. Damper actuators and sensors shall be field installed on the unit by Section 23 09 33, and controlled by the Section 23 09 33 control system.
3. Control Safeties: In addition to code required safeties, unit shall have safety controls to prevent operation that may be unsafe or damage the unit. Such safeties shall as a minimum include the following:

- a. Heating: Pre-purge controls, proof of flame sensor, proof of combustion fan operation, and high temperature limit switch. Ignition system shall lock-out and require manual reset after 3 consecutive unsuccessful ignition attempts.
 - b. Cooling: Controls of all refrigeration system components, low refrigerant pressure safety, high refrigerant pressure safety.
- 4. Ambient controls: Unit shall have all necessary safeties and controls to allow operation at the specified ambient and room conditions.
- L. Vibration Isolation Roof Curb: Direct roof mount roof curb with integral vibration spring isolators; size, configuration, and capacity to suit equipment served; and providing unit seismic restraint. Lower curb portion shall be of steel construction, with horizontal base leg, integral wooden nailer, and removable electro-plated spring isolators. Spring isolators shall provide minimum 1-1/2" deflection, with minimum 50% travel to solid and spring diameter no less than 0.8 of the spring height at the rated load. Spring isolators shall rest on 1/4" thick neoprene pads. Spring isolators shall be sized by curb manufacturer to suit equipment weight served. Upper curb portion shall consist of a galvanized steel frame, to provide continuous support of equipment and transfer unit weight to spring isolators. Upper curb portion shall remain captive under anticipated maximum seismic and wind forces. Curb shall have internal resilient snubbers and suitable clearances to accommodate unit movement under normal wind forces (up to 35 mph) without hindering normal spring action. Curb shall have a continuous galvanized flexible counter flashing joined at corners with EPDM bellows. Lower curb portion shall have provision to accept 2-inch thick rigid insulation. Curb shall include an inner steel frame attached to curb upper "floating" section sized to match equipment duct connection openings to match up to unit and facilitate field duct connections to unit. Curb shall include seismic restraint reinforcing and calculations by a structural engineer licensed in the State of the project location showing forces imparted from the unit to the curb and from the curb to the roof structure per the requirements of Section 23 05 48.
- M. Accessories:
 - 1. Gas Flue Extensions: Provide manufacturers standard or custom fabricated welded stainless steel flue gas extension extending 3 feet higher than top of unit (or as indicated on plans), with flue size matching unit size (or as recommended by manufacturer). Provide drain weep hole at bottom at connection to unit.
 - 2. Convenience Electrical Outlet: GFCI, 120V/15 Amp electrical outlet, for connection to power source separate from unit power. Outlet shall be mounted through unit cabinet, and have weatherproof hinged cover.
 - 3. Circuit Breaker and Disconnect: Thermal magnetic, molded case, HACR circuit breaker, wired from circuit breaker to unit terminal block. Provide with water tight enclosure having exterior access through a hinged cover. Circuit breaker shall provide unit overcurrent protection and unit disconnect in accordance with NEC, UL, and code requirements. Shall be sized to properly handle unit electrical load, including power exhaust (where power exhaust is used).

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General: Comply with Section 23 05 00. Install in accordance with manufacturer's written instructions, code, applicable standards, and best construction practices. Care shall be taken when moving and setting units not to damage roof, curb, units, or other items.

- B. Location Verification: Install equipment at locations indicated in accordance with the Contract Documents. Prior to selecting unit installation locations and setting unit curb and unit, confirm that: unit curb properly matches building support structure; curb is level and dimensionally matches unit; installed duct locations match unit connection locations; manufacturer's pre-installation checklists have been completed; proper unit clearances and access will be provided; proper distances from plumbing vents and other vents; no adverse airflow conditions are present; and installation has been coordinated with other trades.
- C. Gasketing: Provide gasketing around top of unit curb and where duct connections mate to unit.
- D. Complete Connections: Connect and install all items shipped loose with units; provide and connect all utilities and accessories as required for proper unit operation.
- E. Refrigerant Charge: Units shall be checked for proper refrigerant charge and oil level and re-charged as necessary. Refrigerant shall be delivered to the site in factory charged containers and charged into the system through a filter/drier.
- F. Flue Extensions: Support rigidly from unit and so as to avoid transfer of heat and burning of paint on unit. Brace extension to accommodate wind forces.
- G. Cleaning: Units shall be thoroughly cleaned (internally and externally) of all debris prior to operation. Units shall be clean and in new condition prior to Owner acceptance.
- H. Operation and Maintenance:
 - 1. General: Operation and Maintenance shall be in accordance with manufacturer's written procedures and recognized best maintenance practices. Keep records of maintenance and (upon request) forward to the Engineer prior to project final acceptance.
 - 2. Stored Products: Provide maintenance (i.e. equipment rotation, lubrication, flush, cleaning, etc.) and inspection on products while stored to maintain new condition.
 - 3. Installed Products: Provide maintenance and inspection of products and operate mechanical systems until substantial completion or specified Owner Instruction has been provided (whichever is later). Maintenance shall include all manufacturer's recommended maintenance (i.e. strainer cleaning, filter changes, bearing lubrication, belt tensioning, etc.). In addition to scheduled maintenance, review all equipment periodically to allow detection of improper operation or any special maintenance needs; review shall be consistent with best practices for the product but in no case less than every two weeks.
 - 4. Operation Conditions: Units shall not be operated until all construction activities that generate dust, dirt, fumes, or odors are complete. Units shall not be placed into service until start-up has been completed.
- I. Owner Instruction: Instruct Owner on equipment operation, including: system start-up, shut-down, emergency shut-down, normal control operation, safety aspects, maintenance and repair instructions.

3.02 START-UP

- A. Pre Start-Up Inspection: Inspect equipment and connecting systems to confirm equipment and connecting systems have been installed properly and are ready for start-up. As a minimum, check for: proper voltage and phases, correct system refrigerant charge, correct electrical connections, complete control connections, all unit safety devices properly set and connected, heaters operational, fans free to rotate and rotating correctly, fans lubricated, belts tightened to proper tension, coils clear of obstructions, and other items as listed by the manufacturer are properly provided/connected and operating to ensure safe and proper start-up. If items are

discovered that prevent start-up to be completed, notify the installing Contractor and Engineer of issues. Coordinate and re-schedule start-up after items are corrected.

- B. Start-Up: Perform start-up in accordance with manufacturers written start-up procedures. Coordinate with any other trades needed to be present (i.e. balancer, control technician, etc.). Operate equipment in various modes to confirm proper operation. Observe proper operation of all unit components (heating, cooling, condenser fan, economizer, etc.). Observe unit to detect any unusual vibration, leakage, loose wiring, or other situations that could affect unit operation.
- C. Adjustments: Adjust and set unit components to allow for proper operation (i.e. adjust fan sheaves, adjust fan speeds, unit settings, etc.).

3.03 COMMISSIONING

- A. General: The Products referenced in this section are to be commissioned. The Contractor has specific responsibilities for scheduling, coordination, testing, and documentation of the commissioning. The Contractor shall provide a documented and signed record to verify that all equipment and systems installed under this contract have been inspected and functionally tested to verify full compliance with the contract specifications. See Section 23 08 00.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE OF ELECTRICAL WORK

- A. Provide electrical systems and Work described, identified, specified, referenced, and shown in the Project Documents that are covered under Divisions 26 of the Construction Specifications Institute (CSI) and/or as otherwise regulated by national, state, and local electrical codes. Electrical Work includes providing all equipment, materials, devices, appurtenances, and accessories necessary to provide complete and operating systems according to the intent of Project Documents.

1.02 REGULATORY REQUIREMENTS

- A. Comply with requirements of the following codes as adopted and supplemented by authority having jurisdiction:
 - 1. ANSI/NFPA 70 - National Electric Code (NEC)
 - 2. IBC - International Building Code (IBC)
 - 3. IMC - International Mechanical Code (IMC)
 - 4. WAC 296-46B - Washington State Electrical Safety Standards, Administration, and Installation
- B. Comply with additional codes and regulations referenced in other sections.
- C. Comply with additional codes and regulations required by authority having jurisdiction.
- D. Obtain and pay for permits and inspections from authorities having jurisdiction over work included under applicable Division Sections.
- E. Include all testing, shop drawings, and documentation required by the inspection authorities for permitting and final approval.

1.03 SUBMITTALS

- A. Unless otherwise specified, furnish product data and shop drawings to Engineer as follows:
 - 1. Product information sheets shall be neat, readable, 8.5 x 11 inch, submitted in PDF format. Generic product sheets with multiple products or product descriptions shall clearly highlight or otherwise indicate which product is being furnished.
 - 2. Furnish system design shop drawings in PDF format. Title block shall include Project, Owner, Contractor, and Date of Submittal.
 - 3. Furnish product data and shop drawings specifically indicating any conflict or deviation from requirements of contract documents.
- B. Confirm dimensions, ratings, and specifications of electrical materials, devices, fixtures, and equipment conform to project requirements prior to furnishing submittals. Coordinate electrical requirements with utilization equipment submitted under other sections and verify that voltage, phase, and rating are compatible with work shown in the electrical project documents.
- C. Do not order materials or commence Work until applicable submittal has been reviewed and the Engineer has approved or taken other appropriate action.

1.04 RECORD DOCUMENTS

- A. Indicate electrical changes in the contract documents. Include change orders, revised branch circuit and feeder wiring layouts, revised circuit identification, and pull & junction boxes added during construction and on record drawings.

1.05 INTENT OF PROJECT DOCUMENTS

- A. The drawings are diagrammatic and show the general arrangement of the construction and do not attempt to show all features of work, exact construction details, or actual routing of conduit and cable. Provide all necessary supports, off-sets, bends, risers, fittings, boxes, wiring, and accessories which are required for a complete and operating installation. Determine locations for required electrical outlets and connections prior to rough-in base on equipment product and installation submittal data and/or review of equipment on site.
- B. The level of design presented in the documents represents the extent of the design being furnished to the Contractor; any additional design needed to perform the Work shall be provided by the Contractor. All design by the Contractor shall be performed by individuals skilled and experienced in such work, and where required by local code (or elsewhere in the documents) shall be performed by engineers licensed in the State where the project is located. Include in bid the costs of all such project design; including engineering, drafting, coordination, and all related activities and work. Contractor provided design services shall be included for but not limited to bidder design specifications, temporary electrical systems, layout routing to install the Work and share project space with other building systems, hanger and support systems, seismic bracing, preparation of shop drawings, locating and identifying requirements for equipment and fixture terminations, and methods/means of accomplishing the work.

1.06 COORDINATION

- A. Examine architectural and mechanical drawings and specifications and consult with other trades, as required to coordinate use of Project space and sequence of installation.
- B. Arrange wiring and equipment to avoid interference with other work and to maximize accessibility for maintenance and repairs.
- C. Coordinate with suppliers and installers to obtain product electrical data, shop drawings, and installation requirements for systems, equipment, and products furnished by other trades as required perform electrical work.
- D. Contractor is responsible to ensure that equipment, fixtures, and devices being furnished and installed shall fit the space available, taking into account connections, service access, and clearances required by product manufacturer and/or Code. Contractor shall make the necessary field measurements to ascertain the space requirements for proper installation, and shall furnish and/or install equipment so that final installation meets the intent of the Project Documents.
- E. Contractor is responsible to review all the Project Documents and approved shop drawings provide under other divisions to identify and resolve conflicts between electrical systems and building construction, equipment, cabinets, counters, trim, and special finishes, prior to rough-in.

1.07 REQUIREMENTS FOR EQUIPMENT FURNISHED UNDER OTHER SECTIONS

- A. Provide power wiring, disconnect switches, electrical connection of equipment, installation of furnished electrical controllers, parts, and accessories, and field wiring for systems, equipment, and products furnished under other divisions.

- B. Review equipment submittals prior to electrical rough-in and installation. Verify location, rating, size, type of connections, and required space requirements. Coordinate field wiring requirements and details with supplier and installer. Notify Engineer of conflicts between requirements for actual equipment being furnished and equipment indicated in contract documents prior to commencing Work.
- C. Provide motor controllers and operator stations unless otherwise indicated on the project drawings.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT

- A. General: Furnish only products that are new and free from defects with a manufacture date that is less than six months from date of installation. Where product and applicable software updates or upgrades are available from the manufacturer, furnish the latest version unless otherwise specified. Furnishing discontinued products and/or products of manufacturers who are no longer in business is not permitted.
- B. Listing and Labeling: Furnish and install only products that are listed and labeled by one or more of the following testing laboratories as approved by the Authority Having Jurisdiction:
 - 1. Underwriter's Laboratories, Inc. (UL)
 - 2. ETL Testing Laboratories, Inc. (ETL)
 - 3. Factory Mutual (FM)
- C. Each specified product and system to be furnished shall be from a single approved manufacturer. Providing multiple product brands or manufacturers for each type or category, or for multiple units of the same specified product and/or system, is not permitted.
- D. Products shall be delivered, handled, and stored per manufacturer recommendations. Protect fixtures, materials, and equipment from rain, water, dust, dirt, snow, and damage. Do not install products that have marred, scratched, deformed, or otherwise damaged. Do not install products that have been wet or exposed to the weather prior to assembly and/or installation.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. Electrical work shall conform to requirements of ANSI/NECA 1-2015, Standard Practice of Good Workmanship in Electrical Construction.

3.02 INSTALLATION

- A. Provide all electrical work as specified and shown in the Project Documents. Provide all labor, equipment, material, accessories, and testing for electrical systems complete and operating. Include all scaffolding, rigging, hoisting, and services necessary for delivery and installation of materials and equipment. Include required software applications and associated system programming for electronic products.
- B. Provide as part of the Electrical Work all hangers, brackets, supports, framing, backing, accessories, incidentals, not specifically identified the project documents, but required to complete the system(s) in a safe and satisfactory working condition.
- C. Quantity of materials and layout of the Work shall be provided based on field measurement of the actual project conditions and shall not be based on plan dimensions.

- D. Provide all testing and documentation of electrical systems as required to demonstrate compliance with the Project Documents.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Demolition of systems applicable to Division 26.
- B. Requirements for remodeling applicable to Division 26.

1.02 EXISTING CONDITIONS

- A. The drawings show portions of existing electrical systems which are to remain, be removed, or be modified under the Contract. Concealed features of existing systems are based on field observation. No guarantee is made as to their correctness.
- B. Contractors have option to visit the project site prior to bidding and become familiar with the existing conditions and all other factors which may affect the execution of the work. Include all costs related to existing site conditions in the bid proposal.
- C. Failure to visit the project site prior to bid does not relieve the Contractor of the responsibility to provide all required work and a complete installation within the intent of the Contract Documents.

1.03 POWER AND SIGNAL OUTAGES

- A. The facility will continue normal operations during the construction work. The Contractor shall schedule power outages with the Engineer in accordance with requirements of Section 01140. Include coordination, identification of affected areas, work schedule, and re-energizing of electrical systems with minimal disruption to facility operations.
- B. Unscheduled power or signal outages to Owner occupied areas and systems essential to facility operation or life safety shall not be permitted at any time. In the event that the Contractor's work causes or contributes to a power outage or other system fault, the Contractor is responsible for immediately correcting the problem.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. New and Replacement Materials & Equipment: As specified in applicable sections, except product manufacture shall match existing for minor construction and for accessories to equipment that remains.
- B. Materials & Equipment for Patching: Match existing products.
- C. In finished spaces provide surface metal raceway systems as specified in other sections where existing construction does not permit concealed installation.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Field verify wiring and cabling for existing power and signal systems back to source of supply as required to perform Work.

3.02 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Remove, relocate, and extend existing systems to accommodate new construction. For selective demolition, refer to architectural and mechanical plans and include electrical demolition to support removal and replacement work not otherwise indicated in electrical drawings.

- B. Electrical demolition includes the disconnecting, removal, and disposal of fixtures, devices and equipment where indicated, along with associated wiring.
- C. The following shall be considered as abandoned unless otherwise indicated:
 - 1. Wiring to fixtures, devices, and equipment being removed or disconnected.
 - 2. Conduit containing conductors or cable that have been disconnected from a source of supply or left empty by the removal of conductors.
 - 3. Open conductors or cable that have been disconnected from a source of supply.
 - 4. Fixtures, devices, and equipment identified as being replaced.
- D. Remove abandoned wire and cable for power and signal systems to source of supply.
- E. Remove abandoned conduit, cable, and outlets where exposed and within accessible ceiling, attic, crawl, plenum, and opened wall spaces.
- F. Disconnect power to utilization equipment being removed.
- G. Repair adjacent construction and finishes damaged during demolition and extension work.
- H. Maintain access to existing electrical systems to remain active. Modify installation or provide access panels as appropriate.
- I. Replace, modify or extend existing outlet boxes to meet volume requirements. Cut surfaces as required to replace (or modify) existing outlet boxes and to install supports for new boxes and fixtures and patch to match adjacent surface.

3.03 DISPOSITION OF MATERIALS

- A. Prior to start of demolition, coordinate with Owner to identify materials and equipment for salvage. Disconnect and remove items to be salvaged and deliver to an area on site designated by the Owner. Disconnect, remove, and handle salvage material and equipment in a manner so as not to damage or otherwise render unusable.
- B. Materials and equipment removed and not reused or salvaged to the Owner shall become the property of the Contractor unless otherwise indicated. Remove such material and equipment from the Owner's property and dispose legally off site.

3.04 NAMEPLATES AND CIRCUIT DIRECTORIES

- A. Provide nameplates for existing distribution equipment to indicate new and revised equipment, circuit, and load designations.
- B. Update panelboard and load center circuit directories to indicate changes and additions to each circuit. Updated and existing circuits shall be typewritten on new removable circuit index cards.
- C. Nameplates and circuit directories shall comply with requirements of Section 26 20 00.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Conduit and Fittings
- B. Building Wire and Cable
- C. Wiring Connections and Terminations
- D. Boxes
- E. Wiring Devices
- F. Supporting Devices

1.02 SUBMITTALS

- A. Submit product data for conduit fittings, wire and cable, watertight connectors, and wiring devices.

PART 2 - PRODUCTS

2.01 CONDUIT

- A. Rigid Steel Conduit (RGS): ANSI C80.1; hot dipped galvanized.
- B. Intermediate Metal Conduit (IMC): Hot dipped galvanized.
- C. Electric Metallic Tubing (EMT): ANSI C80.3; galvanized tubing.
- D. Liquid Tight Flexible Metal Conduit: Galvanized steel, PVC jacket.
- E. Non-Metallic Conduit: NEMA TC 2; EPC-40-PVC.

2.02 FITTINGS

- A. RGS and IMC Conduit: ANSI/NEMA FB 1; threaded type. Provide hubs and connectors with insulated throat for conduit larger than 3/4 inch diameter
- B. EMT Conduit: ANSI/NEMA FB 1; steel, compression type. Crimp-on, drive-on, indenter, and set screw type prohibited. Provide connectors with insulated throat for conduit larger than 3/4 inch diameter. Provide raintight fittings for conduit installed outdoors.
- C. Liquid tight Flexible Conduit: ANSI C33.84, steel. Provide PVC coated fitting where installed outdoors.
- D. PVC Conduit: NEMA TC 3; solvent welded type, same manufacture as conduit.
- E. Water and Vapor Conduit Sealants: Hydra-Seal S-50 conduit sealing putty or approved; Tyco/Rachem/TE blank duct plug or approved; Polywater FST conduit sealing foam system or approved.
- F. Expansion Fittings for PVC Conduit: Same manufacture as conduit.
- G. Corrosion Protection: Zinc plated minimum indoors and hot dipped galvanized minimum outdoors for all metal fittings and accessories.

