Port of Pasco
INVITATION FOR BIDS
Small Works Roster

Notice to Contractors: The Port of Pasco requests your proposal to furnish labor, equipment, and material to accomplish the project: Big Pasco Industrial Center Warehouse Two Bay Three Canopy.

Instructions: Please submit your proposal by mail or by hand not later than **10:00 AM. PST, May 15, 2025**. Bids shall be mailed, or delivered to the Project Manager, Port of Pasco, 1110 Osprey Pointe Blvd, Suite 201, Pasco, WA 99301. Questions may be directed to Matt Whitish at Ph. 509.783.2244 or Jaime Vera, Ph. 509.547.3378. Plans and specifications may be examined or obtained at the Port of Pasco Administrative office at the address listed above or at the Port's web site, www.portofpasco.org under "Business with the Port". Contractors must be on the Port's Small Works Roster to be eligible for bidding on this project. Small Works Roster applications are available on the Port's web site, www.portofpasco.org thru MRSC Small Works Roster.

Bid Opening: Bids will immediately be publicly opened and read aloud on the submittal time and date listed above. Bids received after the time for opening cannot be considered.

Bid Award: Opened proposals will be submitted to the Board of Commissioners of the Port of Pasco at the next regular meeting. It is anticipated an award will be made within one week after the presentation to the Board of Commissioners. The work will be awarded to, and a contract negotiated with the lowest responsible bidder or the bid judged to be in the best interest of the Port of Pasco. The successful bidder shall have 10 days after receipt of the Notice of Award to execute the Agreement and furnish required bonds and proof of insurance.

Start Date and Contract Time: Work will begin within 10 days after the execution of the contract and/or Notice to Proceed, and require completion not to exceed 30 calendar days.

Pre-Bid Walk-Through: A pre-bid meeting for the project will be held at the Port Administrative Office, 1110 Osprey Pointe Blvd, Suite 201, Pasco, WA on **May 1, 2025, at 10:00 AM** A walk-through of the project site will be conducted at the pre-bid meeting.

Bid Proposal Form: Proposals shall be prepared on the standard proposal form attached. The bidder shall make no stipulation on the bid form, nor qualify the bid in any manner. The proposal shall be placed in a sealed envelope marked in the lower left corner with "Proposal for Big Pasco Industrial Center Warehouse Two Bay Three Canopy. Please place name of company on front of envelope as well.

Bid Comparisons: Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between figures and numbers written as words shall be resolved in favor of the numbers written as words.

Bid Hold: No Bid may be withdrawn for a period of four weeks after the bid date.

Bid Guarantee: A certified check, cashier's check or bid bond made payable to the Port of Pasco for an amount equal to at least 5% of the total base bid amount shall accompany each bid.

Performance & Payment Bond: The Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price, as required by R.C.W. 39.08, upon execution of a contract. These bonds shall remain in effect until one year after the date when final payment becomes due. In lieu of the said performance and payment bonds, and in the event the contract is for an amount less than $150,000.00, the Contractor may elect to have the Port retain 10% of the contract amount for a period of forty five (45) days after the date of final acceptance, or until receipt of all necessary releases from the Department of Revenue, Department of Labor and Industries, and the settlement of liens filed under Chapter 60.28 R.C.W., whichever is later. Retained amounts will be held by the Port unless Contractor submits a written request to invest the deposit retainage in accordance with applicable law.

Agreement: Successful bidder will execute the attached Agreement between the Port of Pasco and the Contractor.

Right of the Port to Accept or Reject Bids: The Port of Pasco reserves the right to reject any or all bids, to waive any informalities or irregularities in any bid, or in the bidding, and to accept or reject any bid for reasons based solely on considerations for the best interests of the Port of Pasco.

GENERAL CONDITIONS:

Insurance: The Contractor shall purchase and maintain such insurance as will protect it from claims arising out of Contractor's operations under the contract, whether such operations be by itself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable (per Title 48 of the R.C.W.). Said insurance shall include provisions applying to:

A. Claims under workman's compensation, disability benefit and other similar employee benefit acts;

B. Claims for damages because of bodily injury, occupational sickness or disease, or death of its employees, and claims insured by usual personal injury liability coverage;

C. Claims for damages because of bodily injury, sickness or disease, or death of person other than its employees, and claims insured by usual personal injury liability coverage; and

D. Claims for damages because of injury to or destruction of tangible property, including loss of use resulting there from.