2.03 WIRE AND CABLE

- A. Copper Building Wire: Type THWN-2, 600 volt insulation; conductors 8 AWG and larger shall be stranded. Type XHHW-2 may be substituted for conductor sizes 4 AWG and larger.

2.04 WIRE CONNECTORS

- A. Connectors for Wire Size 10 AWG and Smaller: Insulated steel spring twist-on pressure connector with plastic cap. Outdoors use watertight type with prefilled sealant gel.
- B. Connectors for Wire Size 8 AWG and Larger: Solderless mechanical or compression type with pre-formed or shrink sleeve insulated cover. Outdoors make watertight using shrink sleeve or pigtail cap and sealing mastic.

2.05 BOXES

- A. Surface Outlet Boxes for Outdoor and Wet Locations: Cast aluminum with baked enamel or epoxy finish, gasketed cover, stainless steel hardware. Outlet boxes shall have threaded hubs.
- B. Junction and Pull Boxes: Outlet box with blank cover except boxes larger than 4 inch square shall be screw cover type, galvanized steel with grey enamel finish, NEMA 1 indoors and NEMA 3R or better outdoors, unless otherwise indicated.

2.06 WIRING DEVICES

- A. Duplex Receptacles: Specification grade 5362 series, NEMA 5-20R, grounding type, as manufactured by Hubbell, Leviton, Pass & Seymour, Cooper or approved equal. Color: Ivory or approved.
- B. Ground Fault Circuit Interrupter (GFCI) Receptacles: Same manufacture, rating, and color as duplex receptacles except devices shall comply with UL 943, Class A, with self test.
- C. Duplex Receptacles, Weather Resistant for Damp and Wet Locations: Same manufacture, rating, and color as duplex and GFCI receptacles except devices shall be UL listed as weather resistant and permanent special purpose identification shall be visible on the device.
- D. Damp and Wet Location Device Plates: ANSI/UL 514D; Commercial grade, low profile, lockable, die cast aluminum cover assembly with powder coat finish, listed as weatherproof when in use and identified as extra duty. Hubbell/TayMac MX series or approved equal.

2.07 SUPPORTING DEVICES

- A. Metal Conduit Clamps & Straps: Stainless steel, screw type.
- B. Support Channel, Field Assembled: Slotted 12-gauge steel channel with fittings, fasteners, brackets, clamps, floor plates, and accessories required; ASTM 123 hot dipped galvanized and suitable for painting.
- C. Fasteners: Expansion anchors in concrete and solid masonry; toggle bolts in hollow masonry, plaster, or gypsum board wall construction; sheet metal screws in metal construction; wood screws in wood construction; set screw type beam clamps on steel columns and beams; U.L. listed clips for metal studs. Metal parts and accessories to be stainless steel outdoors.
- D. Roof Supports: Free standing molded thermoplastic pyramid style block with hot dipped galvanized channel strut support, Erico Caddy ST series or approved.
- E. Outdoors: Use stainless steel rods, fasteners, clamps, straps, and hardware.

PART 3 - EXECUTION

3.01 WIRING METHODS

- A. General:
 - 1. Fixed wiring shall be conductors installed in conduit.

2. Conceal all wiring within construction unless otherwise noted on drawings or specifically authorized by the Engineer.
3. Where contractor wiring methods require the application of conductor ampacity adjustment or correction factors under NEC 310.15, the contractor shall submit calculations that show Code compliance, except the adjusted ampacity of the conductors installed shall not be less than the circuit overcurrent device rating shown or specified.
4. Conduit sizes shall not be reduced to smaller size than shown or otherwise noted on plans.
5. Feeders shown or otherwise noted on plans shall not be combined to share a common conduit homerun. Branch circuit homeruns shown or otherwise noted on plans shall not be combined to share a common conduit with other circuits.

B. Conduit Requirements:

1. Rigid Steel Conduit (RGS): May be used in all areas.
2. Electrical Metallic Tubing (EMT): May be used in dry and damp locations where not subject to damage.
3. Flexible Conduit: Required for final equipment connections (maximum length 36 inches). Use liquid tight in damp or wet locations.
4. Rigid Non-Metallic Conduit (PVC): May be used outdoors.

C. Wire and Cable Requirements:

1. Use copper conductors.

3.02 SUPPORT - GENERAL

- A. Support wiring, conduit, raceways, boxes, equipment, and fixtures from building structural members. Provide additional framing, channel, or listed support attachments as required to span or support between structural members and to avoid interference from pipes, ducts, and other equipment.
- B. Do not install support anchors to penetrate thru roof deck.
- C. Do not violate the integrity or exceed the capacity of the building structure used for support. Provide/fabricate additional support elements to transmit loads to the floor or other parts of the building structure that can carry the load as approved by the Architect/Engineer.

3.03 CONDUIT SIZING, ARRANGEMENT, AND SUPPORT

- A. Minimum conduit trade size 1/2-inch diameter.
- B. Arrange conduit to present a neat appearance.
- C. Route conduit parallel and perpendicular to walls and adjacent piping.
- D. Maintain 12-inch clearance between conduit and heat sources such as flues, steam pipes, and heating appliances.
- E. Do not support conduit with perforated pipe straps or tie wraps. Remove all wire used for temporary conduit support during construction, before conductors are pulled.
- F. Do not bore holes in truss members or notch structural members.

3.04 CONDUIT INSTALLATION

- A. Use conduit hubs or sealing locknuts for fastening conduit to cast boxes and for fastening conduit to sheet metal boxes in damp locations.
- B. Use conduit bodies to make sharp changes in direction, as around beams.
- C. Use factory elbows for PVC conduit and for bends in metal conduit larger than 1 inch. Conduit bends for signal systems that are greater than 45 degrees shall be minimum radius sweeps as follows:

Under 2 inches	Standard radius
2 inches - 3 inches	24 inch radius
Over 3 inches	36 inch radius
- D. Install insulated bushings on each end of conduit larger than 1 inch.
- E. Conduits at Roof Decks: Conduit installed within 1.5 inches of the nearest surface of metal corrugated roof decks and conduit concealed within roofing systems on top of roof decks shall be RGS or IMC conduit.
- F. Install evenly spaced expansion couplings on above ground PVC conduit runs longer than 25 feet. Unless otherwise recommended by manufacturer, maximum spacing for short couplings (2 inch expansion) shall be 40 feet on center and maximum spacing for standard coupling (6 inch expansion) shall be 100 feet on center.

3.05 CONDUIT PENETRATIONS

- A. Roof Penetrations: Provide flashing around each conduit which penetrates a roof. Materials and installation shall comply with applicable provisions of Division 07 for roofing. Seal top of flashing around conduit with a weatherproof non-hardening mastic.

3.06 CONDUCTOR INSTALLATION

- A. Minimum Conductor Size: #12 AWG.
- B. Splice conductors only in junction or outlet boxes.
- C. Arrange conductors neatly at termination such that a clamp-on ammeter may be used.

3.07 CONDUCTOR IDENTIFICATION

- A. Provide non-metallic wire markers on each conductor in panelboards and in junction boxes having more than 6 conductors. Identify branch circuit or feeder number for power and lighting circuits.
- B. Color Coding of Insulated Equipment Ground: Solid green.
- C. Color Coding of 208/120 Volt System: Phase A - black, Phase B - red, Phase C - blue, Neutral - white.
- D. Color Coding of 480/277 Volt System: Phase A - brown, Phase B - orange Phase C - yellow, Neutral - gray.
- E. Provide color tracers on neutrals to differentiate circuits on multi-wire branch circuits with separate neutrals.

3.08 BOX INSTALLATION

- A. Set wall outlet and wall switch boxes vertically.

- B. Support boxes independently of conduit, piping, and ductwork; securely fasten in place.

3.09 WIRING DEVICES

- A. Ground Fault Circuit Interrupter (GFCI) Protection: Provide for receptacles located outdoors.

3.10 LABELING

- A. Outlets: Identify panel and circuit number on faceplate of convenience and special purpose outlets. Use self-adhesive, polyester or vinyl laminated labels with machine generated alpha-numeric circuit identification, 1/4 inch high black letters on clear background. Exception: Use white letters on black or brown color device plates.
- B. Junction Boxes: Label or mark cover with panel and circuit number. Locate on inside of cover except locate on outside of junction box cover in attics, crawl spaces, equipment rooms and above accessible ceilings.

3.11 TESTS

- A. Perform continuity test on all feeder and branch circuit conductors. Verify proper phasing and that no short circuits or accidental grounds exist.
- B. Check all convenience outlets for correct wiring connections using a polarity circuit tester. Test GFCI circuits for proper operation with an approved tester.
- C. Torque test conductor lug terminations to manufacturers recommended values.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Power System Grounding
- B. Electrical Equipment and Raceway Grounding

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Mechanical Connectors at Ground Connections: Heavy duty, solderless, bolted pressure or compression type connectors or clamps labeled as being suitable for the purpose. Manufacturer's standard grounding lug when furnished as part of panelboards and other equipment.
- B. Ground & Bonding Conductors: Bare, soft drawn copper; stranded for 8 AWG and larger, unless otherwise indicated or specified. Equipment grounding conductors may be insulated with green color identification per Code.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Equipment Grounding Conductor: Provide separate insulated green equipment grounding conductor in feeders and in branch circuits. Provide equipment grounding conductor in non-metallic conduits and flexible conduit. Size equipment grounding conductors per NEC 250.122 unless larger size is shown or specified.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Panelboards and Circuit Breakers
- B. Disconnect Switches
- C. Fuses
- D. Nameplates

1.02 SUBMITTALS

- A. Submit product data for panelboards, circuit breakers, and disconnect switches.
- B. Submit shop drawings for panelboards. Include installation requirements for anchoring and bracing meeting requirements of the International Building Code for Seismic Design Category F.
- C. Coordinate dimensions of equipment with site and project space dimensions to verify equipment will fit, conform to indicated layout, and meet NEC and manufacturer clearance requirements.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Panelboards, Circuit Breakers and Disconnects: Square 'D', Siemens, Cutler-Hammer, or approved equal
- B. Fuses: Bussman and Littelfuse or approved equal.

2.02 BRANCH CIRCUIT PANELBOARDS

- A. Panelboards: UL 67, NEMA PB 1; bolt-on circuit breaker type.
- B. Electrical Ratings, Circuit Breaker Arrangement, Special Features: As indicated on drawings. Indicated ampere interrupting capacity (AIC) is the rms symmetrical integrated equipment short circuit rating of the complete assembly. Indicated AIC rating shall be base upon manufacture listed series rating with the panelboard main device or the line side overcurrent protective device, as applicable, unless otherwise indicated.
- C. Cabinet: Concealed trim clamps, concealed hinge, 6" deep x 20" wide.
- D. Finish: Manufacturer's standard enamel over rust inhibitor for exposed surfaces.
- E. Circuit Directory: Index card under plastic with metal framed holder on inside door.
- F. Circuit Breakers: UL 489; molded case, thermal magnetic trip. Multi-pole breakers shall be single handle with common pole operation.
 - 1. Provide type SWD circuit breakers for lighting circuits.
 - 2. Provide type HACR circuit breakers for air conditioning equipment, refrigeration equipment, and surge protection devices (SPD).
 - 3. Provide approved manufacturer handle padlock attachment on circuit breakers serving branch circuits for permanently connected appliances without local disconnecting means and where otherwise indicated.
- G. Bussing: Copper with full neutral and ground bus. Provide separate ground bus isolated from cabinet where isolated grounding requirements are indicated.

2.03 DISCONNECT SWITCHES

- A. Safety Switches: NEMA KS 1; heavy duty, quick make, quick break, handle with lock out / tag out provisions. Provide rating, number of poles, and fusing required for load served.
- B. Switch Enclosures: NEMA ICS 6; Type 3R for damp or outdoor locations.

2.04 FUSES

- A. Approved Fuses, 600 Amperes and Less, for Branch Circuits and Power Distribution:
 - 1. ANSI/UL 198C Class J low peak with time delay unless otherwise indicated except ANSI/UL 198E Class RK5 may be used in safety switches for protection of motors and transformers.
 - 2. For protection of circuit breakers: Fuses must comply with NEC 240.86 series rating requirements for load side circuit breakers that are not rated for the available fault current. Coordinate series rating requirements with published manufacturer's listings for circuit breakers installed.

2.05 NAMEPLATES AND LABELS

- A. Nameplates: Engraved three-layer laminated plastic, white letters on black background, affixed with stainless steel screws.
- B. Letter Height: 1/4-inch for panelboards, switches, and disconnecting means.
- C. Arc Flash Protection Labels: ANSI Z535.4; Self adhesive vinyl label factory installed by the equipment manufacturer with ANSI header to read WARNING or DANGER and informational text to include:
 - 1. Electric Arc Flash Hazard
 - 2. Turn off all power before opening.
 - 3. Follow all requirements in NFPA 70E for safe work practices and for Personal Protective Equipment.
 - 4. Failure to comply can result in death or injury.

PART 3 - EXECUTION

3.01 PANELBOARDS

- A. Install in accordance with NEMA PB 1.1.
- B. Provide typewritten circuit directory for each panelboard listing load description for each circuit. Use final room names and numbers as verified with the Owner.

3.02 FUSES

- A. Install fuses in fusible switches.
- B. Size fuses for motor loads at 150% of nameplate full load amperes; size fuses for air conditioning and refrigeration equipment at maximum recommended nameplate rating.

3.03 NAMEPLATES AND LABELS

- A. Panelboards: Provide nameplate to identify equipment designation, voltage, and source of supply for each, e.g. Panel A, 208/120V, Fed from Panel M. Provide arc flash protection label.

- B. Individual Safety Switches, and Disconnecting Means: Provide nameplate to identify load served and circuit source and circuit number.
- C. Nameplate and Label Location: Secure to equipment fronts.

3.04 TESTS

- A. Motors and Compressors: Record all nameplate data. Measure actual voltage and running amperes for each phase. Record manufacturer and catalog number of overload thermal units installed.

END OF SECTION

APPENDIX A

CITY OF TACOMA BUILDING

PERMITS

BLDCA18-0490

BLDCA18-0491

BLDCA18-0492



CITY OF TACOMA

Planning and Development Services
(253) 591-5030

747 Market St.
Tacoma, WA 98402

Building Inspections (253) 573-2587
Site Inspections (253) 573-2587

COMMERCIAL ALTERATION PERMIT # **BLDCA18-0490**

ISSUED: 11/16/2018

EXPIRES: 5/15/2019

PO Number: N/A

SITE INFORMATION

Parcel No.: 5000350013
300 E ALEXANDER AVE, TACOMA,
WA 98421

PARCEL OWNER

PORT OF TACOMA
PORT EARLEY BUSINESS CENTER
PO BOX 1837

ISSUED TO

PORT OF TACOMA
PORT EARLEY BUSINESS CENTER PO
BOX 1837
TACOMA WA, 984011837

Structure Type: B Business

PROJECT DESCRIPTION

REMODEL

Building #326 - Roof Cover Replacement; HVAC Replacement (Like for Like)
Replace roof covering and replace HVAC mechanical units (repair by replacing).
HVAC is not being redesigned or changed. New structural parapet walls and
associated work in commercial building.

Total Value: \$524,992.00

Permit Fee: \$11,274.45

Payment Info: Credit Card

Building Information

Number of Units:

Zoning: PMI

Estimated Value: 524992

Construction Type:

Occupancy Group: B Business

Floor Count:

Total Floor Area:

Attached Garage:

Deck:

Porches:

CONDITIONS OF APPROVAL

BLDCA18-0490, BLDCA18-0491 and BLDCA18-0492 have the same plans. Please issue all at once.

PERMIT MUST BE KEPT ON SITE DURING CONSTRUCTION

All plumbing, heating, and electrical work will be performed by either the home owner or by a contractor licensed to do the same. Separate permits are required for other work, including but not limited to, sanitary and storm sewer, sidewalk, curb and gutter, driveways, parking lot paving, street improvements, fire protection, and signs. Plumbing and mechanical permits can be incorporated to some permits.

X _____

THIS PERMIT SHALL BECOME NULL AND VOID IF ANY OF THE ABOVE
INFORMATION IS FOUND TO BE INCORRECT

GENERAL:

PERMISSION IS HEREBY GIVEN TO DO THE DESCRIBED WORK, AS NOTED ON THE REVERSE SIDE, ACCORDING TO THE CONDITIONS HEREON AND ACCORDING TO THE APPROVED PLANS AND SPECIFICATIONS PERTAINING THERETO, SUBJECT TO COMPLIANCE WITH THE ORDINANCES OF THE CITY OF TACOMA.,

YOUR ATTENTION IS CALLED TO THE FACT THAT IT SHALL BE THE DUTY OF THE PERMITEE (General Contractor) to assure that all necessary inspections are called for and approved by the City Inspectors.

YOUR ATTENTION IS CALLED to the fact that in addition to the called for inspections specified by the applicable codes, the Building Official may make or require any other inspections of any construction work necessary to ascertain compliance with the provisions of City Codes and other laws which are enforced by the City of Tacoma.

YOUR ATTENTION IS CALLED to the fact that in addition to regularly scheduled inspections during construction there shall be a final inspection and approval on all buildings or structures when completed and ready for occupancy. All required off-site improvements (curbs, sidewalks, storm sewers, etc.) must be completed at time of final inspection and prior to occupancy of building. Construction of off-site improvements requires scheduled inspections during construction in addition to the final inspection.

SPECIAL PERMITS

The holder of Special Permits agrees to the following stipulations:

1. To complete the work encompassed by the Special Permit in accordance with the current edition of the WSDOT/APWA Standard Specifications as amended by the City of Tacoma General Special Provisions and in accordance with any special provisions or conditions set forth before final acceptance as required by the provisions of the Right of Way Bond.
2. To indemnify and hold the City of Tacoma harmless from any and all damages done to any person or property which may arise from the construction encompassed by the Special Permit.
3. To submit for review and approval to the Traffic Engineer a traffic control plan developed in accordance with the "Manual on Uniform Traffic Control Devices" (MUTCD). The traffic control plan shall show pedestrian access through the work zone.
4. To protect the public by placing adequate barricades, signs, cones, lights or other traffic control devices in accordance with the approved traffic control plan. It is understood that traffic lane closures and or sidewalk closures are limited to that which is specifically permitted herein. No other closures will be allowed without prior written approval of the City Engineer.
5. To provide and maintain protected pedestrian and ADA compliant disability access on walkways at all times.
6. The City of Tacoma does not guarantee sewer location or depth information. It shall be the permittee's responsibility to verify sewer and sewer stub locations and depths.
7. To restore Rights-of-Way in accordance with the City's Rights-of-Way Restoration Policy and City of Tacoma Standard Plans
8. Trench backfill within all improved streets or streets proposed for improvement shall be full depth bank run gravel or approved equal by the Site & Building Division.
9. All cuts in arterial streets shall be patched and maintained with Hot Mix Asphalt until permanent repairs are completed. All cuts in residential streets or alleys shall be patched and maintained with cold mix asphalt until permanent repairs are made. Permanent repairs shall be per current City of Tacoma Standard Plans. Streets and alleys shall be permanently repaired within 30 days.
10. To be responsible for the preservation of any utilities within the construction area.