The insurance required by this paragraph shall be written for not less than:

A. Commercial General Liability and Contractual Liability Insurance; written on an Occurrence form, and include Premises and Products/Completed Operations; Employers Liability.

Combined Single Limit per Occurrence	$1,000,000
General Aggregate	$2,000,000

B. Commercial Auto Liability; including all Owned, Non-Owned, and Hired Autos:

	Combined Single Limit per Occurrence	$1,000,000 each Accident including Bodily Injury and Property Damage Liability
C.	Workers Compensation	Statutory Requirements
D.	Excess/Umbrella	$1,000,000 Each Occurrence

All such insurance policies shall be issued by a reputable insurance company satisfactory to Port; authorized to do business in the State of Washington and rated A- or better by A. M. Best Company. The insurance company and its agent shall be licensed with the State of Washington Insurance Commissioner per Title 48 of the RCW of Washington.

The policy of Commercial General Liability shall 1) name the Port as an Additional Insured for both "ongoing" and "completed operations", and shall include coverage for the Port's officers, directors, partners, employees, agents, and consultants and 2) be primary coverage for both Defense and Indemnity and Non-Contributory with any insurance maintained by Port, and shall provide for a Waiver of Subrogation rights as to the Port.

Evidence of Insurance shall be filed with the Port prior to the execution of the agreement, which documents that policies providing such coverage and limits of insurance are in full force and effect in a form acceptable to the Port. Attach appropriate endorsement forms evidencing required additional insured parties. Thirty (30) days advance notice shall be given in writing to the PORT prior to cancellation, termination or alteration of said policies of insurance. The insurance company and its agent shall be licensed with the State of Washington Insurance Commissioner per Title 48 of the RCW of Washington.

Warranty: Standard one year Contractors Guarantee covering the work performed and Manufacturers' Warranty on material, and warranties as otherwise listed in these specifications. Copies of all such warranties to be furnished to the Port of Pasco.

Cancellation of Contract for Violation of Port Policy: This contract pursuant to R.C.W. 49.28.050 and 49.28.060 may be cancelled by the officers or agents of the Port authorized to contract for or supervise the execution of such work, in case such work is not performed in accordance with the policy of the Port relating to such work.

Prevailing Wage: The hourly wages paid to laborers, workmen or mechanics shall not be less than the prevailing rate of wage, R.C.W. 39.12.020. No worker may be paid less than the specified hourly rate. Contractor will submit Intent to Pay Prevailing Wages, Affidavit of Wages Paid, and Request for Release to the Department of Labor and Industries at appropriate times.

The Washington State Prevailing Wage Rates for Public Works Contracts, Franklin County, effective March 30, 2025, is a part of this Invitation and may be accessed from the following website: http://www.lni.wa.gov/TradesLicensing/PrevWage/WageRates/default.asp. A copy is also available for viewing at the Port of Pasco office, 1110 Osprey Pointe Blvd, Suite 201, Pasco, WA 99301, and can be mailed upon request.

Retainage: Retainage of 5% will be administered in accordance with R.C.W. 60.28 when contractor elects to furnish a performance and payment bond for the project when all requirements are met. If contractor elects not to furnish a performance and payment bond on the project of

$150,000 or less, retainage of 10% will be withheld until requirements of R.C.W. 60.28 are met.

Bidder Responsibility Criteria

It is the intent of Owner to award a contract to the lowest, responsible bidder. In accordance with RCW 39.04.350, before award of a public works contract, the bidder must meet the following bidder responsibility criteria to be considered a responsible bidder and qualified to be awarded a public works project. The bidder may be required by the Owner to submit documentation demonstrating compliance with the criteria. The bidder must:

A. Have a current certificate of registration as a contractor at the time of bid submittal, in compliance with chapter 18.27 RCW. In addition, per RCW 39.06.010(1), all electrical and elevator contractors must also be licensed, which must have been in effect at the time of bid submittal;

B. Have a current Washington Unified Business Identifier (UBI) number;

C. If applicable:

   1. Have Industrial Insurance (workers' compensation) coverage for the bidder's employees working in Washington, as required in Title 51 RCW, unless self insured;

   2. Have a Washington Employment Security Department number, as required in Title 50 RCW;

   3. Have a Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;

   4. Have a Federal Employer Identification number (EIN or Federal Tax ID number)

D. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3).

E. If bidding on a public works project subject to the apprenticeship utilization requirements in RCW 39.04.320, not have been found out of compliance by the Washington state apprenticeship and training council for working apprentices out of ratio, without appropriate supervision, or outside their approved work processes as outlined in their standards of apprenticeship under chapter 49.04 RCW for the one-year period immediately preceding the date of the bid solicitation;

F. Have received training on the requirements related to public works and prevailing wage under this chapter and chapter 39.12 RCW. The bidder must designate a person or persons to be trained on these requirements. The training must be provided by the department of labor and industries or by a training provider whose curriculum is approved by the department. The department, in consultation with the prevailing wage advisory committee, must determine the length of the training. Bidders that have completed three or more public works projects and have had a valid business license in Washington for three or more years are exempt from this subsection. The department of labor and industries must keep records of entities that have satisfied the training requirement or are exempt and make the records available on its web site. Responsible parties may rely on the records made available by the department regarding satisfaction of the training requirement or exemption;

G. Within the three year period immediately preceding the date of the bid solicitation, not have been determined by a final binding citation and notice of assessment

issued by the Department of Labor and Industries or through a civil judgement entered by a court of limited or general jurisdiction to have willfully violated, as defined in RCW 49.48.082, any provision of chapter 49.46, 49.48, or 49.52 RCW. This requires the successful bidder to submit to the municipality a signed acknowledged statement under oath verifying under penalty of perjury that the bidder is in compliance with the responsible bidder criteria requirement set forth under this number.

H. In accordance with RCW 39.06, a public works contractor must verify responsibility criteria for each first tier subcontractor, and a subcontractor of any tier that hires other subcontractors must verify responsibility criteria for each of its subcontractors. Verification shall include that each subcontractor, at the time of subcontract execution, meets the responsibility criteria and possesses an electrical contractor license if required by RCW 19.28, or an elevator contractor license, if required by RCW 70.87. This verification requirement, as well as the responsibility criteria, must be included in every public works contract and subcontract of every tier.

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SPECIFICATIONS:

Section 1:

Description of the Work: The project involves construction of a metal canopy structure at Warehouse 2 Bay 3. Plans are attached as Drawings G-01 through G-03, PH-01, A-01, A-02 and Meier Engineering & Architecture drawings S001, S101, S501, S502 and S503. General demolition at each building includes, but is not limited to, removal of T&G wood siding, translucent window panels, metal siding panels, etc. to install all necessary steel and steel supports for canopies, any required demo for installation of new canopies and dry pipe sprinkler system.

All structural members, nuts, bolts, fasteners, etc. and underside of roofing panels shall be painted. Color to match existing siding at warehouses.

Detail 6/S501 weld symbol is meant to be the connection of C10 to C10 members.

Drawing S101, the perimeter C10 can either be welded or one channel can have a 3/8" plate welded to the web and bolted to the other.

Dry sprinkler system shall be designed to have wall mounted heads as per existing conditions of new canopies built in 2024. No piping to be hung from new canopy structure.

Project specific requirements are listed below:

DIVISION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

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

1.02 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the work, not involving adjustment to the contract sum or the contract time, on AIA Document G710, "Architect's Supplemental Instructions."

1.03 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a description of proposed changes in the work that may require adjustment to the contract sum or the contract time. Work change proposal requests issued by architect are not instructions either to stop work in progress or to execute the proposed change. Cost shall include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made, applicable taxes, delivery charges, equipment rental, and costs of labor and supervision directly attributable to the change.

B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the contract, contractor may initiate a claim by submitting a request for a change to architect. Include a statement outlining reasons for the change and the effect of the change on the work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the contract sum and the

contract time. Cost shall include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made, applicable taxes, delivery charges, equipment rental, and costs of labor and supervision directly attributable to the change.

1.04 CHANGE ORDER PROCEDURES

A. On owner's approval of a work changes proposal request, architect will issue a change order for signatures of owner and contractor on AIA Document G701.

1.05 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a construction change directive on AIA Document G714. Construction change directive instructs contractor to proceed with a change in the work, for subsequent inclusion in a change order.

B. Documentation: Maintain detailed records on a time and material basis of work required by the construction change directive. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF DIVISION 012600 - CONTRACT MODIFICATION PROCEDURES

DISISION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on project including, but not limited to Requests for Information (RFIS) and project meetings.