CALL TOLL FREE BEFORE YOU DIG -1-800-424-5555 (Utilities Underground Location Center)

11. 24 Hour notice is required prior to any inspection. Site & Building Division 253-591-5760, Traffic Signal/Streetlight 253-591-5287.
12. The Special Permit Expiration date is 30 days from the issue date unless otherwise noted.



Inspection Record Card

City of Tacoma

Planning and Development Services Department

INSPECTION PHONE NUMBERS

NOTICE

Post this card and the approved plans conspicuously on the construction site for inspections

Building

Structure, Plumbing & Mechanical..... 253-573-2587
Fire/Sprinkler..... 253-591-5754
Electrical..... 253-502-8277

Site

Right-of-Way and Storm & Sanitary Conveyance... 253-573-2587
Sanitary OWS/Grease Trap..... 253-502-2153
Stormwater Quality Device/Source Control..... 253-502-2162

Land Use

Zoning/Landscaping Final..... 253-591-5577

To check the results of the building and/or site inspections, call the City of Tacoma Permit Services System at 253-573-2587

DATE ISSUED 11.16.18 TO PORT OF TACOMA

Owner/Contractor

TYPE OF WORK 300 E. ALEXAN REPLACE ROOF COVER, HVAC (LIKE FOR LIKE), NEW STRUCTURAL PARAPET WALLS & ASSOC'D WORK IN COMM BUILDING

ADDRESS 300 E ALEXANDER AVE

Request All That Apply	Inspection Schedule	Date	BY
	Initial Erosion Control (BMP) for clearing and grading		
	Building Footing		
	Building Foundation Walls		
	Plumbing/Mechanical Groundwork		
	Slab (base and insulation)		
Required Before The Building Framing Inspection	Floor Framing (prior to decking)		
	Shear Wall Nailing (before siding)		
	Plumbing Rough-In		
	Mechanical Rough-In (HVAC & exhaust)		
	Gas Piping		
	Electrical Rough-In		
	Water Line Installation		
	Rough-in/Set Storm & Sanitary Device		
	Rough-in/Set Storm & Sanitary Conveyance		
	Erosion Control Maintenance (BMP)		
	Building Framing and Caulking		
	Insulation		
Required Before The Building Final Inspection	Drywall		
	Suspended Ceiling (see back of card)		
	Plumbing Final		
	Mechanical Final		
	Electrical Final		
	Storm and Sanitary Device Final		
	Storm and Sanitary Conveyance Final		
	Sidewalk, Curb & Gutter, Driveway		
	Final Erosion Control & Site Stabilization (BMP)		
	Building Final (see back of card)		

WARNING: It is unlawful to occupy the premises until all applicable final inspections have been made.

SUPPLEMENTAL INSPECTIONS ON THE BACK

Supplemental Erosion Control Inspections		Commercial Building Inspections That May Apply	
	By / Date		By / Date
Initial Inspection:		Electrical for Ceiling Cover	
Maintenance Inspection:		Mechanical for Ceiling Cover	
Maintenance Inspection:		Fire/Sprinkler for Ceiling Cover	
Maintenance Inspection:		Building for Ceiling Cover	
Maintenance Inspection:		Fire/Sprinkler FINAL	
Maintenance Inspection:		Water/Backflow FINAL (253-502-8215)	
		Zoning/Landscaping FINAL	
		Boiler FINAL (253-596-3902)	

[illegible]

PERMITS:

Building #	<u>BLDCA18-0490</u>	Contractor	_____
Plumbing #	_____	Contractor	_____
Heating #	_____	Contractor	_____
Electrical #	_____	Contractor	_____
Sanitary Sewer #	_____	Contractor	_____
Sidewalk #	_____	Contractor	_____



CITY OF TACOMA

Planning and Development Services
(253) 591-5030

747 Market St.
Tacoma, WA 98402

Building Inspections (253) 573-2587
Site Inspections (253) 573-2587

COMMERCIAL ALTERATION PERMIT # **BLDCA18-0491**

ISSUED: 11/19/2018

PO Number: N/A

EXPIRES: 5/18/2019

SITE INFORMATION	PARCEL OWNER	ISSUED TO
Parcel No.: 5000350013 300 E ALEXANDER AVE, TACOMA, WA 98421 Structure Type: B Business	PORT OF TACOMA PORT EARLEY BUSINESS CENTER PO BOX 1837	PORT OF TACOMA PORT EARLEY BUSINESS CENTER PO BOX 1837 TACOMA WA, 984011837

PROJECT DESCRIPTION

OTHER Port of Tacoma EBS - Building 407 Upgrade to existing roof top bird deterrent wire systems for a commercial space.	Total Value: \$37,760.00 Permit Fee: \$1,754.08 Payment Info: Credit Card
--	---

Building Information

Number of Units:
Zoning: PMI
Estimated Value: 37760
Construction Type:
Occupancy Group: B Business

Floor Count:
Total Floor Area:
Attached Garage:
Deck:
Porches:

CONDITIONS OF APPROVAL

BLDCA18-0490, BLDCA18-0491 and BLDCA18-0492 have the same plans. Please issue all at once.

PERMIT MUST BE KEPT ON SITE DURING CONSTRUCTION

All plumbing, heating, and electrical work will be performed by either the home owner or by a contractor licensed to do the same. Separate permits are required for other work, including but not limited to, sanitary and storm sewer, sidewalk, curb and gutter, driveways, parking lot paving, street improvements, fire protection, and signs. Plumbing and mechanical permits can be incorporated to some permits.

X _____

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INFORMATION IS FOUND TO BE INCORRECT



Inspection Record Card

City of Tacoma

Planning and Development Services Department

INSPECTION PHONE NUMBERS

NOTICE

Post this card and the approved plans conspicuously on the construction site for inspections

Building

Structure, Plumbing & Mechanical..... 253-573-2587
Fire/Sprinkler..... 253-591-5754
Electrical..... 253-502-8277

Site

Right-of-Way and Storm & Sanitary Conveyance... 253-573-2587
Sanitary OWS/Grease Trap..... 253-502-2153
Stormwater Quality Device/Source Control..... 253-502-2162

Land Use

Zoning/Landscaping Final..... 253-591-5577

To check the results of the building and/or site inspections, call the City of Tacoma Permit Services System at 253-573-2587

DATE ISSUED 11/19/18

TO Port of Tacoma

Owner/Contractor

TYPE OF WORK

Upgrade to existing roof top bird deterrent wire systems for a commercial space

ADDRESS 300 E Alexander Ave Bldg 407

Request All That Apply	Inspection Schedule	Date	BY
	Initial Erosion Control (BMP) for clearing and grading		
	Building Footing		
	Building Foundation Walls		
	Plumbing/Mechanical Groundwork		
	Slab (base and insulation)		
Required Before The Building Framing Inspection	Floor Framing (prior to decking)		
	Shear Wall Nailing (before siding)		
	Plumbing Rough-In		
	Mechanical Rough-In (HVAC & exhaust)		
	Gas Piping		
	Electrical Rough-In		
	Water Line Installation		
	Rough-in/Set Storm & Sanitary Device		
	Rough-in/Set Storm & Sanitary Conveyance		
	Erosion Control Maintenance (BMP)		
Required Before The Building Final Inspection	Building Framing and Caulking		
	Insulation		
	Drywall		
	Suspended Ceiling (see back of card)		
	Plumbing Final		
	Mechanical Final		
	Electrical Final		
	Storm and Sanitary Device Final		
	Storm and Sanitary Conveyance Final		
	Sidewalk, Curb & Gutter, Driveway		
	Final Erosion Control & Site Stabilization (BMP)		
	Building Final (see back of card)		

WARNING: It is unlawful to occupy the premises until all applicable final inspections have been made.

SUPPLEMENTAL INSPECTIONS ON THE BACK

GENERAL:

PERMISSION IS HEREBY GIVEN TO DO THE DESCRIBED WORK, AS NOTED ON THE REVERSE SIDE, ACCORDING TO THE CONDITIONS HEREON AND ACCORDING TO THE APPROVED PLANS AND SPECIFICATIONS PERTAINING THERETO, SUBJECT TO COMPLIANCE WITH THE ORDINANCES OF THE CITY OF TACOMA.,

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SPECIAL PERMITS

The holder of Special Permits agrees to the following stipulations:

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2. To indemnify and hold the City of Tacoma harmless from any and all damages done to any person or property which may arise from the construction encompassed by the Special Permit.
3. To submit for review and approval to the Traffic Engineer a traffic control plan developed in accordance with the "Manual on Uniform Traffic Control Devices" (MUTCD). The traffic control plan shall show pedestrian access through the work zone.
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10. To be responsible for the preservation of any utilities within the construction area.

CALL TOLL FREE BEFORE YOU DIG -1-800-424-5555 (Utilities Underground Location Center)

11. 24 Hour notice is required prior to any inspection. Site & Building Division 253-591-5760, Traffic Signal/Streetlight 253-591-5287.
12. The Special Permit Expiration date is 30 days from the issue date unless otherwise noted.



CITY OF TACOMA

Planning and Development Services
(253) 591-5030

747 Market St.
Tacoma, WA 98402

Building Inspections (253) 573-2587
Site Inspections (253) 573-2587

COMMERCIAL ALTERATION PERMIT # **BLDCA18-0492**

ISSUED: 11/19/2018

EXPIRES: 5/18/2019

PO Number: N/A

SITE INFORMATION

Parcel No.: 5000350013
300 E ALEXANDER AVE, TACOMA,
WA 98421

PARCEL OWNER

PORT OF TACOMA
PORT EARLEY BUSINESS CENTER
PO BOX 1837

ISSUED TO

PORT OF TACOMA
PORT EARLEY BUSINESS CENTER PO
BOX 1837
TACOMA WA, 984011837

Structure Type: B Business

PROJECT DESCRIPTION

OTHER

Port of Tacoma EBS - Building 532
Upgrade to the existing roof top bird deterrent wire systems for a commercial
space.

Total Value: \$25,600.00

Permit Fee: \$1,319.11

Payment Info: Credit Card

Building Information

Number of Units:

Zoning: PMI

Estimated Value: 25600

Construction Type:

Occupancy Group: B Business

Floor Count:

Total Floor Area:

Attached Garage:

Deck:

Porches:

CONDITIONS OF APPROVAL

BLDCA18-0490, BLDCA18-0491 and BLDCA18-0492 have the same plans. Please issue all at once.

PERMIT MUST BE KEPT ON SITE DURING CONSTRUCTION

All plumbing, heating, and electrical work will be performed by either the home owner or by a contractor licensed to do the same. Separate permits are required for other work, including but not limited to, sanitary and storm sewer, sidewalk, curb and gutter, driveways, parking lot paving, street improvements, fire protection, and signs. Plumbing and mechanical permits can be incorporated to some permits.

X _____

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11. 24 Hour notice is required prior to any inspection. Site & Building Division 253-591-5760, Traffic Signal/Streetlight 253-591-5287.
12. The Special Permit Expiration date is 30 days from the issue date unless otherwise noted.



Inspection Record Card

City of Tacoma

Planning and Development Services Department

INSPECTION PHONE NUMBERS

NOTICE

Post this card and the approved plans conspicuously on the construction site for inspections

Building

Structure, Plumbing & Mechanical..... 253-573-2587
Fire/Sprinkler..... 253-591-5754
Electrical..... 253-502-8277

Site

Right-of-Way and Storm & Sanitary Conveyance... 253-573-2587
Sanitary OWS/Grease Trap..... 253-502-2153
Stormwater Quality Device/Source Control..... 253-502-2162

Land Use

Zoning/Landscaping Final..... 253-591-5577

To check the results of the building and/or site inspections, call the City of Tacoma Permit Services System at 253-573-2587

DATE ISSUED 11/19/18 TO Port of Tacoma Owner/Contractor

TYPE OF WORK Upgrade to existing Roof top bird deterrent wire systems for a commercial space

ADDRESS 300 E Alexander Bldg 53B

Request All That Apply	Inspection Schedule	Date	BY
	Initial Erosion Control (BMP) for clearing and grading		
	Building Footing		
	Building Foundation Walls		
	Plumbing/Mechanical Groundwork		
	Slab (base and insulation)		
Required Before The Building Framing Inspection	Floor Framing (prior to decking)		
	Shear Wall Nailing (before siding)		
	Plumbing Rough-In		
	Mechanical Rough-In (HVAC & exhaust)		
	Gas Piping		
	Electrical Rough-In		
	Water Line Installation		
	Rough-in/Set Storm & Sanitary Device		
	Rough-in/Set Storm & Sanitary Conveyance		
	Erosion Control Maintenance (BMP)		
	Building Framing and Caulking		
	Insulation		
Required Before The Building Final Inspection	Drywall		
	Suspended Ceiling (see back of card)		
	Plumbing Final		
	Mechanical Final		
	Electrical Final		
	Storm and Sanitary Device Final		
	Storm and Sanitary Conveyance Final		
	Sidewalk, Curb & Gutter, Driveway		
	Final Erosion Control & Site Stabilization (BMP)		
	Building Final (see back of card)		

WARNING: It is unlawful to occupy the premises until all applicable final inspections have been made.

SUPPLEMENTAL INSPECTIONS ON THE BACK

BLDCA 18-049

Supplemental Erosion Control Inspections		Commercial Building Inspections That May Apply	
	By / Date		By / Date
Initial Inspection:		Electrical for Ceiling Cover	
Maintenance Inspection:		Mechanical for Ceiling Cover	
Maintenance Inspection:		Fire/Sprinkler for Ceiling Cover	
Maintenance Inspection:		Building for Ceiling Cover	
Maintenance Inspection:		Fire/Sprinkler FINAL	
Maintenance Inspection:		Water/Backflow FINAL (253-502-8215)	
		Zoning/Landscaping FINAL	
		Boiler FINAL (253-596-3902)	

Comments _____

PERMITS:

Building #	BLDCAF8-0492	Contractor	
Plumbing #		Contractor	
Heating #		Contractor	
Electrical #		Contractor	
Sanitary Sewer #		Contractor	
Sidewalk #		Contractor	

APPENDIX B

HAZARDOUS BUILDING

MATERIALS INVESTIGATION

REPORT

August 3, 2018

Mr. Lee Davenport
Helix Design Group, Inc.
6021 12th Street East, Suite 201
Tacoma, Washington 98424

Subject: EBC Building 326 HVAC & Roof Replacement
Hazardous Building Materials Investigation
Tacoma, Washington
Med-Tox Northwest Project No. A-8772.2

Dear Lee;

Med-Tox Northwest performed a limited asbestos and hazardous building materials (HBM) survey of EBC Building 326 located at the end of Alexander Avenue at the Port of Tacoma in Tacoma, Washington. The investigation was performed on July 26, 2018 and was limited to the roof system and roof top mechanical systems.

The purpose of the investigation was to assist the Port of Tacoma with communicating the presence and location of lead hazards and the presence, location, and quantity of asbestos-containing materials to employees and contractors working on the roof replacement project. It was also performed to meet the requirements for an asbestos survey by Puget Sound Clean Air Agency (PSCAA) and a good faith inspection as required by Washington State Department of Labor and Industries' Division of Occupational Safety and Health (DOSH) regulation Washington Administrative Code (WAC) 296-62-077 prior to renovation.

As required by WAC 296-62-077 and PSCAA Regulation III, Article 4, an Asbestos Hazard Emergency Response Act (AHERA) accredited building inspector performed the survey. A copy of the building inspector certificate is attached to this letter report.

BUILDING INFORMATION

Building 326 is a single-story structure with approximately 11,500 square feet. Roof access is available via a building access ladder. Renovations will include demolition of the existing roof system and demolition of roof top heating, ventilation and air conditioning (HVAC) systems. Existing HVAC systems are assumed to contain chlorofluorocarbons (CFCs) which will require removal and recycling prior to demolition.

ASBESTOS SURVEY

The Building 326 roof system is a membrane roof with 3.5- to 6-inches of foam insulation which is applied on a metal roof substrate. There is fiberglass batt insulation on the HVAC system duct work that was visually determined non-asbestos containing. Building materials potentially impacted by the repairs are included in Table 1 below:

Table 1. Summary of Materials Sampled for Asbestos

Sample	Material	Location	AHERA Type	HM	Result
8772.2-326-001	Membrane, roof insulation	Roof	Miscellaneous	1	ND
8772.2-326-002	Membrane, roof insulation	Roof	Miscellaneous	1	ND
8772.2-326-003	Membrane, roof insulation	Roof	Miscellaneous	1	ND
8772.2-326-004	Gray flashing caulk	Roof edge	Miscellaneous	2	ND
8772.2-326-005	Gray flashing caulk	Roof edge	Miscellaneous	2	ND
8772.2-326-006	Gray flashing caulk	Roof edge	Miscellaneous	2	ND
8772.2-326-007	Black asphaltic sealant	Roof flashing at drain	Miscellaneous	3	ND
8772.2-326-008	Black asphaltic sealant	Insulation	Miscellaneous	3	ND
8772.2-326-009	Black asphaltic sealant	Insulation	Miscellaneous	3	ND
8772.2-326-010	Gray insulation sealant	Roof top HVAC unit	Miscellaneous	4	ND
8772.2-326-011	Gray insulation sealant	Roof top HVAC unit	Miscellaneous	4	ND
8772.2-326-012	Gray insulation sealant	Roof top HVAC unit	Miscellaneous	4	ND

HM = homogeneous (same look, feel, etc.), ND = none detected

Bulk samples were analyzed by Polarized Light Microscopy (PLM) dispersion staining EPA Method 600/R-93/116 by Seattle Asbestos Test, Inc. (SAT). SAT is accredited through the National Voluntary Laboratory Accreditation Program (NVLAP) of the U. S. Department of Commerce. This accreditation does not constitute endorsement, but rather a finding of laboratory competence (certification copy is attached).

LEAD ASSESSMENT

HVAC units on the roof have factory applied coating on recyclable metal components; these coatings are assumed to contain lead and heavy metal content. Factory coated metal roof flashing or other metal building components are also assumed to contain lead and heavy metal content.

SUMMARY/CONCLUSION

Asbestos-containing materials (ACM) were not identified during this survey. WAC 296-62-07721 and PSCAA Regulation III, Article 4 requires that this survey report to be placed on-site during renovation and/or demolition and copies provided to the contractor(s) bidding and performing work.

WAC 296-155-176, the lead in construction standard, has not defined a minimum concentration for regulating lead and has clarified that lead at any detectable concentration shall be considered regulated (Washington Administrative Code [WAC] 296-155-176, Lead). Med-Tox Northwest recommends the contractor performing demolition of the HVAC units provide a written lead compliance plan and implement the requirements of WAC 296-155-176 for any work disturbing painted surfaces.

Med-Tox Northwest recommends removal and recycling of CFC's prior to HVAC unit demolition.

HELIX DESIGN GROUP, INC./Building 326 HVAC & Roof Replace
August 3, 2018
Page 3



If you have any questions or need additional information, please contact me at (253) 351-0677.

Sincerely,

Jon A. Havelock, CSP, CHMM
Senior Project Manager

Attachments



Photograph 1: Building 326.



Photograph 2: Membrane roof system and HVAC units.



Photograph 3: HVAC system with fiberglass insulation on ducts.



Photograph 4: Typical roof system, no ACM present.

SEATTLE ASBESTOS TEST, LLC
BATCH #

19711 Scriber Lake Rd. Suite D, Lynnwood, WA 98036

Tel: (425) 673-9850, Fax: (425) 673-9810

Website: seattleasbestostest.com

CHAIN OF CUSTODY

Analysis Type: Bulk Analysis X Point Count 400 Point Count 1000 Point Count Gravimetric

Turn Around Time 5TD Number of Samples 12 Client Job # A-872.2

Client Name Med-Tox Northwest

Address Post Office Box 1446 City Auburn State WA Zip 98071-1446

Phone 253-351-0677 Fax 253-351-0688 Email havelockj@medtoxnw.com

Project Location POT Bld 326 Project Manager Jon A. Havelock

Sample Condition: Good Damaged Severe Damage(Spillage)

SEQ #	SAMPLE ID	SAMPLE DESCRIPTION	Lab ID	Comment	A/R
1	8772.2-326-001	See attached data sheet			
2	8772.2-326-002				
3	8772.2-326-003				
4	8772.2-326-004				
5	8772.2-326-005				
6	8772.2-326-006				
7	8772.2-326-007				
8	8772.2-326-008				
9	8772.2-326-009				
10	8772.2-326-010				
11	8772.2-326-011				
12	8772.2-326-012				
13					
14					
15					

	Print	Signature	Company Name	Date	Time
Sampled by	Jon A. Havelock	<i>Jon A. Havelock</i>	Med-Tox Northwest	7/26/18	1000
Relinquished by	Jon A. Havelock	<i>Jon A. Havelock</i>	Med-Tox Northwest	7/27/18	1300
Delivered by	ERIC T. JARVIS	<i>Eric Jarvis</i>	MED-TOX NORTHWEST	7/27/18	2257
Received by	Eric Jarvis	<i>Eric Jarvis</i>	SAT	7/30/18	9:00
Analyzed by	<i>Steve Zhang</i>	<i>Steve Zhang</i>		7/31/18	
Result reported by					

Seattle Asbestos Test warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted, and disclaims any other warranties, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. Seattle Asbestos Test accepts no legal responsibility for the purpose for which the client uses test results. By signing on this form, the clients agree to relieve Seattle Asbestos Test of any liability that may arise from the test results. Late payment may be charged of interest, invoices goes to collection causes 17-25% of collection fee. NSF is \$50.

Result Reporting method:

Phone ,
Pick Up Report

Fax ,

Email X

SEATTLE ASBESTOS TEST

Lynnwood Laboratory: 19701 Scriber Lake Road, Suite 103, Lynnwood, WA 98036, Tel: 425.673.9850, Fax: 425.673.9810, NVLAP Lab Code: 200768-0

Disclaimer: This report must not be used by the client to claim product certification, approval, or endorsement by Seattle Asbestos Test, LLC, NVLAP, NIST, or any agency of the Federal government.

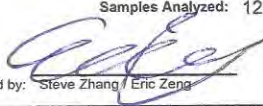
ANALYTICAL LABORATORY REPORT

PLM by Method EPA/600/R-93/116

Attn.: Jon Havelock
Job#: A-872.2
Samples Rec'd: 12
Project Loc.: POT Bld 36

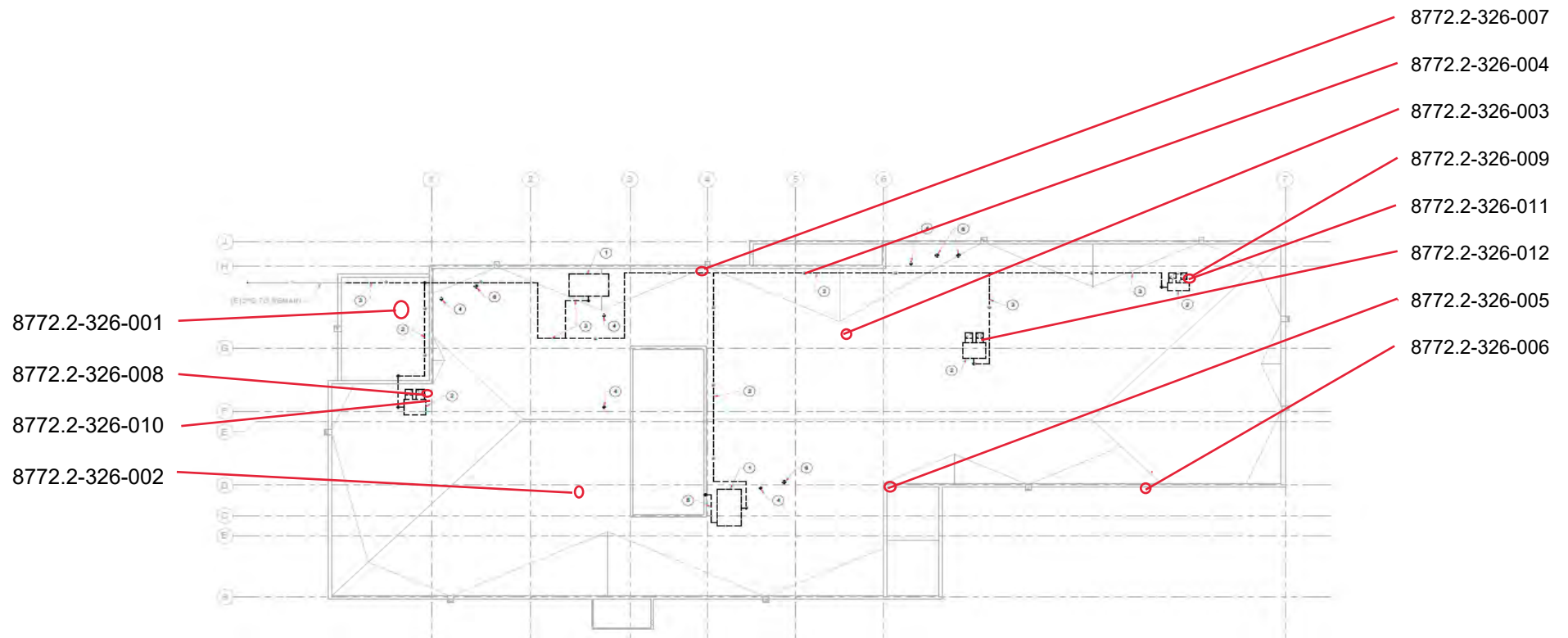
Client: Med-Tox, Northwest
Batch#: 201812076
Date Analyzed: 7/31/2018

Address: PO Box 1446, Auburn, WA 98071-1446
Date Received: 7/30/2018
Samples Analyzed: 12

Analyzed by / Reported by:  Steve Zhang / Eric Zeng

Reviewed by: Steve (Fanyao) Zhang, President

Lab ID	Client Sample ID	Layer	Description	%	Asbestos Fibers	Non-fibrous Components	%	Non-asbestos Fibers
1	8772.2-326-001	1	Beige elastic material with woven fibers		None detected	Vinyl/binder		None detected
		2	Gray fibrous material		None detected	Filler, Binder	65	Cellulose
		3	Yellow foamy material		None detected	Foam, Binder		None detected
2	8772.2-326-002	1	Beige elastic material with woven fibers		None detected	Vinyl/binder		None detected
		2	Gray fibrous material		None detected	Filler, Binder	67	Cellulose
		3	Yellow foamy material		None detected	Foam, Binder		None detected
		4	Black asphaltic material		None detected	Asphalt, binder		None detected
3	8772.2-326-003	1	Gray fibrous material		None detected	Filler, Binder	65	Cellulose
		2	Yellow foamy material		None detected	Foam, Binder		None detected
4	8772.2-326-004	1	Gray rubbery material		None detected	Rubber/binder	2	Cellulose
5	8772.2-326-005	1	Gray rubbery material		None detected	Rubber/binder	3	Cellulose
6	8772.2-326-006	1	Gray rubbery material		None detected	Rubber/binder	2	Cellulose
7	8772.2-326-007	1	Black asphaltic fibrous material		None detected	Asphalt/binder, Binder/filler	70	Cellulose
8	8772.2-326-008	1	Black rubbery material		None detected	Rubber/binder	2	Cellulose
9	8772.2-326-009	1	Black rubbery material		None detected	Rubber/binder	4	Cellulose
10	8772.2-326-010	1	Beige elastic material		None detected	Filler, Binder	2	Cellulose
11	8772.2-326-011	1	Beige elastic material		None detected	Filler, Binder	3	Cellulose
12	8772.2-326-012	1	Beige elastic material		None detected	Filler, Binder	2	Cellulose



Building 326 Sample Location Drawing

MED-TOX
SAFE ENVIRONMENT OF AMERICA, INC. (S.E.A.)
 Post Office Box 1446
 Auburn, WA 98017-
 1446
 253-351-0677
 253-351-0688 fax

**ASBESTOS AND LEAD SURVEY
 SAMPLE LOCATION PLAN**

Building 326 Port of Tacoma

PROJECT NO: A-8772.1

Figure 1

Certificate of Completion

Asbestos Building Inspector Refresher Course

DOSH #:CA-015-06

Jon A. Havelock

ABIR1017170006N12321

Alan Dages

Principal Instructor

10/17/2017

Course Start Date

10/17/2017

Course End Date

This course satisfies the education requirements for Asbestos accreditation under the Toxic Substances Control Act, Title II. This course has been approved by the Department of Industrial Relations, Division of Occupational Safety and Health of the State of California

Michael W. Horner

Michael W. Horner

Training Director

10/17/2017

Exam Date

10/17/2018

Expiration Date



NATEC International, Inc.
National Association of Training and Environmental Consulting
1100 Technology Circle- Suite A, Anaheim, CA 92805 • www.natecintl.com • 800-969-3228

Important Industry Contacts

CAL-OSHA: Ph# (916) 574-2993
(916) 483-0572 Fax Notification
Web: www.dir.ca.gov or calosha.com

CDPH/CLPPB: Ph# (510) 620-5600
Web: www.cdph.ca.gov/programs/CLPPB

SCAQMD: Ph# (909) 396-3739
Fax#(909) 396-3342

BAAQMD: Ph# (415) 749-4762

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National Association of Training and Environmental Consulting
Anaheim, CA • Oakland, CA • Fresno, CA • Sacramento, CA

Asbestos • Lead • Mold • HAZWOPER

P.O. Box 25205 Anaheim, CA 92825-5205
(714) 678-2750, (800) 969-3228, Fax (714) 678-2757

www.natecintl.com

NATEC International, Inc.

National Association of Training and Environmental Consulting
*Note: Card is not suitable substitute for certificate and is not accepted by SCAQMD as proof of certification

This Card Acknowledges That
Jon A. Havelock

Holds Training Certification For
Asbestos Building Inspector Refresher Course

(Valid for 12 months)

Training Date
10/17/2017

Certificate No. **ABIR1017170006N12321**

Michael W. Horner

Training Director

STATE OF WASHINGTON

Department of Commerce

Lead-Based Paint Abatement Program

Jon A Havelock

*Has fulfilled the certification requirements of
WAC 365-230
and has been certified to conduct lead-based paint activities as a
Risk Assessor New*

Certification #

0241

Issuance Date

01/23/2017

Expiration Date

12/03/2019

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200876-0

Seattle Asbestos Test Bellevue
Bellevue, WA

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

Asbestos Fiber Analysis

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).*

2017-10-01 through 2018-09-30

Effective Dates



Dana S. Laman
For the National Voluntary Laboratory Accreditation Program

APPENDIX C

PORT OF TACOMA

CONSTRUCTION SWPPP

SHORT FORM

CONSTRUCTION SWPPP SHORT FORM

The threshold for using the Port of Tacoma's (Port) short form is a project that proposes to clear or disturb less than one acre of land. Projects falling within this threshold may use this short form instead of preparing a professionally designed Construction Stormwater Pollution Prevention Plan (SWPPP). If project disturbance quantities exceed this threshold, you must prepare of formal Construction SWPPP as part of your submittal package. If your project is within the threshold and includes—or may affect—a critical area, please contact the Port to determine if the SWPPP short form may be used.

CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN SHORT FORM

Project Name:

Address:

Contact/Owner:

Phone:

Erosion Control Supervisor:

Phone:

Cell:

Pager:

Emergency (After hours) Contact:

Phone:

Permit No.:

Parcel No.:

Required Submittals

A Construction SWPPP consists of both a project narrative and a site plan. The project narrative describes existing conditions on the site, the proposed conditions, and how construction site runoff will be managed until final site stabilization is achieved. Any additional relevant information should be included in the project narrative. All Best Management Practices (BMPs) that will be utilized onsite must be included as part of the project narrative and provided (electronically or hard copy) as part of the submittal package. If additional BMPs beyond those included in the Washington Department of Ecology's (Ecology) Western Washington Stormwater Management Manual (Ecology SWMM) or the City of Tacoma's (City) Stormwater Management Manual (City SWMM) are proposed to be used, a narrative and appropriate details describing the BMP (its function, installation method, and maintenance activities) will be required.

The site plan is a drawing which shows the location of the proposed BMPs to control erosion and sedimentation during and after construction activities.

PROJECT NARRATIVE

The Construction SWPPP Short Form narrative must be completed at part of the submittal package. Any information described, as part of the narrative, should also be shown on the site plan.

Note: From October 1 through April 30, clearing, grading, and other soil disturbing activities shall only be permitted by special authorization from the Port.

A. Project Description (Check all that apply)

- | | | |
|--|--|---|
| <input type="checkbox"/> New Structure | <input type="checkbox"/> Building Addition | <input type="checkbox"/> Grading/Excavation |
| <input type="checkbox"/> Paving | <input type="checkbox"/> Utilities | <input type="checkbox"/> Other: |

1. Total project area (square feet)
2. Total proposed impervious area (square feet)
3. Total existing impervious area (square feet)
4. Total proposed area to be disturbed (square feet)
5. Total volume of cut/fill (cubic yards)

Additional Project Information:

B. Existing Site Conditions (Check all that apply)

1. Describe the existing vegetation on the site. (Check all that apply)

<input type="checkbox"/> Forest	<input type="checkbox"/> Pasture/field grass	<input type="checkbox"/> Pavement	<input type="checkbox"/> Landscaping	<input type="checkbox"/> Brush
<input type="checkbox"/> Trees	<input type="checkbox"/> Other:			
2. Describe how surface water (stormwater) drainage flows across/from the site. (Check all that apply)

<input type="checkbox"/> Sheet Flow	<input type="checkbox"/> Gutter	<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Ditch/Swale	<input type="checkbox"/> Storm Sewer
<input type="checkbox"/> Stream	<input type="checkbox"/> Other:			
3. Describe any unusual site condition(s) or other features of note.

<input type="checkbox"/> Steep Grades	<input type="checkbox"/> Large depression	<input type="checkbox"/> Underground tanks	<input type="checkbox"/> Springs
<input type="checkbox"/> Easements	<input type="checkbox"/> Existing structures	<input type="checkbox"/> Existing utilities	<input type="checkbox"/> Other:

C. Adjacent Areas (Check all that apply)

1. Check any/all adjacent areas that may be affected by site disturbance and fully describe below in item 2:

☐ Streams* ☐ Lakes* ☐ Wetlands* ☐ Steep slopes*
☐ Residential Areas ☐ Roads ☐ Ditches, pipes, culverts ☐ Other:

** If the site is on or adjacent to a critical area (e.g., waterbody), the Port may require additional information, engineering, and other permits to be submitted with this short form.*

2. Describe how and where surface water enters the site from properties located upstream:

3. Describe the downstream drainage path from the site to the receiving body of water (minimum distance of 0.25 mile [1320 feet]). (E.g., water flows from the site into a curb-line, then to a catch basin at the intersection of X and Y streets. A 10-inch pipe system conveys water another 1000 feet to a wetland.) Include information on the condition of the drainage structures.

D. Soils (Check all that apply)

The intent of this section is to identify when additional soils information may be required for applicants using this short form. There are other site-specific issues that may necessitate a soils investigation or more extensive erosion control practices. The Port will determine these situations on a case-by-case basis as part of their review.

1. Does the project propose infiltration? Infiltration systems require prior Port approval.

☐ Yes ☐ No

2. Does the project propose construction on or near steep slopes (15% or greater)?

☐ Yes ☐ No

If infiltration is proposed for the site or steep slopes (15% or greater) have been identified, the Port will require soils information as part of project design. The applicant must contact a soil professional or civil engineer that specializes in soil analysis and perform an in-depth soils investigation. If the Yes box is checked for either question, the Port may not permit the use of this short form.

E. Construction Sequencing/Phasing

1. Construction sequence: the standard construction sequence is as follows:
 - Mark clearing/grading limits.
 - Install initial erosion control Best Management Practices (BMPs) (e.g., construction entrance, silt fence, catch basin inserts, etc.).
 - Clear, grade, and fill project site as outlined in the site plan while implementing and maintaining proper temporary erosion and sediment control BMPs simultaneously.
 - Install permanent erosion protection as described in the specifications (e.g., impervious surfaces, landscaping, etc.).
 - Remove temporary erosion control methods as permitted. Do not remove temporary erosion control until permanent erosion protection is fully established.

List any changes from the standard construction sequence outlined above:

2. Construction phasing: if construction is going to occur in separate phases, please describe:

F. Construction Schedule

1. Provide a proposed construction schedule (dates construction starts and ends, and dates for any construction phasing.)

Start Date:

End Date:

Interim Phasing Dates:

Wet Season Construction Activities: Wet season occurs from October 1 to April 30. Please describe construction activities that will occur during this time period.

Note: Additional erosion control methods may be required during periods of increased surface water runoff.

2. Site plan (see Figure 1, page 6)

A site plan, to scale, must be included with this checklist that shows the following items:

- ☐ a. Address, Parcel Number, Permit Number, and Street Names
- ☐ b. North Arrow
- ☐ c. Indicate boundaries of existing vegetation (e.g., tree lines, grassy areas, pasture areas, fields, etc.)
- ☐ d. Identify any onsite or adjacent critical areas and associated buffers (e.g., wetlands, steep slopes, streams, etc.).
- ☐ e. Identify any FEMA base flood boundaries and Shoreline Management boundaries.
- ☐ f. Show existing and proposed contours.
- ☐ g. Delineate areas that are to be cleared and/or graded.
- ☐ h. Show all cut and fill slopes, indicating top and bottom of slope catch lines.
- ☐ i. Show locations where upstream run-on enters the site and locations where runoff leaves the site.
- ☐ j. Indicate existing surface water flow direction(s).
- ☐ k. Label final grade contour and indicate proposed surface water flow direction and surface water conveyance systems (e.g., pipes, catch basins, ditches, etc.).
- ☐ l. Show grades, dimensions, and direction of flow in all (existing and proposed) ditches, swales, culverts, and pipes.
- ☐ m. Indicate locations and outlets of any dewatering systems (usually to sediment trap).
- ☐ n. Identify and locate all erosion control methods to be used during and after construction.