1.02 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different sections of the specifications to ensure efficient and orderly installation of each part of the work. Coordinate construction operations, included in different sections, which depend on each other for proper installation, connection, and operation. Schedule construction operations in sequence required to obtain the best results where installation of one part of the work depends on installation of other components, before or after its own installation. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the work. Such administrative activities include, but are not limited to, preparation of contractor's construction schedule, delivery and processing of submittals, progress meetings, pre-installation conferences, project closeout activities, and startup and adjustment of systems.

1.03 REQUESTS FOR INFORMATION (RFIS)

A. General: Immediately on discovery of the need for additional information or interpretation of the contract documents, contractor shall prepare and submit an RFI in the form specified. Architect will return RFIS submitted to architect by other entities controlled by contractor with no response.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the contractor's suggested resolution. If contractor's solution(s) impacts the contract time or the contract sum, contractor shall state impact in the RFI.

C. RFI forms: AIA Document G716 or approved form, acceptable to architect.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for architect's response for each RFI. The following RFIS will be returned without action: Requests for approval of submittals or substitutions and requests for coordination information already indicated in the contract documents.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIS organized by the RFI number. Include RFI description, date submitted and date architect's response was received. Notify architect within five days if contractor disagrees with response.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF DIVISION 013100 - PROJECT MANAGEMENT AND COORDINATION

DIVISION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the work, consisting of the contractor's construction schedule.

1.02 SUBMITTALS

A. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1.03 COORDINATION

A. Coordinate contractor's construction schedule with the schedule of values, submittal schedule, progress reports, and payment requests coordinate each construction activity with other activities and schedule them in proper sequence.

PART 2 – PRODUCTS

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the notice to proceed to date of substantial completion. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by change order.

B. Activities: Separate area as a separate numbered activity for each main element of the work. Comply with the following: define activities so no activity is longer than 90 days. Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, submittals, approvals, purchasing, fabrication, and delivery.

C. Milestones: Include milestones indicated in the contract documents in schedule, including, but not limited to, the notice to proceed, substantial completion, and final completion.

D. Recovery Schedule: When periodic update indicates the work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which contractor intends to regain compliance with the schedule.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, contractor's construction schedule within 7 days prior of date established for commencement of the work. Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. For construction activities that require more than three months to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

PART 3 – EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

B. Distribution: Distribute copies of approved schedule to architect owner, separate contractors, testing and inspecting agencies, and other parties identified by contractor with a need-to-know schedule responsibility.

END OF DIVISION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

DIVISION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated in the contract documents for specific test and inspection requirements. These services do not relieve contractor of responsibility for compliance with the contract document requirements.

1.02 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to architect for a decision before proceeding.

B. Minimum quantity or quality levels: the quantity or quality level shown or specified shall be the minimum provided or performed.

1.03 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other sections.

B. Manufacturer's Field Reports: Prepare written information documenting tests and inspections specified in other sections.

C. Permits, Licenses, and Certificates: For owner's records, submit copies of permits, licenses, certifications, inspection reports, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the work.

D. Testing Agency Qualifications: An independent agency with the experience to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual technical sections; and that is acceptable to authorities having jurisdiction.

1.04 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as owner's responsibility, owner will engage a qualified testing agency to perform these services.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to the owner are contractor's responsibility. Perform additional quality-control activities required to verify that the work complies with requirements, whether specified or not.

C. Manufacturer's Field Services: Where indicated, engage a manufacturer's representative to observe and inspect the work. Manufacturer's representative's services include examination of substrates and conditions, verification of materials, inspection of completed portions of the work, and submittal of written reports.

D. Re-testing/re-inspecting: Regardless of whether original tests or inspections were contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced work that failed to comply with the contract documents.

E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide access to the work, and incidental labor and facilities necessary to facilitate tests and inspections.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 TEST AND INSPECTION LOG

A. Test and inspection log: maintain a record at project site.

3.02 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes. Repair and protection are contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF DIVISION 014000 - QUALITY REQUIREMENTS

DIVISION 016000 - PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in project; product delivery, storage, handling; manufacturers' standard warranties; special warranties; and comparable products.