ONSITE FIELD VERIFICATION OF ACTUAL CONDITIONS IS REQUIRED.

Figure 1. (to be worked out with Engineering Dept.)

GUIDELINES FOR EROSION CONTROL ELEMENTS

This SWPPP must contain the 12 required elements, as required by Ecology. Check off each element as it is addressed in the SWPPP short form and/or on your site plan.

- ☐ 1. Mark Clearing Limits
- ☐ 2. Establish Construction Access
- ☐ 3. Control Flow Rates
- ☐ 4. Install Sediment Controls
- ☐ 5. Stabilize Soils
- ☐ 6. Protect Slopes
- ☐ 7. Protect Drain Inlets
- ☐ 8. Stabilize Channels and Outlets
- ☐ 9. Control Pollutants
- ☐ 10. Control Dewatering
- ☐ 11. Maintain BMPs
- ☐ 12. Manage the Project

The following is a brief description of each of the 12 required elements of a SWPPP. If an element does not apply to the proposed project site, please describe why the element does not apply. Applicable BMPs are listed with each element and in Table 1. Please note that this list is not a comprehensive list of BMPs available for small construction projects, but erosion and sediment control techniques most pertinent to small construction sites are included here. More detailed information on construction BMPs can be found in Ecology's SWMM Volume II and the City's SWMM Volume II (Ecology 2005; City of Tacoma 2012). Please provide hard copies of the BMPs that will be used for the project and include as part of this Construction SWPPP. BMPs that may be used if needed can be noted as being contingent in the event additional erosion control is needed. Describe any additional BMPs that will be utilized onsite and add them to the SWPPP short form.

For phased construction projects, clearly indicate erosion control methods to be used for each phase of construction.

Element #1 – Mark Clearing Limits

All construction projects must clearly mark any clearing limits, sensitive areas and their buffers prior to beginning any land disturbing activities, including clearing and grading. Clearly mark the limits both in the field and on the site plans. Limits shall be marked in such a way that any trees or vegetation that is to remain will not be harmed.

Applicable BMPs include:

- BMP C101: Preserving Natural Vegetation
- BMP C102: Buffer Zones
- BMP C103: High Visibility Plastic or Metal Fence
- BMP C104: Stake and Wire Fence

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #2 – Establish Construction Access

All construction projects subject to vehicular traffic shall provide a means of preventing vehicle “tracking” soil from the site onto streets or neighboring properties. Limit vehicle traffic on- and off-site to one route if possible. All access points shall be stabilized with a rock pad construction entrance or other Port-approved BMP. The applicant should consider placing the entrance in the area for future driveway(s), as it may be possible to use the rock as a driveway base material. The entrance(s) must be inspected weekly, at a minimum, to ensure no excess sediment buildup or missing rock.

Applicable BMPs include:

- BMP C105: Stabilized Construction Entrance
- BMP C106: Wheel Wash
- BMP C107: Construction Road/Parking Area Stabilization

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #3 – Control Flow Rates

Protect properties and waterways downstream of the project site from erosion due to increases in volume, velocity, and peak flow of stormwater runoff from the project site.

Permanent infiltration facilities shall not be used for flow control during construction unless specifically approved by the Environmental Department. Sediment traps can provide flow control for small sites by allowing water to pool and allowing sediment to settle out of the water.

Applicable BMPs include:

- BMP C207: Check Dams
- BMP C240: Sediment Trap

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element 4 – Install Sediment Controls

Surface water runoff from disturbed areas must pass through an appropriate sediment removal device prior to leaving a construction site or discharging into a waterbody. Sediment barriers are typically used to slow stormwater sheet flow and allow the sediment to settle out behind the barrier.

Sediment controls must be installed/constructed prior to site grading.

Applicable BMPs include:

- BMP C208: Triangular Silt Dike
- BMP C232: Gravel Filter Berm
- BMP C233: Silt Fence
- BMP C235: Straw Wattles

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #5 – Stabilize Soils

Stabilize exposed and unworked soils by applying BMPs that protect the soils from raindrop impact, flowing water, and wind.

From October 1 through April 30, no soils shall remain exposed or unworked for more than 2 days. From May 1 to September 30, no soils shall remain exposed or unworked for more than 7 days. This applies to all soils whether at final grade or not.

Applicable BMPs include:

- BMP C120: Temporary and Permanent Seeding
- BMP C121: Mulching
- BMP C122: Nets and Blankets
- BMP C123: Plastic Covering
- BMP C140: Dust Control

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #6 – Protect Slopes

Protect slopes by diverting water at the top of the slope. Reduce slope velocities by minimizing the continuous length of the slope.

Applicable BMPs include:

- BMP C200: Interceptor Dike and Swale
- BMP C204: Pipe Slope Drains
- BMP C207: Check Dams

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #7 – Protect Drain Inlets

All operable storm drain inlets must be protected during construction so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment. Install catch basin protection on all catch basins within 500 feet downstream of the project.

Applicable BMPs include:

- BMP C220: Storm Drain Inlet Protection

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #8 – Stabilize Channels and Outlets

Stabilize all temporary onsite conveyance channels. Provide stabilization to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches at the conveyance system outlets.

Applicable BMPs include:

- BMP C202: Channel Lining
- BMP C209: Outlet Protection

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #9 – Control Pollutants

Handle and dispose of all pollutants, including demolition debris and other solid wastes in a manner that does not cause stormwater contamination. Provide cover and containment for all chemicals, liquid products (including paint), petroleum products, and other materials. Handle all concrete and concrete waste appropriately.

Applicable BMPs include:

- BMP C150: Materials on Hand
- BMP C151: Concrete Handling
- BMP C152: Sawcutting and Surface Pollution Prevention
- BMP C153: Material Delivery, Storage and Containment

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #10 – Control Dewatering

Clean, non-turbid dewatering water, such as groundwater, can be discharged to the stormwater system provided the dewatering flow does not cause erosion or flooding of receiving waters.

Applicable BMPs include:

- BMP C150: Materials on Hand

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #11 – Maintain BMPs

Maintain and repair temporary erosion and sediment control BMPs as needed. Inspect all BMPs at least weekly and after every storm event.

Remove all temporary erosion and sediment control BMPs within 30 days after final site stabilization or if the BMP is no longer needed. Any sediment trapped during construction activities should be removed or stabilized onsite. No sediment shall be discharged into the stormwater drainage system or any natural conveyance system (e.g., streams).

Applicable BMPs include:

- BMP C160: Certified Erosion and Sediment Control Lead

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Element #12 – Manage the Project

Phase development projects to prevent soil erosion and the transport of sediment from the project site during construction. Coordinate all work prior initial construction with subcontractors and other utilities to ensure no areas are worked prematurely.\

A designated erosion and sediment control person is required for all construction projects. This person is responsible for ensuring that the project's erosion and sediment control BMPs are appropriate for the site and are functioning properly. They are also responsible for updating the SWPPP as necessary as site conditions warrant. They must be available 24 hours a day to ensure compliance.

Applicable BMPs include:

- BMP C160: Certified Erosion and Sediment Control Lead
- BMP C162: Scheduling
- BMP C180: Small Project Construction Stormwater Pollution Prevention

☐ The BMP(s) being proposed to meet this element are:

OR

☐ This element is not required for this project because:

Table 1. Applicable BMPs for the 12 Elements of a SWPPP

Element #1 – Mark Clearing Limits		
BMP C101	Preserving Natural Vegetation	
BMP C102	Buffer Zones	
BMP C103	High Visibility Plastic and Wire Fence	
BMP C104	Stake and Wire Fence	
Element #2 – Establish Construction Entrance		
BMP C105	Stabilized Construction Entrance	
BMP C106	Wheel Wash	
BMP C107	Construction Road/Parking Area Stabilization	
Element #3 – Control Flow Rates		
BMP C207	Check Dams	
BMP C240	Sediment Trap	
Element #4 – Install Sediment Controls		
BMP C208	Triangular Silt Trap	
BMP C232	Gravel Filter Berm	
BMP C233	Silt Fence	
BMP C235	Straw Wattles	
Element #5 – Stabilize Soils		
BMP C120	Temporary and Permanent Seeding	
BMP C121	Mulching	
BMP C122	Nets and Blankets	
BMP C123	Plastic Covering	
BMP C140	Dust Control	
Element #6 – Protect Slopes		
BMP C200	Interceptor Dike and Swale	
BMP C204	Pipe Slope Drains	
BMP C207	Check Dams	
Element #7 – Protect Drain Inlets		
BMP C220	Storm Drain Inlet Protection	
Element #8 – Stabilize Channels and Outlets		
BMP C202	Channel Lining	
BMP C209	Outlet Protection	
Element #9 – Control Pollutants		
BMP C150	Materials on Hand	

Element #9 – Control Pollutants, cont.		
BMP C151	Concrete Handling	
BMP C152	Sawcutting and Surfacing Pollution Prevention	
BMP C153	Materials, Delivery, Storage and Containment	
Element #10 – Control Dewatering		
BMP C150	Materials on Hand	
Element #11 – Maintain BMPs		
BMP C160	Certified Erosion and Sediment Control Lead	
Element #12 – Manage the Project		
BMP C160	Certified Erosion and Sediment Control Lead	
BMP C162	Scheduling	
BMP C180	Small Project Construction Stormwater Pollution Prevention	

REFERENCES

City of Tacoma. 2012. Stormwater Management Manual 2012 Edition. Public Works/ Environmental Services, Maintenance Division, Tacoma, Washington.

Washington State Department of Ecology (Ecology). 2005. Stormwater Management Manual for Western Washington. Water Quality Program, Lacey, Washington.

APPENDIX D

**SHORELINE SUBSTANTIAL
DEVELOPMENT PERMIT
EXEMPTION**



City of Tacoma
Planning and Development Services

March 17, 2015

Jennifer Stebbings
Port of Tacoma
P.O. Box 1837
Tacoma, WA 98401

RE: Shoreline Substantial Development Permit Exemption
File No. SHR2014-40000237530, Facilities Maintenance, Multiple Sites

Dear Ms. Stebbings:

You have requested an exemption from a Shoreline Substantial Development Permit to allow the repair and maintenance of Port facilities at multiple sites within the Port of Tacoma, all within the "S-10" Port Industrial and "S-13" Waters of the State Shoreline Districts.

The repair and maintenance activities include the following:

- Hanging and bolt-on fender systems and rub strip repair
- Bull rail repairs/maintenance/replacement
- Bollard installation/relocation (includes mooring hardware)
- Utility maintenance (excluding stormwater), including the repair and replacement of electric, domestic water, fire water, communications and warning systems
- Power/Switch gear maintenance, including upgrades and increasing capacity allowed per code
- Crane rail repairs
- Deck repairs including re-planking of dock surfaces (wood)
- Re-surfacing existing impervious areas (paved areas and gravel areas)
- Exterior building repairs and maintenance, including windows, doors, siding, landscaping, roofing, and associated equipment (e.g., HVAC, etc.).
- Containment berm installation and maintenance
- Light pole maintenance
- Safety equipment maintenance, including safety ladders, life rings, and floatation devices and navigation lights
- Safety platform maintenance
- Cathodic protection system repair/maintenance

The majority of the work is anticipated to take place on or from the surface of existing piers and wharves, which are above or adjacent to the waterway and within the floodplain. Work on existing buildings and paved areas will be landward of the OHWM. Exceptions to this include replacement of navigation lights, done from boats, and any in-water work for the relocation of bollards.

For each maintenance project, best practices will be used to ensure no debris enters the waters of the state, and will comply with water quality standards and habitat protection standards per

the State of Washington. Port of Tacoma employees and/or its contractors will prepare spill prevention plans. Further, following work, each site will be returned to its current state.

Attachment "A" shows the locations of the proposed work.

The *Tacoma Shoreline Master Program (TSMP)* designates the sites of the proposed activity as "High Intensity" environment and provides policy guidance maintenance, repair, and demolition activities. The proposed repairs are consistent with the policies of the *TSMP*, as they are intended to prevent the cessation of lawfully-established Port uses, and, except where required by code, do not increase the capacity of the systems being repaired.

The Master Program sets forth allowed uses for the "S-10" District in Chapters 6.1, 7.6, and 9.12. Port activities and the maintenance and repair thereof are allowed development activities within that district. Work within the "S-13" District is allowed in conjunction with permitted uses and activities at the upland locations. The proposed shoreline maintenance work meets all these requirements. The applicant will meet all requirements of the *TSMP* and will pursue all required permits prior to starting work.

Pursuant to WAC 197-11-800, subsection (3) and the City of Tacoma's SEPA Procedures, this proposed action is categorically exempt from the Threshold Determination and Environmental Impact Statement requirements of SEPA.

The site is also located within a Fish and Wildlife Habitat Conservation Area. The site has been reviewed by Theresa Dusek, Natural Resource Consultant. Ms. Dusek concludes that the proposed project is not likely to cause substantial adverse impacts to the shoreline environment. See Attachment "B" for a copy of Ms. Dusek's technical memorandum.

Based on the above findings, the requested exemption to the City's Shoreline Substantial Development Permit requirement is consistent with the policies of the *SMA*, the policies and implementing regulations of the *TSMP* and with the criteria set forth in the *WAC* and *RCW* for the authorization of such permits.

The following are conditional **requirements**:

Conditions

1. The applicant shall apply for and receive approval of any required building permit from the City of Tacoma prior to any work.
2. The applicant shall follow all proposed installation and construction methods and best management practices for minimizing unintended impacts during repair and maintenance of all structures.
3. All trash and unauthorized fill, including concrete blocks or pieces, bricks, asphalt, metal, treated wood, glass, floating debris, and paper, below the OHWM in and around the applicant's repair project areas shall be removed and deposited at an approved upland disposal site.
4. No stockpiling or staging of materials will occur below the OHWM of any water body.
5. All shoreline work shall be completed within the approved work windows designated by the Washington State Department of Fish and Wildlife (WDFW).
6. The applicant shall notify the City of Tacoma and pertinent state and federal agencies should an unexpected spill of fuel or other chemicals occur in Commencement Bay or associated waterways.

7. The City of Tacoma is not the only agency with jurisdiction over the project area. The applicant is responsible for coordinating any required reviews and/or approvals with the WDFW, Washington State Department of Ecology, and U. S. Army Corps of Engineers and shall provide documentation to the City of Tacoma.
8. This exemption shall be valid for a period not to exceed 5 years from the date of issuance. Should the Shoreline Master Program be revised prior to the completion of this project, additional review may be required.

In addition, the applicant is advised of the following:

- This permit is only applicable to the proposed project as described above and based upon the information submitted by the applicant. Modifications to this proposal and future activities or development within the regulated buffers may be subject to further review and additional permits as required in accordance with the *Tacoma Municipal Code*.
- The applicant must obtain other approvals prior to construction as required by other local, state and federal agencies. The City of Tacoma is not the only reviewing agency with jurisdiction over the project area. The Army Corps of Engineers and State Department of Fish and Wildlife have requirements regarding work within regulated waters that may be applicable to the project.
- This exemption is applicable only to areas within 200 feet of the OHWM of waters of the state. It is not meant to constitute an exemption from *TMC* 13.11 Critical Areas. Should work outside the Shoreline jurisdiction occur within vicinity of a non-associated critical area, additional review may be required.

We are issuing this letter of exemption per the provisions of *TMC* Section 13.10 to comply with the requirements of *WAC* 173-27-050 and *WAC* 173-27-040. Should you have any further questions or requests please do not hesitate to contact me at 253-591-5121.

Sincerely,



Shirley Schultz
Principal Planner

cc via regular and electronic mail:

Planning and Development Services, Peter Huffman, Steven Atkinson, Theresa Dusek
Washington Department of Ecology, Shorelands & Environmental Assistance Program, Alex Callender, SWRO, P.O. Box 47775, Olympia, WA 98504-7775
Washington Department of Fish and Wildlife, Matthew Curtis, 600 Capitol Way N., Olympia, WA 98501-1091
U.S. Army Corps of Engineers, Attn: Regulatory Branch, CENWS-OD-RG ATTN: Jessica Winkler, P.O. Box C-3755, Seattle, WA 98124
U.S. Fish & Wildlife Service, Attn: Judy Lantor, 510 Desmond Drive SE #102, Lacey, WA 98503



SCALE 1: 50,000

2 Miles

Map Produced 12/03/2014 By

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DISCLAIMER: The information included on this map has been compiled by Port of Tacoma staff from a variety of sources and is subject to change without notice. These data are intended for informational purposes and should not be considered authoritative for engineering, navigational, legal and other site-specific uses. The Port of Tacoma makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information.



Legend

- Building Footprints
- Port Parcels

Notes

Highlighted areas are Port parcels included in permit application. Some Port parcels are within the Shoreline zone but are not included in this permit application.



City of Tacoma
Public Works Department

Technical Memorandum

TO: Shirley Schultz, Principal Planner

FROM: Theresa Dusek
Natural Resource Consultant

SUBJECT: **Memorandum for Routine Maintenance and Repair of
Existing Structures and Utilities
Shoreline Substantial Development Permit Programmatic Exemption
SHR2014-40000237530
Multiple Locations within S-10 Shorelines in the Port of Tacoma**

DATE: March 11, 2015

Project Descriptions

The applicant has applied for both a Shoreline Substantial Development Permit Programmatic Exemption under the Shoreline Master Program set forth under *Tacoma Municipal Code (TMC)* Chapter 13.10. The applicant is requesting this programmatic maintenance exemption for a 5 year period. No increase in footprint or overwater coverage is proposed.

Wetland Reports and Supporting Documents

The applicant submitted the following reports and supporting documents:

- Joint Aquatic Resource Permit Application dated December 3, 2014
- Application for Land Use Permit dated December 3, 2014
- SEPA Exemption - Terminal and Shoreline Area Routine Maintenance and Repair dated November 20, 2014.
- Port of Tacoma Terminal and Shoreline Area Routine Maintenance and Repair Map dated December 3, 2014.

Shoreline Findings

1. The repair and maintenance activities for the shoreline areas within 200 feet of the ordinary high water marks of Commencement Bay, Puyallup, Hylebos, Blair, Sitcum, Middle and Thea Foss Waterways include the following:

Activity	Construction Methods	Activity Specific Best Management Practices
<p>Hanging fender systems and rub strip repair: Fenders and rub strips are located on the outer surface of a dock and prevent the vessel or dock from being damaged during the mooring process and while the vessel is berthed. Fenders and rub strips must be maintained and replaced as they become damaged and worn</p>	<p>Work will occur from existing piers located above and adjacent to marine waters and in the 100-year floodplain. To replace the fenders and rub strips, a derrick is maneuvered as close as possible to the wing wall where it holds the replacement fender or rub strip while the bolts are removed by hand. The original fender or rub strip is then lowered and loaded onto a barge or truck and removed from the site. The replacement fender or rub strip is then held and bolted into place.</p>	<p>A small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.</p>
<p>Bolt-on fender systems and rub strip repair: Fenders and rub strips must be maintained and replaced as they become damaged and worn.</p>	<p>Work will occur from existing piers located above and adjacent to marine waters and in the 100-year floodplain. To replace the fenders and rub strips, a derrick is maneuvered as close as possible to the wing wall where it holds the replacement fender or rub strip while the bolts are removed by hand. The original fender or rub strip is then lowered and loaded onto a barge or truck and removed from the site. The replacement fender or rub strip is then held and bolted into place.</p>	<p>A small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.</p>
<p>Bull rail repairs/maintenance: Bull rails run along the edge of a dock and are used as a curb to prevent objects and people from falling into the water. These must be maintained and occasionally replaced for</p>	<p>Work will occur from existing piers located above and adjacent to marine waters and in the 100-year floodplain. No parts of the bull rail are in contact with the water. The bull rail and decking are generally installed manually using</p>	<p>A small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.</p>

safety.	hand tools from the dock surface. However, on occasion, it will be necessary to use a forklift or backhoe to remove heavy sections.	
Bollard installation/relocation (includes mooring hardware): Bollards must be installed and/or relocated to provide mooring capabilities at a facility. Bollards are placed in berthing locations that will allow better utilization of the existing wharf by vessels. Ship lengths vary and are trending toward being much larger, which require the addition of bollards in more strategic locations to accommodate those ships.	Work will occur from existing piers located above and adjacent to marine waters and in the 100-year floodplain. The concrete of the bull rail and pile cap will be chipped away to expose the rebar, and holes will be drilled in the broken concrete surface. Dowels will be epoxied into the holes to provide solid anchoring points for the new concrete to help integrate the old and the new as one structure. The new bollard will be placed in position and integrated into the existing rebar and concrete and the pour will be formed up, then the new concrete will be poured and finished.	<p>Stormwater BMPs will be in place to ensure that concrete dust is not carried through the deck drains on the wharf/pier, and to ensure that stormwater does not contact wet or fresh concrete.</p> <p>A small barge, wood and/or cloth barrier will be used to catch the concrete as it is chipped to prevent it from falling into the water. Concrete forms will be completely sealed on the bottom and sides to prevent wet concrete from escaping and dropping into the water. Wash water and leftover concrete product will not be allowed to drain onto the deck or into storm drains or allowed to drain to waters of the state.</p>
Utility maintenance (excluding stormwater): Utilities associated with the existing uses must be maintained, including the repair and replacement of electric, domestic water, fire water, communications and warning system such as speaker arrays, strobes and control cabinets. Replacement is limited to that needed to maintain the original condition and use and does not include significant expansion of capacity.	Work can occur from existing piers located above and adjacent to marine waters and within the 100-year floodplain. Maintenance in areas landward of the Ordinary High Water Mark (OHWM) may include trenching, backfilling and repaving. Repair or replacement of underground utilities will require existing pavement to be saw cut and removed for trenching. Trenching will remove the subgrade material to allow access to the existing utilities. Once repairs are complete the trench will be backfilled with	<p>Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances.</p> <p>Stormwater BMPs will be in place to ensure that concrete dust is not carried through the deck drains on the pier/wharf, and to ensure that stormwater does not contact wet or fresh concrete.</p> <p>Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.</p>

	<p>excavated material or new clean imported material. All excavated material not used will be stockpiled for testing and proper disposal offsite. Repaving will be conducted to match the existing surface, grade, and asphalt thickness.</p> <p>Maintenance and repair of electrical equipment will be conducted based on the associated building and common industrial standard. Warning system equipment maintenance and repair includes work on speaker arrays, strobes, and control cabinets that are located on poles in upland locations.</p>	
<p>Power/Switch gear maintenance: Routine maintenance is required periodically to maintain functionality, including upgrades and increasing capacity allowed per code. Routine maintenance is limited to existing structures.</p>	<p>Work may occur from existing piers located above and adjacent to marine waters and within the 100-year floodplain.</p> <p>Maintenance and repair of electrical equipment will be conducted based on the associated building and common industrial standard.</p>	<p>Stormwater BMPs will be in place to ensure that concrete dust is not carried through the deck drains on the pier/wharf, and to ensure that stormwater does not contact wet or fresh concrete.</p> <p>Wash water and leftover concrete product will not be allowed to drain onto the deck or into storm drains or allowed to drain to waters of the state.</p>
<p>Crane rail repairs: A crane rail is a track located on the wharf upon which a top running crane moves. Rails must be maintained to ensure proper operation of the cranes.</p>	<p>Work will occur from existing paved wharfs located above and adjacent to marine waters and within the 100-year floodplain. All work will occur from the surface of the existing paved wharf.</p>	<p>Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances.</p> <p>Stormwater BMPs will be in place to ensure that concrete dust is not carried through the deck drains on the pier/wharf, and to ensure that stormwater does not contact wet or fresh concrete.</p> <p>Slurry, cuttings, or process</p>

		<p>water will not be allowed to drain to waters of the state or stormwater conveyance systems.</p> <p>Concrete forms will be completely sealed on the bottom and sides to prevent wet concrete from escaping and dropping into the water. Wash water and leftover concrete product will not be allowed to drain to deck or storm drains or allowed to drain to waters of the state.</p>
<p>Deck repairs including re-planking of dock surfaces (wood): Deteriorated timber pieces need to be replaced to maintain existing docks and preserve structural integrity.</p>	<p>Work will occur above and adjacent to marine waters and within the 100-year floodplain. Specifically, deteriorated timber planks will be removed and replaced with new timber planks. No in-water work will occur; all equipment will be positioned on the dock itself; and no increase in footprint or overwater coverage is proposed. The deteriorated timber will be removed by cutting with a chainsaw and lifting out either by hand or with a truck mounted davit. Due to the severe constraints beneath the dock, the Port will not be able to employ work floats or tarps to capture falling debris; however, workers will operate a vacuum while using power tools to cut decking, and skim any debris that may escape the vacuum to minimize impacts to the waterbody. Replacement timbers will be installed using hand tools.</p>	<p>Work floats or tarps will be used to capture any falling debris to prevent any material from entering the waterway. Where such space or worker safety constraints preclude the use of such structures, workers will operate a vacuum while using power tools to cut or drill, and will skim any debris that may escape the vacuum to minimize waterbody impacts.</p> <p>Excess or waste materials will not be allowed to enter waters of the state. All such materials will be collected and recycled or disposed of at an approved upland facility.</p> <p>Wood treated with creosote or pentachlorophenol will not be used.</p> <p>Any deck overlay removal and/or replacement must have a sound subsurface that will prevent existing or new overlay material from entering waters of the state.</p>
<p>Re-paving existing paved areas: Paved areas on the pier surface must be resurfaced to maintain</p>	<p>Work will occur landward of the OHWM and may occur within the 100-year floodplain. The old surface</p>	<p>Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance</p>

integrity.	will be milled away. An application of a tack coat will be applied and a new layer asphalt will then be laid down with paving machines and rollers.	systems. Wash water and leftover concrete product will not be allowed to drain to deck or storm drains or allowed to drain to waters of the state.
Exterior building repairs and maintenance: Existing buildings must be maintained to prevent their decline. Maintenance and repair will include windows, doors, siding, landscaping, roofing, and associated equipment (e.g., HVAC, etc.).	Work will occur above and adjacent to marine waters and within the 100-year floodplain. Maintenance and repair work will be conducted from improved areas surrounding existing buildings. Typical equipment may include lifts, scaffolding, and trucks. Landscaping maintenance is limited to the immediate area surrounding buildings and parking areas that are not part of a restoration, mitigation, or other area that is not already regularly maintained.	Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems. Work that could result in debris and substances entering state water shall include a containment structure capable of collecting all debris and substances.
Containment berm installation and maintenance: Containment berms are paved and used to control stormwater flows. Repairs and maintenance is limited to work that does not alter the flow to or from a critical area.	Work will occur landward of the OHWM and may occur within the 100-year floodplain. Typical equipment used to construct a containment berm includes trucks and paving equipment.	Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.
Light pole maintenance: Light poles must be maintained and replaced, including increases in height when needed to maintain safe operations.	Work will occur above and adjacent to marine waters and within the 100-year floodplain. Typical equipment will include lifts and trucks.	Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.
Safety equipment maintenance: Safety equipment, including safety ladders, life rings, and floatation devices, must be maintained to operate safely and meet state and federal code requirements. Maintenance may include the installation and	Work will occur above and adjacent to marine waters and within the 100-year floodplain. Safety equipment will be installed using hand tools on the dock surface or with the use of a boom truck operated from the dock or a barge. Workers will operate	A small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.

relocation of safety ladders and life rings.	a vacuum while using power tools to cut decking in over water areas and skim any debris that may escape the vacuum to minimize waterbody impacts. Safety ladders are approximately 30 feet long and 24 inches wide and are mounted to the face of the wharf or pier. Life rings and their housing is approximately 2 feet by 2 feet and is mounted to the top of the wharf or pier.	
Navigation light maintenance and replacement: Navigation lights are located on piling and must be maintained and replaced as needed for safety. This does not include pile replacement. Safety platform maintenance: Platforms, such as line handling platforms, must be maintained and/or relocated for safety. A significant increase in overwater coverage is not included as maintenance.	Navigation light maintenance and replacement work will occur above and adjacent to marine waters and within the 100-year floodplain. Navigation lights will be accessed by boat and replaced with hand tools. Safety platform maintenance work will occur above and adjacent to marine waters and within the 100-year floodplain. Line platforms will be accessed from the pier and will be maintained with hand tools and/or use of a boom truck operated from the pier.	Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances. For safety platform maintenance a small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.
Cathodic protection system repair/maintenance: Cathodic protection systems are installed to extend the life of dock steel piles. The system works by connecting protected metal to a more easily corroded "sacrificial metal" to act as the anode. The sacrificial metal corrodes instead of the protected metal. Without the protection system, corrosion can occur in the piling splash	Work will occur within the 100 year floodplain above and in marine waters. Repair and maintenance will be done with hand tools from a floating work platform and/or by divers.	Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances.

<p>zone. A typical system includes pile wraps located on each pile from the concrete pile caps to below the Mean Lower Low Water (MLLW) elevation. All of the cathodic protection piles have a bolt welded at the top, which will allow bond wires to be attached between each pile. Ananode attachment is located below the subtidal water line.</p>		
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2. The applicant asserts that these routine maintenance and repair activities are needed to maintain the integrity of Port infrastructure and to operate safely and efficiently. The parcels are located in the Port of Tacoma along the shorelines of Commencement Bay, Puyallup, Hylebos, Blair, Sitcum, Middle and Thea Foss Waterways within the S-10 Shoreline District.
3. The Port of Tacoma will ensure that the maintenance activities do not harm wildlife, vegetation or other elements of the shoreline environment. In addition to the following BMPs, the maintenance activities will be designed to comply with applicable federal, state and local laws and regulations to avoid and minimize adverse impacts to the aquatic environment. The following BMPs apply to all shoreline maintenance activities:
 - Each activity will comply with the Washington Department of Fish and Wildlife Hydraulic Project Approval requirements including timing restrictions to protect juvenile salmonid migration.
 - Each activity will comply with water quality restrictions imposed by the Washington Department of Ecology and implement corrective measures if water quality standards are exceeded.
 - If a contractor performs the maintenance activities, they will be required to prepare a Spill Prevention, Control and Countermeasures plan (SPCC). The SPCC plan will describe how the contractor will store all fuels and hazardous substances that may be onsite during construction. It will include procedures that the contractor will follow in the event of a fuel or chemical spill, and will require the contractor to have a spill response kit that will prevent spilled material from entering surface waters. The plan will also include emergency phone numbers and contacts that will be made in the event of a spill.
 - No petroleum products, hydraulic fluids, chemicals, or any other polluting substances shall be allowed to enter waters of the state.
 - Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., will be checked regularly for drips or leaks, and shall be maintained and stored properly with secondary containment to prevent spills.
 - Once the activity is complete, all temporary work structures, devices, equipment, materials, manmade debris and wastes from the project shall be completely removed from the shoreline.

- Temporary floating work platforms will not disturb eelgrass, kelp, and/or intertidal wetland vascular plants.
 - Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances. Where space or worker safety constraints preclude the use of such structures, workers will operate a vacuum while using power tools to cut or drill, and will skim any debris that may escape the vacuum to minimize waterbody impacts.
 - No stockpiling or staging of materials will occur water ward of the OHWM of any waterbody, except for when work is occurring on a paved wharf/pier. Stockpiles will be covered with plastic to prevent contact with the elements and erosion.
 - All areas for equipment fuel storage will be located 150 feet from open water or wetlands.
 - Fueling and servicing of all equipment will be confined to an established staging area that is at least 150 feet from open water or wetlands.
 - A spill kit with oil-absorbent materials is on site to be used in the event of a spill.
 - Deck and storm drain inlets will be protected to prevent sediment and contaminants from entering the waterways or storm drain system.
 - Proper BMPs such as a silt fence and/or straw wattles will be used to provide a physical barrier to sediment and prevent runoff.
4. There are wetlands located within the Port of Tacoma adjacent to areas where shoreline maintenance and repair work will occur; however, no work will occur in wetlands. The work is limited to repair and maintenance activities to ensure the continued use of existing structures and improvements. The project will avoid impacts to wetlands by using proper Best Management Practices (BMPs) and confining work to already developed and improved areas. No wetland vegetation or soils will be disturbed and drainage patterns will not be altered.
 5. The shoreline project sites are highly modified and contain armored/hardened shorelines, piers/wharfs and impervious surfaces typical of the Shoreline Port Industrial (S-10) Port Maritime and Industrial (PMI) zone. The shoreline project areas are within the state designated shoreline district and FEMA designated floodplain. These Environmental Designations and the existing conditions were considered in evaluating potential indirect impacts to determine if mitigation is necessary. The shoreline maintenance activities are not anticipated to result in permanent impacts to adjacent wetlands or buffers; therefore, no compensatory mitigation is proposed.
 6. The applicant identified listed Threatened and endangered salmonid species as occurring within the vicinity of the project areas. Chinook salmon, steelhead, bull trout, killer whale, and humpback whale may occur in the area; however, the applicant shall follow work windows required under an approved HPA. Portions of the waterways within the project areas are mapped as Estuarine Zone and Estuarine Intertidal which are a listed Priority Habitats. WDFW Priority Species that may be present in the vicinity include bald eagle, peregrine falcon, cormorant, alcids, great blue heron, Steller sea lion, Dungeness crab, surf smelt, coho and chum salmon and the ESA species listed above; however, there are no haulout sites, breeding areas, nests or roosting areas on or in the immediate vicinity of the shoreline project sites. The location of the work on developed lands adjacent to a highly developed waterway and the use of proper BMPs make it extremely unlikely that any of the above species or habitat would be affected.

Applicable Tacoma Shoreline Master Program and Code

7. The project parcels are located in the S-10 Shoreline District with a High Intensity Environmental Designation.
8. The intent of the S-10 Port Industrial Area Shoreline District is to allow the continued development of the Port Industrial Area, with an increase in the intensity of development and a greater emphasis on terminal facilities within the City.
9. Under TSMP 2.3.2 Exemptions from Shoreline Substantial Development Permit. All uses within shoreline jurisdiction must be consistent with the regulations of this Master Program whether or not they require a Shoreline Substantial Development Permit. An exemption from the Substantial Development Permit requirements does not constitute an exemption from the policies and use regulations of the Shoreline Management Act, the provisions of this Master Program, and other applicable City, state, or federal permit requirements. Also, Letters of exemption may contain conditions and/or mitigating measures of approval to achieve consistency and compliance with the provisions of the Program and Act.
10. Under TSMP 2.3.2 Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements. "Normal maintenance" includes those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition, including but not limited to its size, shape, configuration, location and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to shoreline resource or environment. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including but not limited to its size, shape, configuration, location and external appearance and the replacement does not cause substantial adverse effects to shoreline resources or environment. Relocation and reconfiguration of the structure or development may be performed within the existing property boundaries if the relocation or reconfiguration results in a measurable and sustainable ecological improvement.
11. Under TSMP 2.3.4 Letter of Exemption. Exempt activities related to any of the following shall not be conducted until a letter of exemption has been obtained from the Director or designated signatory: dredging, flood control works, in-water structures, archaeological or historic site alteration, clearing and ground disturbing activities such as filling and excavation, docks, shore stabilization, or activities determined to be located within a critical area or buffer.
12. Under TSMP 6.4.4 Fish and Wildlife Habitat Conservation Areas (FWHCAs), lands containing priority habitats and species and critical saltwater habitats are classified as FWHCAs. Whenever activities are proposed within or adjacent to a habitat conservation area with which state or federally endangered, threatened, or sensitive species have a primary association, such area shall be protected through the application of protection measures in accordance with a critical area report and habitat management plan prepared by a qualified professional and approved by the

City. And, under TSMP 2.4.2, the Director shall determine whether these reports are necessary based upon the activities associated with the project.

Conclusions

13. The shoreline project sites are located in the S-10 shoreline district and are eligible for the maintenance and repair exemption from the Shoreline Substantial Development Permit.
14. The impacts associated with the proposed repair and maintenance projects will be temporary and limited during the active maintenance work. No permanent adverse impacts are anticipated. No new additional structures are proposed and there is no expansion or increases to water dependent use.
15. Species listed under the Endangered Species Act that may occur in the vicinity of the projects include Chinook Salmon (*Oncorhynchus tshawytscha*), Steelhead (*Oncorhynchus mykiss*), Bull Trout (*Salvelinus confluentus*), Steller Sea Lion (*Eumatopius jubatus*), Southern Resident Orca (*Orcinus orca*), Humpback Whale (*Megaptera novaeangliae*), Marbled Murrelet (*Brachyramphus marmoratus*), Bocaccio (*Sebastes paucispinis*), Yellow Rockfish (*Sebastes ruberrimus*), Canary Rockfish (*Sebastes pinniger*) and Pacific Eulachon (*Thaleichthys pacificus*). Species may be temporarily affected by turbidity; however, it is likely that they would temporarily vacate the areas when active work commences.
16. The project lies within an identified FEMA floodplain area (Commencement Bay); however, no vegetation removal or increase in impervious surface is proposed. Project impacts are being avoided and minimized; therefore, no floodplain mitigation is required.
17. The applicant indicates that the water body will not be adversely affected by the proposed projects. All work in Commencement bay and associated waterways will occur during lower tidal elevations with a silt curtain installed. Work will be limited to Fish and Wildlife in-water work windows and no impacts to priority habitats or species are anticipated. Increase turbidity potentially caused by the proposed project will be localized and temporary.
18. The project as proposed will not result in any permanent loss of habitat and will not compromise FWHCAs or buffer functions; therefore, compensatory mitigation is not required.
19. WAC 173-27-040(2)(b) exempts "*Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements. "Normal maintenance" includes those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition, including but not limited to its size, shape, configuration, location and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to shoreline resource or environment. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including but not limited to its size, shape, configuration, location and*

external appearance and the replacement does not cause substantial adverse effects to shoreline resources or environment". The proposed repairs are considered typical and will conform to the size, shape, configuration, location, and general appearance of the existing structures. The project as described by the applicant is generally consistent with the Substantial Shoreline Development Permit Exemption requirements.

20. Based on the above findings, the proposed programmatic proposal to conduct repair and maintenance activities over five years is consistent with the policies Tacoma Shoreline Master Program. The proposal as described by the applicant is not likely to cause adverse impacts to the shoreline; therefore, if properly conditioned, this project can be approved without the need for a Shoreline Substantial Development Permit.