1.02 DEFINITIONS

A. Products: Items obtained for incorporating into the work, whether purchased for project or taken from previously purchased stock. The term "Product" includes the terms "Material," "Equipment," "System," and terms of similar intent.

1. Named products: Items identified by manufacturer's product name, make or model number listed in manufacturer's published product literature that is current as of date of the contract documents.

2. New products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.

3. Comparable product: product that is approved through the submittal process to have the indicated qualities related to type, function, dimension, performance, physical properties, appearance, and other characteristics that equal or exceed those of the specified product.

B. Basis-of-design Product Specification: A specification in which a specific manufacturer's product is named, including make or model number or other designation, to establish the significant qualities related to type, function, dimension, performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.03 SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include specification section number and title and drawing numbers and titles.

B. Basis-of-design Product Specification Submittal: Comply with requirements in division 01 section "Submittal Procedures." show compliance with requirements.

1.04 QUALITY ASSURANCE

A. Compatibility of Options: If contractor is given option of selecting between two or more products for use on project, select product compatible with products previously selected, even if previously selected products were also options.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions. Schedule delivery to minimize long-term storage at project site and to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration. Deliver products to project site in an undamaged condition in manufacturer's original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Protect stored products from damage and liquids from freezing.

1.06 PRODUCT WARRANTIES

A. Warranties shall be in addition to, and run concurrent with, other provisions of the contract documents. Manufacturer's disclaimers and limitations on product warranties do not relieve contractor of obligations under requirements of the contract documents.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution from Manufacturers.

PART 2 – PRODUCTS

2.01 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the contract documents, are undamaged and, unless otherwise indicated, are new at time of installation. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

1. Product: Where specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for contractor's convenience will not be considered. Where specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements.

2. Basis-of-design Product: Where specifications name a product, or refer to a product indicated on drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.

3. Visual Selection Specification: Where specifications include the phrase "as selected from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 COMPARABLE PRODUCTS & SUBSTITUTIONS

A. Substitutions will be considered up to 5 calendar days prior to bid opening.

B. Substitutions may be considered after contract award only when a product becomes unavailable through no fault of the contractor, or when the Owner deems it to be in the Owner's best interest to do so.

C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

D. A request constitutes a representation that the Bidder/Contractor:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.

2. Will provide the same warranty for the Substitution as for the specified product.

3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.

4. Waives claims for additional costs or time extension that may subsequently become apparent.

5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, if they have not been previously approved.

F. Substitution Submittal Procedure:

1. All substitution requests shall be accomplished by requesting substitution form from Engineer.

2. Clearly indicate with red arrows on the supporting data the proposed substitution and accessories.

G. Substitution Review Procedure: Engineer will review substitution requests prior to bid within the 10 days prior to bidding. The substitution request form will be required to be filled out. Only approved substitutions will be listed on addenda. All proposed substitutions not listed on addenda shall be considered by the submitter and the Contractor as non-acceptable substitution and shall not be used. Substitutions after bid submission by Contractor will be reviewed only as per item B above or a better quality item is requested for substitution on approval by Engineer.

PART 3 - EXECUTION (NOT USED)

END OF DIVISION 016000 - PRODUCT REQUIREMENTS

DIVISION 017839 - PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including record drawings and specifications.

1.02 SUBMITTALS

A. Record drawings: Submit one complete paper-copy set of marked-up record prints.

PART 2 – PRODUCTS

2.01 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the contract drawings and shop drawings, incorporating new and revised drawings as modifications are issued. Mark record prints to show the actual installation where installation varies from that shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Note construction change directive numbers, alternates, change order numbers, and similar identification, where applicable.

PART 3 – EXECUTION

3.01 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur.

B. Maintenance of Record Documents: Store record documents apart from the contract documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for architect's reference during normal working hours.

END OF DIVISION 017839 - PROJECT RECORD DOCUMENTS

DIVISION 024119 - SELECTIVE DEMOLITION

PART 1 – GENERAL

1.01 DESCRIPTION

A. This section consists of furnishing all labor, materials and equipment necessary and incidental to selective demolition and removal of existing interior finishes, plumbing, electrical, wood siding, metal siding items as shown in contract drawings, and any items and supports as shown on Meier plans, and miscellaneous items at the locations indicated on the Contract Drawings. All associated items related to items listed, and miscellaneous items unless otherwise noted, is included in the work described in this section.

1.02 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings.