Conditions

1. The applicant shall apply for and receive approval of any required building permit from the City of Tacoma prior to any work.
2. The applicant shall follow all proposed installation and construction methods and best management practices for minimizing unintended impacts during repair and maintenance of all structures within the shoreline jurisdiction in the S-10 District.
3. All trash and unauthorized fill, including concrete blocks or pieces, bricks, asphalt, metal, treated wood, glass, floating debris, and paper, below the ohwm in and around the applicant's repair project areas shall be removed and deposited at an approved upland disposal site.
5. No stockpiling or staging of materials will occur below the ohwm of any water body.
6. All shoreline work shall be completed within the approved work windows designated by the Washington State Department of Fish and Wildlife (WDFW).
7. The applicant shall notify the City of Tacoma and pertinent state and federal agencies should an unexpected spill of fuel or other chemicals occur in Commencement Bay or associated waterways.
8. The City of Tacoma is not the only agency with jurisdiction over the project area. The applicant is responsible for coordinating any required reviews and/or approvals with the WDFW, Washington State Department of Ecology, and U. S. Army Corps of Engineers and shall provide documentation to the City of Tacoma.
9. This exemption shall be valid for a period not to exceed 5 years from the date of issuance. Should the Shoreline Master Program be revised prior to the completion of this project, additional review may be required.

Advisory Notes

- The applicant shall apply for and receive approval of any required building permits prior to any work.
- The applicant is advised that all local, State and Federal permits or approvals required for the project must be obtained prior to starting site work.

APPENDIX E

SEPA EXEMPTION

MEMORANDUM

DATE: November 20, 2014
TO: Port of Tacoma SEPA File
FROM: Jennifer Stebbings
SUBJECT: SEPA Exemption – Terminal and Shoreline Area Routine Maintenance and Repair

The Port of Tacoma (Port) currently owns multiple properties that require regular maintenance and repair to ensure a safe and efficient operation. The project sites are located on Port properties throughout the Tacoma Tideflats. All properties are zoned S-10 Port Industrial.

The project includes routine maintenance and repair work that will occur over a five year period commencing once the Port receives all necessary approvals, which may include a Nationwide 3 permit from the U.S. Army Corps of Engineers, a Hydraulic Project Approval from the Washington State Department of Fish and Wildlife, and a formal exemption letter from the City of Tacoma covering both Shoreline and Critical Area requirements.

The routine maintenance and repair activities apply to the following typical Port infrastructure: hanging and bolt-on fender systems and rub strips; bull rails; bollards; utilities (excluding stormwater infrastructure); power/gear switches; crane rails; dock surfaces (planks, pavement); other existing paved and impervious surfaces; building exteriors; containment berms; light poles; safety equipment and platforms; navigation lights; and cathodic protection systems. The following routine maintenance and repair activities are needed to maintain the integrity of Port infrastructure and to operate safely and efficiently.

Hanging and bolt-on fender systems and rub strip repair: Work will occur from existing piers located above and adjacent to marine waters and in the 100-year floodplain. To replace the fenders and rub strips, a derrick is maneuvered as close as possible to the wingwall where it holds the replacement fender or rub strip while the bolts are removed by hand. The original fender or rub strip is then lowered and loaded onto a barge or truck and removed from the site. The replacement fender or rub strip is then held and bolted into place.

Bull rail repairs/maintenance: Work will occur from existing piers located above and adjacent to marine waters and in the 100-year floodplain. No parts of the bull rail are in contact with the water. The bull rail and decking are generally installed manually using hand tools from the dock surface. However, on occasion, it will be necessary to use a forklift or backhoe to remove heavy sections.

Bollard installation/relocation (includes mooring hardware): Work will occur from existing piers located above and adjacent to marine waters and in the 100-year floodplain. The concrete of the bull rail and pile cap will be chipped away to expose the rebar, and holes will be drilled in the broken concrete surface. Dowels will be epoxied into the holes to provide solid anchoring points for the new concrete to help integrate the old and the new as one structure. The new bollard will be placed in position and integrated into the existing rebar and concrete and the pour will be formed up, then the new concrete will be poured and finished.

Utility maintenance (excluding stormwater): Work can occur from existing piers located above and adjacent to marine waters and within the 100-year floodplain. Maintenance in areas landward of the Ordinary High Water Mark (OHWM) may include trenching, backfilling and repaving.

Repair or replacement of underground utilities will require existing pavement to be saw cut and removed for trenching. Trenching will remove the subgrade material to allow access to the existing utilities. Once repairs are complete the trench will be backfilled with excavated material or new clean imported material. All excavated material not used will be stockpiled for testing and proper disposal offsite. Repaving will be conducted to match the existing surface, grade, and asphalt thickness.

Maintenance and repair of electrical equipment will be conducted based on the associated building and common industrial standard.

Warning system equipment maintenance and repair includes work on speaker arrays, strobes, and control cabinets that are located on poles in upland locations.

Power/Switch gear maintenance: Work may occur from existing piers located above and adjacent to marine waters and within the 100-year floodplain.

Maintenance and repair of electrical equipment will be conducted based on the associated building and common industrial standard.

Crane rail repairs: Work will occur from existing paved wharfs located above and adjacent to marine waters and within the 100-year floodplain. All work will occur from the surface of the existing paved wharf.

Deck repairs including re-planking of dock surfaces (wood): Work will occur above and adjacent to marine waters and within the 100-year floodplain. Specifically, deteriorated timber planks will be removed and replaced with new timber planks. No in-water work will occur; all equipment will be positioned on the dock itself; and no increase in footprint or overwater coverage is proposed.

The deteriorated timber will be removed by cutting with a chainsaw and lifting out either by hand or with a truck-mounted davit. Due to the severe constraints beneath the dock, the Port will not be able to employ work floats or tarps to capture falling debris; however, workers will operate a vacuum while using power tools to cut decking, and skim any debris that may escape the vacuum to minimize impacts to the waterbody. Replacement timbers will be installed using hand tools.

Re-paving existing paved areas: Work will occur landward of the OHWM and may occur within the 100-year floodplain. The old surface will be milled away. An application of a tack coat will be applied and a new layer asphalt will then be laid down with paving machines and rollers.

Exterior building repairs and maintenance: Work will occur above and adjacent to marine waters and within the 100-year floodplain. Maintenance and repair work will be conducted from improved areas surrounding existing buildings. Typical equipment may include lifts, scaffolding, and trucks. Landscaping maintenance is limited to the immediate area surrounding buildings and parking areas that are not part of a restoration, mitigation, or other area that is not already regularly maintained.

Containment berm installation and maintenance: Work will occur landward of the OHWM and may occur within the 100-year floodplain. Typical equipment used to construct a containment berm includes trucks and paving equipment.

Light pole maintenance: Work will occur above and adjacent to marine waters and within the 100-year floodplain. Typical equipment will include lifts and trucks.

Maintenance of safety equipment: Work will occur above and adjacent to marine waters and within the 100-year floodplain. Safety equipment will be installed using hand tools on the dock surface or with the use of a boom truck operated from the dock or a barge. Workers will operate a vacuum while using power tools to cut decking in over water areas and skim any debris that may escape the vacuum to minimize waterbody impacts.

Safety ladders are approximately 30 feet long and 24 inches wide and are mounted to the face of the wharf or pier (please see Figure 1 for standard dimensions). Life rings and their housing are approximately 2 feet by 2 feet and are mounted to the top of the wharf or pier.

Navigation light maintenance and replacement: Work will occur above and adjacent to marine waters and within the 100-year floodplain. Navigation lights will be accessed by boat and replaced with hand tools.

Safety platform maintenance: Work will occur above and adjacent to marine waters and within the 100-year floodplain. Line platforms will be accessed from the pier and will be maintained with hand tools and/or use of a boom truck operated from the pier.

Cathodic protection system repair/maintenance: Work will occur within the 100 year floodplain above and in marine waters. Repair and maintenance will be done with hand tools from a floating work platform and/or by divers.

The Port of Tacoma will ensure that the maintenance activities do not harm wildlife, vegetation or other elements of the shoreline environment. In addition to the following BMPs, the maintenance activities will be designed to comply with applicable federal, state and local laws and regulations to avoid and minimize adverse impacts to the aquatic environment.

The following BMPs apply to all maintenance activities:

- Each activity will comply with the Washington Department of Fish and Wildlife Hydraulic Project Approval requirements including timing restrictions to protect juvenile salmonid migration.
- Each activity will comply with water quality restrictions imposed by the Washington Department of Ecology and implement corrective measures if water quality standards are exceeded.
- If a contractor performs the maintenance activities, they will be required to prepare a Spill Prevention, Control and Countermeasures plan (SPCC). The SPCC plan will describe how the contractor will store all fuels and hazardous substances that may be onsite during construction. It will include procedures that the contractor will follow in the event of a fuel or chemical spill, and will require the contractor to have a spill response kit that will prevent spilled material from entering surface waters. The plan will also include emergency phone numbers and contacts that will be made in the event of a spill.
- No petroleum products, hydraulic fluids, chemicals, or any other polluting substances shall be allowed to enter waters of the state.
- Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., will be checked regularly for drips or leaks, and shall be maintained and stored properly with secondary containment to prevent spills.
- Once the activity is complete, all temporary work structures, devices, equipment, materials, man-made debris and wastes from the project shall be completely removed from the shoreline.
- Temporary floating work platforms will not disturb eelgrass, kelp, and/or intertidal wetland vascular plants.
- Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances. Where space or worker safety constraints preclude the use of such structures, workers will operate a vacuum

while using power tools to cut or drill, and will skim any debris that may escape the vacuum to minimize waterbody impacts.

- No stockpiling or staging of materials will occur waterward of the OHWM of any waterbody, except for when work is occurring on a paved wharf/pier. Stockpiles will be covered with plastic to prevent contact with the elements and erosion.
- All areas for equipment fuel storage will be located 150 feet from open water or wetlands.
- Fueling and servicing of all equipment will be confined to an established staging area that is at least 150 feet from open water or wetlands.
- A spill kit with oil-absorbent materials is on site to be used in the event of a spill.
- Deck and storm drain inlets will be protected to prevent sediment and contaminants from entering the waterways or storm drain system.
- Proper BMPs such as a silt fence and/or straw wattles will be used to provide a physical barrier to sediment and prevent runoff.

BMPs specific to the maintenance activity include, but are not limited to:

Hanging and bolt-on fender systems and rub strip repair

- A small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.

Bull rail repairs/maintenance

- A small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.

Bollard installation/relocation (includes mooring hardware)

- Stormwater BMPs will be in place to ensure that concrete dust is not carried through the deck drains on the wharf/pier, and to ensure that stormwater does not contact wet or fresh concrete.
- A small barge, wood and/or cloth barrier will be used to catch the concrete as it is chipped to prevent it from falling into the water.
- Concrete forms will be completely sealed on the bottom and sides to prevent wet concrete from escaping and dropping into the water.
- Washwater and leftover concrete product will not be allowed to drain onto the deck or into storm drains or allowed to drain to waters of the state.

Utility maintenance (excluding stormwater)

- Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances.
- Stormwater BMPs will be in place to ensure that concrete dust is not carried through the deck drains on the pier/wharf, and to ensure that stormwater does not contact wet or fresh concrete.
- Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.

Power/Switch gear maintenance

- Stormwater BMPs will be in place to ensure that concrete dust is not carried through the deck drains on the pier/wharf, and to ensure that stormwater does not contact wet or fresh concrete.
- Washwater and leftover concrete product will not be allowed to drain onto the deck or into storm drains or allowed to drain to waters of the state.

Crane rail repairs

- Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances.
- Stormwater BMPs will be in place to ensure that concrete dust is not carried through the deck drains on the pier/wharf, and to ensure that stormwater does not contact wet or fresh concrete.
- Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.
- Concrete forms will be completely sealed on the bottom and sides to prevent wet concrete from escaping and dropping into the water.
- Washwater and leftover concrete product will not be allowed to drain to deck or storm drains or allowed to drain to waters of the state.

Deck repairs including re-planking of dock surfaces (wood)

- Work floats or tarps will be used to capture any falling debris to prevent any material from entering the waterway. Where such space or worker safety constraints preclude the use of such structures, workers will operate a vacuum while using power tools to cut or drill, and will skim any debris that may escape the vacuum to minimize waterbody impacts.
- Excess or waste materials will not be allowed to enter waters of the state. All such materials will be collected and recycled or disposed of at an approved upland facility.
- Wood treated with creosote or pentachlorophenol will not be used.
- Any deck overlay removal and/or replacement must have a sound subsurface that will prevent existing or new overlay material from entering waters of the state.

Re-paving existing paved areas

- Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.
- Washwater and leftover concrete product will not be allowed to drain to deck or storm drains or allowed to drain to waters of the state.

Exterior building repairs and maintenance

- Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.
- Work that could result in debris and substances entering state water shall include a containment structure capable of collecting all debris and substances.

Containment berm installation and maintenance

- Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.

Light pole maintenance

- Slurry, cuttings, or process water will not be allowed to drain to waters of the state or stormwater conveyance systems.

Safety equipment installation/relocation (ladders, flotation devices, etc.)

- A small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.

Navigation light maintenance and replacement

- Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances.

Safety platform maintenance

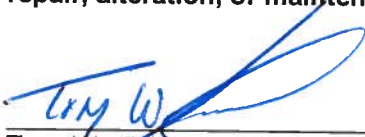
- A small barge, wood and/or cloth barrier will be used to catch debris to prevent it from falling into the water.

Cathodic protection system repair/maintenance

Work that could result in debris and substances entering waters of the state shall include a containment structure capable of collecting all debris and substances.

SEPA Finding: The Port of Tacoma, as lead agency, has determined that there is no establishment, change, or material expansion in use for the project and it is categorically exempt from SEPA review based on the criteria described in WAC 197-11-800(3).

WAC 197-11-800(3): Repair, remodeling and maintenance activities—The following activities shall be categorically exempt: The repair, remodeling, maintenance, or minor alteration of existing private or public structures, facilities or equipment, including utilities, involving no material expansions or changes beyond that previously existing; except that, where undertaken wholly or in part on lands covered by water, only minor repair or replacement of structures may be exempt (examples include repair or replacement of pilings, ramps, floats, or mooring buoys, or minor repair, alteration, or maintenance of docks.



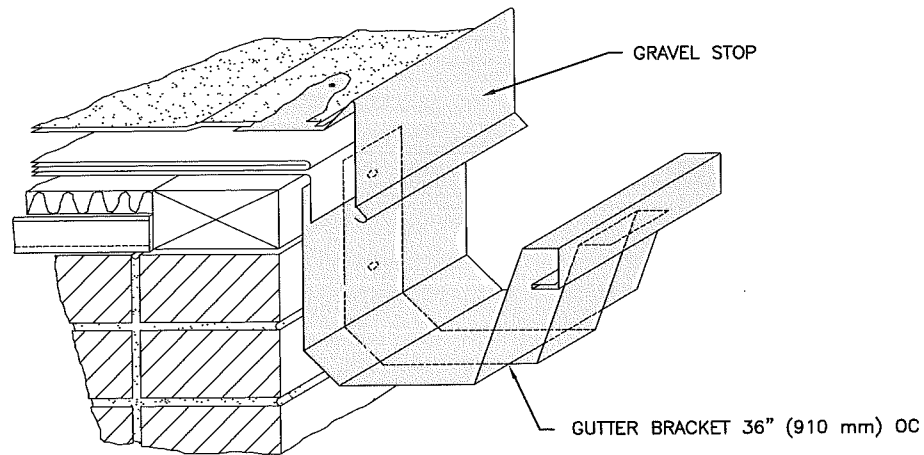
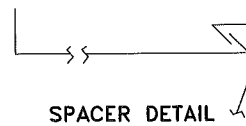
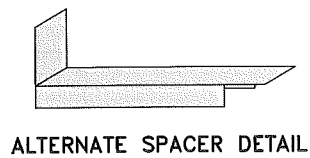
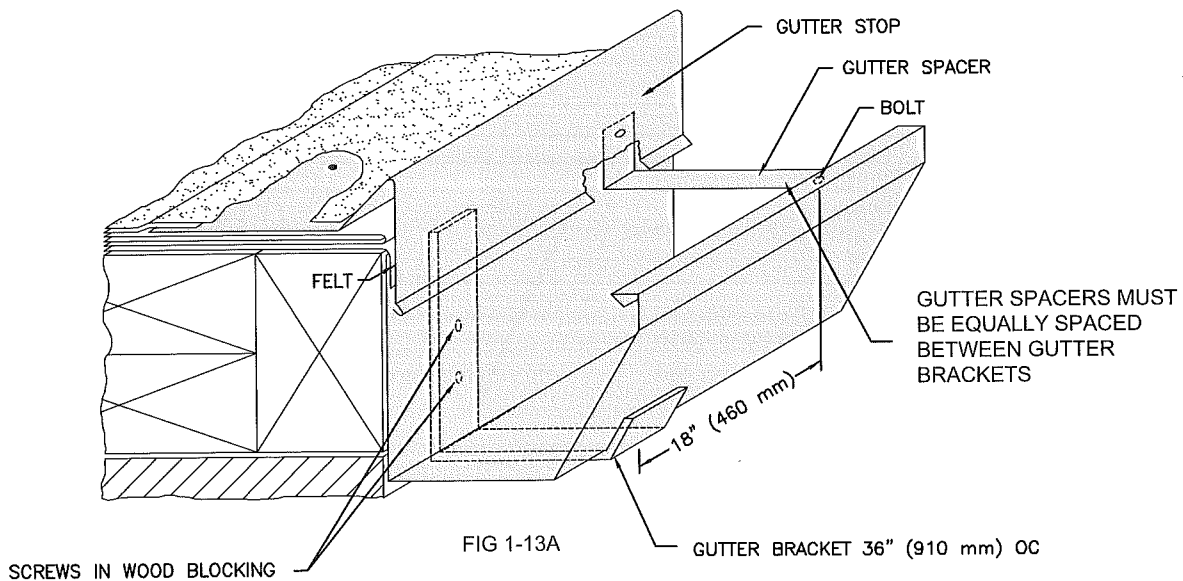
Tony Warfield
Senior Environmental Project Manager