1.03 FIELD CONDITIONS

A. There will be tenants occupying building during selective demolition work. There is public access adjacent to building and contractor shall conduct selective demolition operations to protect the tenant and public from any harm..

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. If suspected hazardous materials are encountered, do not disturb; immediately notify the Port. Hazardous materials will be removed by the Port under a separate contract.

D. Utility Service: Maintain existing utilities and protect them against damage during selective demolition operations.

PART 2 – PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA, City of Pasco, etc. notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify utility locations before starting selective demolition operations.

B. Review record documents of existing construction provided by the Port. Port does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

3.02 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, rails, public, and other adjacent occupied and used facilities.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to tenants and people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of buildings, docks and decks.

3.03 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

2. Dispose of demolished items and materials promptly.

3.04 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Remove demolished materials from Project site and legally dispose.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF DIVISION 02 4119-SELECTIVE DEMOLITION

DIVISION 05 5200 – STRUCTURAL STEEL

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Structural Steel

1.2 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings. Meier Architectural & Engineering drawings and specifications will take first precedence and these specifications will serve as secondary specifications for items not covered in those drawings and specifications.

1.3 REFERENCES

A. All references shall be the latest adopted edition unless noted otherwise.

B. AISC M016 - Manual of Steel Construction - Allowable Stress Design; American Institute of Steel Construction, Inc.

C. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.

D. AWS A2.4 - Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society.

E. AWS 01.1 - Structural Welding Code - Steel; American Welding Society.

F. SSPC (PM2) - Steel StructuresPainting Manual, Vol. 2 Systems and Specifications; Steel Structures Painting Council.

1.4 SUBMITTALS

A. Shop Drawings: Provide shop drawings prepared by an experienced professional steel detailer.

1. Calculate and resolve all dimensions related to structural steel work and coordinate with work of other trades.
2. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
3. Connections.
4. Indicate cambers and loads.
5. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
6. Include erection drawings, elevations, and details.

1.5 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC M016 and S303.

1. Comply with Section 10 of AISC S303 for architecturally exposed structural steel.

B. Erector Qualifications:Company specializing in performing the work of this Section with minimum 5 years experience.

C. Welders: Qualified within the previous 12 months for type of welding required for this project in accordance with AWS 0-1.1 and Washington Association of Building Officials (WABO) certified as required by local Building Official having jurisdiction on this project.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Structural Steel Members: As specified in the Structural General Notes.

B. Structural Tubing: As specified in the Structural General Notes.

C. Bolts, Anchorbolts, Nuts, Washers, Shear Studs: As specified in the Structural General Notes.

D. Miscellaneous Structural Items and Accessories: As specified in the Structural General Notes.

E. Non-Shrink Grout: As specified in the Structural General Notes.

F. Welding Materials: As specified in the Structural General Notes.

G. Shop and Touch-Up Primer: SSPC-Paint 15, Type 1, red oxide.

H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I Inorganic zinc rich.

2.2 FABRICATION

A. Coordinate and confirm field dimensions and conditions prior to 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. Welds Use welding equipment/technique that provides a clean, neat, weld bead of consistent width and appearance, with low profile and edges feathered into adjacent metal, no splatter, no voids or porosity, and a smooth surface finish.

1. Provide continuous welds the full length and circumference of pieces being connected, no stitch welds where exposed to view.
2. Weld shall fill joint completely free of any voids or holes.
3. Grind welds exposed to view flush and smooth, do not leave grinder marks or visible scratches on surface of steel.

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.

2.3 FABRICATED ITEMS

A. Miscellaneous Framing and Supports: Fabricate from structural steel shapes, plates, and bars, of welded construction to sizes, shapes, and profiles indicated and required, to receive other adjacent construction retained by framing and supports.

1. Use mitered joints for field connection.
2. Cut, drill, and tap units to receive hangers, hardware, and similar items.
3. Hot-dip galvanize items on building exterior, exposed to exterior atmosphere or so indicated on the Drawings; prime paint other items.

B. Other Miscellaneous Fabricated Steel Items Shown On The Drawings: Fabricate as shown.

2.4 FINISHES - STEEL

A. Prime Paint:

1. Prepare surfaces to be primed in accordance with SSPC-SP-1 and SP 3.
2. Clean surfaces of rust, scale, oil; grease, and foreign matter prior to finishing.
3. Prime Painting: One coat.

B. Galvanizing: Galvanize after fabrication to ASTM A 123. Provide minimum 2.0 oz/sq ft galvanized coating.

1. Hot-dip galvanize fabricated items located on building exterior, exposed to exterior atmosphere or so indicated on the Drawings.

C. Blackened Steel Finish: Shop finished blackening and clear finish system; finishing work shall be accomplished by a finishing shop experienced in finishing steel similar to the requirements for this project.

1. Chemical Blackening: Blacken steel to uniform transparent black color matching approved finish sample using a chemical blackening process.
   a. The process shall give some control of the intensity, color and transparency of the blackened steel.
   b. Even out the color and expose some of the metal by rubbing a Scotchbrite pad over blackened surface until the desired appearance/color is achieved.
   c. The process shall be compatible with the clear finish system used.
   d. Blackening Products For Consideration: Presto Black® Gel manufactured by Birchwood Casey, phone (800) 328-6156.
2. Clear Finish: Apply 2 coats of clear solvent-base polyurethane finish to provide uniform appearance, gloss and coverage matching appearance of approved sample.
   a. Sheen: Semi-gloss, or as directed by Architect.
   b. Application: Spray.
   c. Manufacturer/Product:Sherwin Williams Rexthane Heavy Duty Polyurethane Varnish or similar.
3. Protection: Protect finished surfaces from damage during shipping and handling.

2.5 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: No misalignment allowed, fabricate flush.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 - EXECUTION

3.1 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.

3.2 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Beginning installation indicates installer's acceptance of conditions.

3.3 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.4 INSTALLATION

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 shop drawings.

D. Perform field welding in accordance with AWS 01.1.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized.

3.5 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 DIVISION 05 1200- STRUCTURAL STEEL

DIVISION 05 5000 - METAL FABRICATIONS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Miscellaneous Metal Fabrications

1.2 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings. Meier Architecture & Engineering plans S001, S101, S501, S502 & S503 have specific specifications for work at canopy installation. These will take precedence over this specification section and this specification section will be secondary to Meier drawings where references are not made in those drawings.

1.3 REFERENCES

A. All references shall be the latest adopted edition unless noted otherwise.

B. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel.

C. ASTM A 53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

D. ASTM A 123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings On Iron and Steel Products.

E. ASTM A 153/A A53M - Standard Specification for Zinc Coating (Hot-Dip) On Iron and Steel Hardware.

F. ASTM A 283/A 283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

G. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

H. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Tubing In Rounds And Shapes.

I. ASTM A 1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy With Improved Formability, Solution Hardened, And Bake Hardenable.

J. AISC M016- Manual for Steel Construction - Allowable Stress Design; American Institute of Steel Construction, Inc.

K. AISC S303 - Code of Standard Practice For Steel Buildings And Bridges; American Institute Of Steel Construction, Inc.

L. AWS A2.4 - Symbols for Welding, Brazing, And Non-Destructive Examination; American Welding Society.

M. AWS D1.1 - Structural Welding Code- Steel; American Welding Society.

N. SSPC (PM2) - Painting Manual, Vol. 2, Systems and Specifications; Steel Structures Painting Council.

1.4 SUBMITTALS

A. Shop Drawings: Submit shop drawings prepared by an experienced professional steel detailer showing each metal fabrication; indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

B. Product Data: Submit manufacturer's specifications, anchor details and installation instructions for products used in the fabrication of miscellaneous metal fabrications, including paint products and grout.

1.5 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC M016 and S303.

1. Comply with Section 10 of AISC S303 for Architecturally Exposed Structural Steel.

B. Welders: Qualified within the previous 12 months for type of welding required for this project in accordance with AWS D-1.1 and AWS D-1.4 and Washington Association of Building Officials (WABO) certified as required by local building official having jurisdiction on this project.

C. Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting wherever taking field measurements before fabrication might delay work.

D. Furnish inserts and anchoring devices which must be set in concrete for installation of miscellaneous metal work. Coordinate delivery with other work to avoid delay.

E. Shop Assembly: Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

F. Erector Qualifications: Company specializing in performing the work of this section with minimum 5 years' experience.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Steel Sheet: ASTM A 1008.