11/25/14
Date

APPENDIX F

SMACNA SHEETMETAL

FIGURES



**FIGURE 1-13 HANGING GUTTER INSTALLATIONS —
BRACKET SUPPORT**

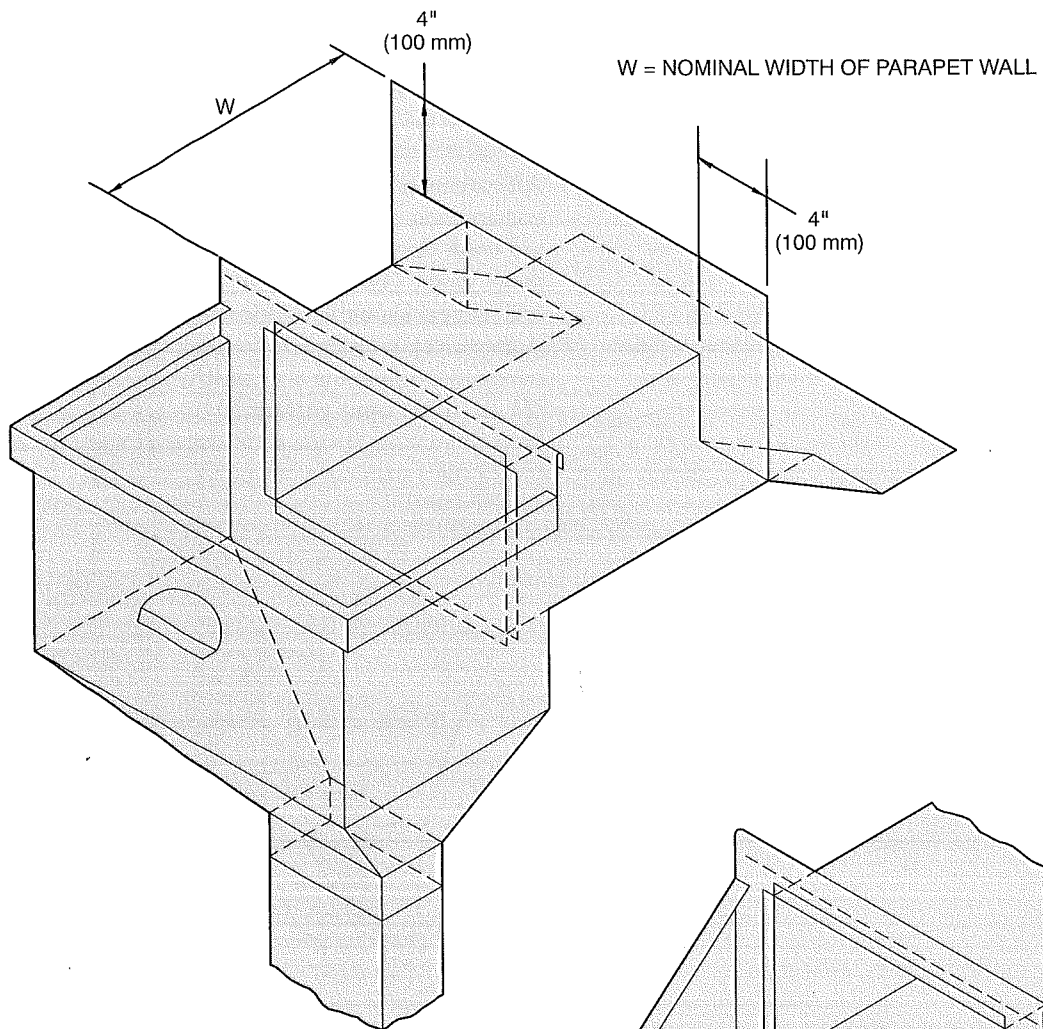


FIG 1-27A

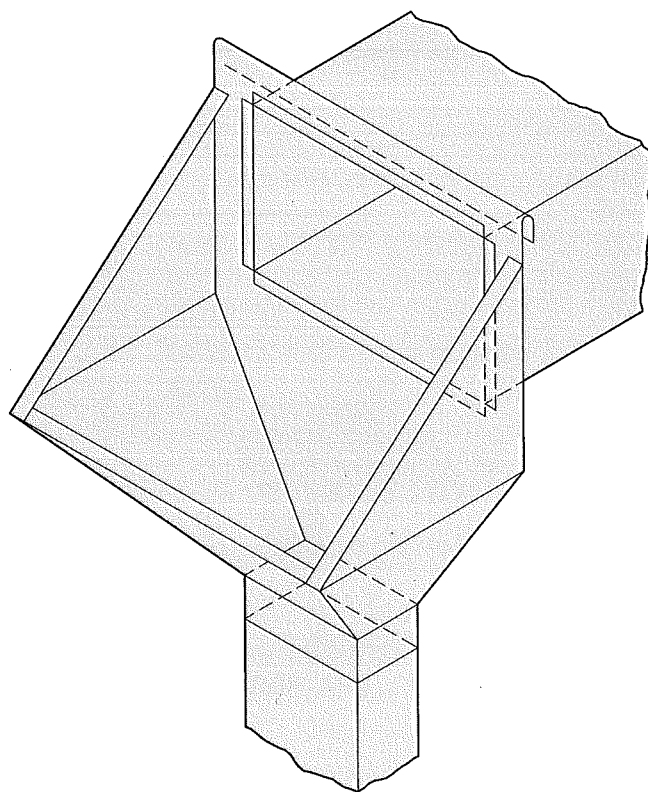


FIG 1-27B

FIGURE 1-27 SCUPPER DESIGN AND INSTALLATION

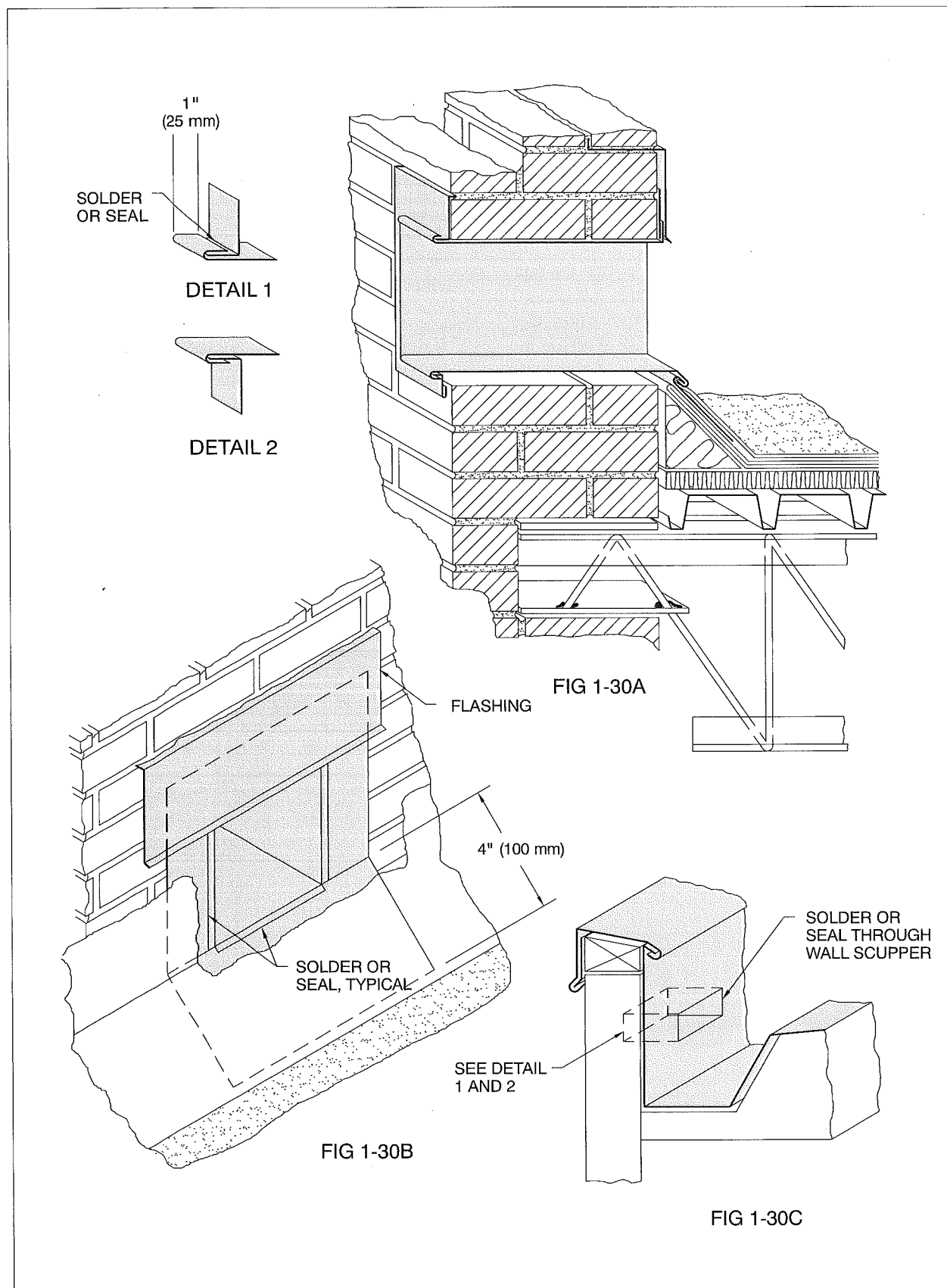


FIGURE 1-30 SCUPPER — OVERFLOW TYPE — DESIGN AND INSTALLATION

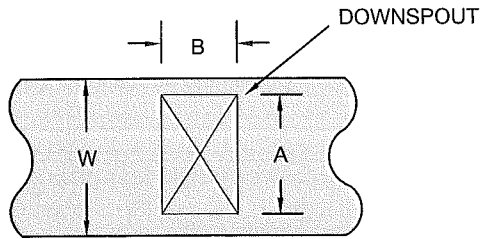


FIG 1-33A

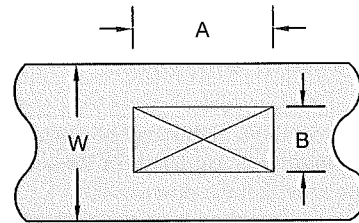


FIG 1-33B

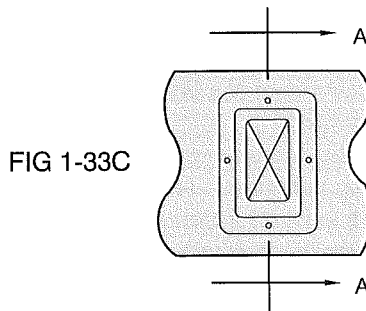
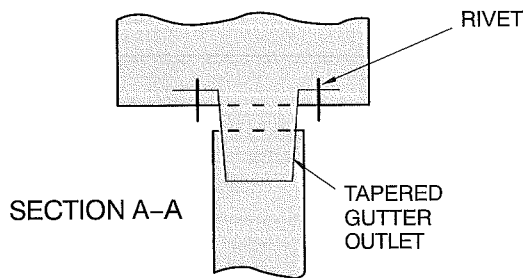
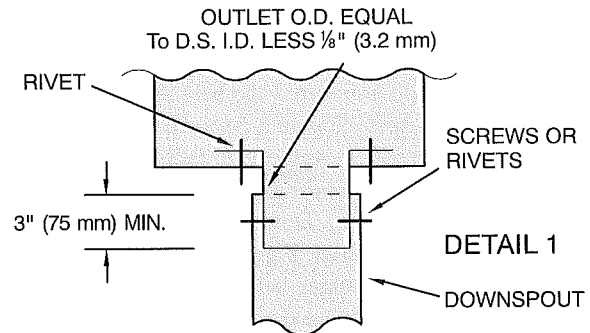
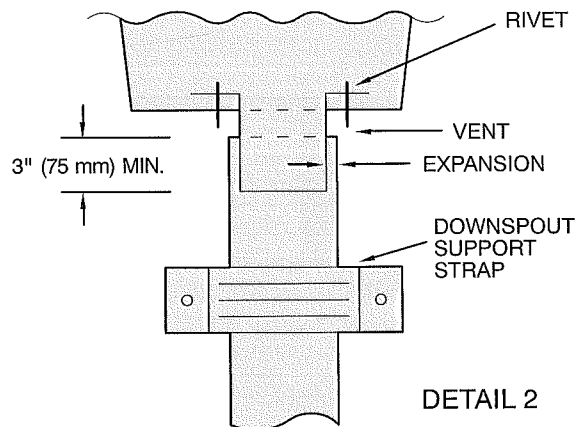


FIG 1-33C



SECTION A-A



DETAIL 2

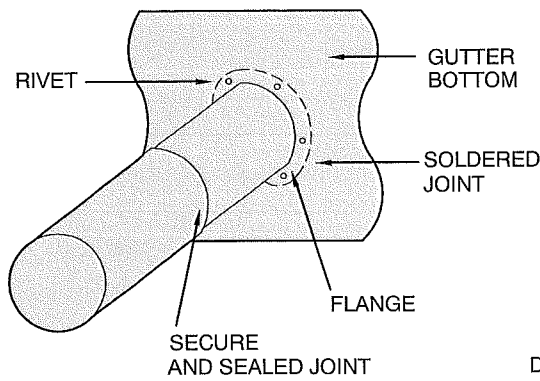


FIG 1-33D

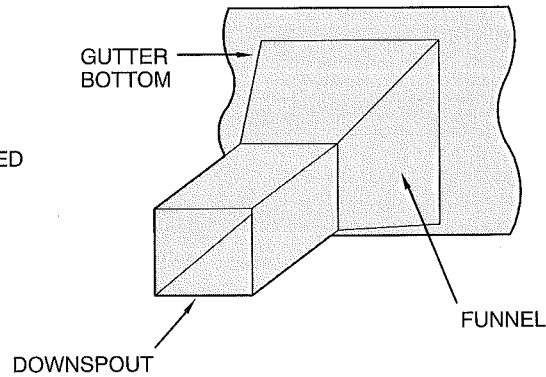


FIG 1-33E

FIGURE 1-33 DOWNSPOUT — GUTTER CONNECTIONS

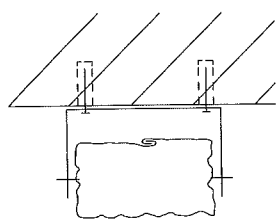


FIG 1-35A

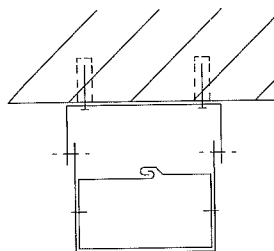


FIG 1-35B

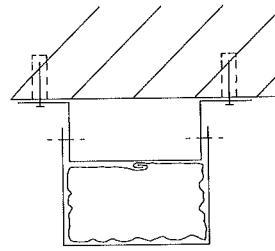


FIG 1-35C

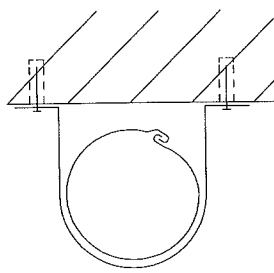


FIG 1-35D

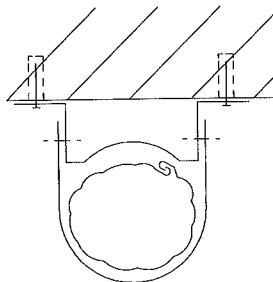


FIG 1-35E

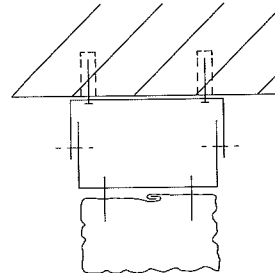


FIG 1-35F

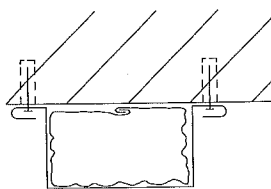


FIG 1-35G

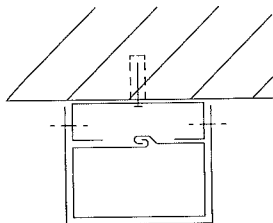


FIG 1-35H

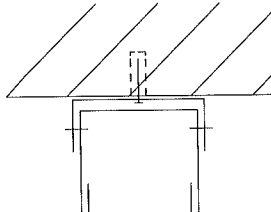


FIG 1-35I

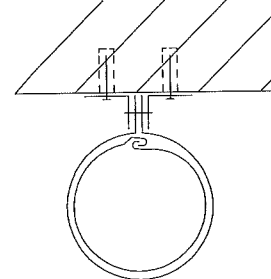


FIG 1-35J

FIGURE 1-35 SHOP-FABRICATED DOWNSPOUT HANGERS

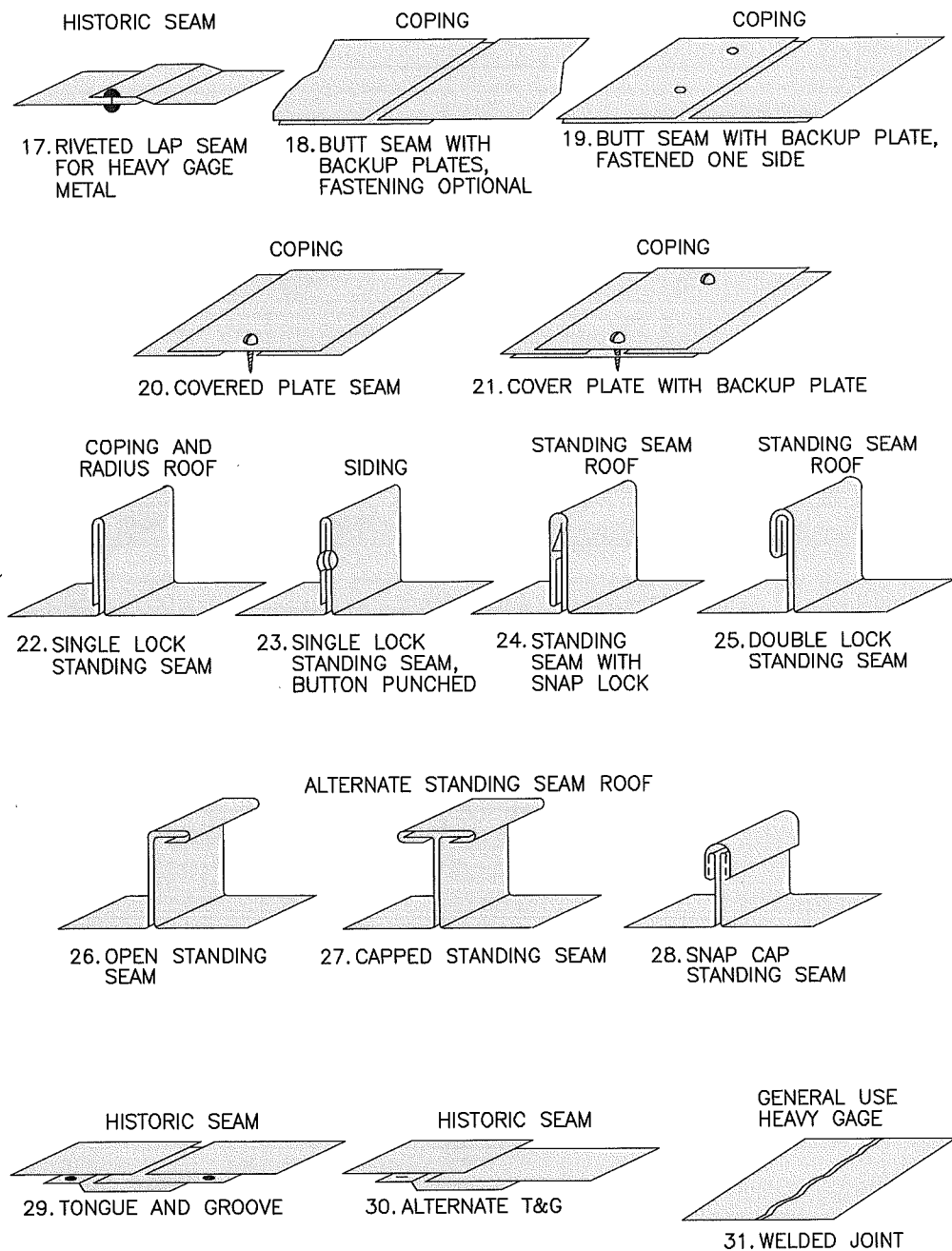


FIGURE 3-3 LOCKS AND SEAMS DESIGN DATA