B. Solid Steel Bars, Plates & Shapes: ASTM 36/A 36M.

C. Steel Tubing: ASTM A 500, Grade B.

D. Plates: ASTM A 283.

E. Pipe: ASTM A 53, Grade B Schedule 40 and Schedule 80, black finish.

F. Bolts, Nuts, and Washers: ASTM A 325 galvanized to ASTM A 153/A 153M for galvanized components.

G. Welding Materials: AWS D1.1; type required for materials being welded.

H. Non-shrink Grout: As specified in the structural general notes.

I. Shop and Touch-up Primer: SSPC-paint 15, type 1, red oxide.

J. Touch-up Primer for Galvanized Surfaces: SSPC-paint 20 type 1 inorganic zinc rich.

2.2 FABRICATION

A. Coordinate and confirm field dimensions and conditions prior to 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. Welds: Use welding equipment/technique that provides a clean, neat, weld bead of consistent width and appearance, with low profile and edges feathered into adjacent metal, no splatter, no voids or porosity, and a smooth surface finish.

1. Provide continuous welds the full length and circumference of pieces being connected, no stitch welds where exposed to view.
2. Weld shall fill joint completely free of any voids or holes.
3. Grind welds exposed to view flush and smooth, do not leave grinder marks or visible scratches on surface of steel.

E. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints but tight, flush, and hairline. Ease exposed edges to small uniform radius.

F. Welding shall conform to structural welding code AWS D-1.1.

G. Fabricate connections for bolt, nut, and washer connectors.

H. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

I. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.3 FABRICATED ITEMS

A. Miscellaneous Framing and Supports: Fabricate from structural steel shapes, plates, and bars, of welded construction to sizes, shapes, and profiles indicated and required, to receive other adjacent construction retained by framing and supports.

1. Use mitered joints for field connection.
2. Cut, drill, and tap units to receive hangars, hardware, and similar items.
3. Hot-dip galvanize items on building exterior, exposed to exterior atmosphere or so indicated on the drawings; prime paint other items.

B. Other miscellaneous fabricated steel items shown on the drawings: Fabricate as shown.

2.4 FINISHES – STEEL

A. Prime paint:

1. Prepare surfaces to be primed in accordance with SSPC-SP-1 and SP 3, power tool cleaning.
2. Clean surfaces of rust, scale, oil, grease, and foreign matter prior to finishing.
3. Prime painting: one coat.

B. Galvanizing: Galvanize after fabrication to ASTM A 123. Provide minimum 2.0 oz/sq ft galvanizing coating.

1. Hot-dip galvanize fabricated items located on building exterior, exposed to exterior atmosphere or so indicated on the drawings.
2. Clear Finish: Apply 2 coats of clear solvent-base polyurethane finish to provide uniform appearance, gloss and coverage matching appearance of approved sample.
   a. Sheen: Semi-gloss, or as directed by Architect.
   b. Application: Spray.
   c. Manufacturer/Product: Sherwin Williams Rexthane Heavy Duty Polyurethane Varnish or similar.
3. Protection: Protect finished surfaces from damage during shipping and handling.

2.5 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: No misalignment allowed, fabricate flush.

C. Maximum Misalignment Of Adjacent Members; 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation from Plane: 1/16 inch in 48 inches.

2.6 MISCELLANEOUS METAL ITEMS

A. Rough Hardware:

1. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangars, dowels and other miscellaneous steel and iron shapes as required.

2. Manufacture or fabricate items of sizes, shapes and dimensions required.

B. Edge Angles:

1. Provide edge angles fabricated of structural steel shapes as shown, of all welded construction with radius corners and continuously welded joints.

C. Provide other miscellaneous steel items; work of this section is not limited to the items listed above.

PART 3 – EXECUTION

3.1 COORDINATION

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

3.2 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Beginning installation indicates installer's acceptance of conditions.

3.3 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Provide temporary shores, guys, braces and other supports during erection to keep structural steel secure, plumb and in alignment against temporary construction loads and loads equal in intensity to design loads.

C. Remove temporary supports only after all permanent structural members, braces, shear walls, diaphragms and brace frames are in place and properly connected.

D. Furnish setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete construction. Coordinate delivery of such items to project site.

3.4 INSTALLATION

A. Fastening to In-place Construction:

1. Provide anchorage devices and fasteners where necessary for securing miscellaneous metal items to in-place construction including threaded fasteners for concrete inserts, toggle bolts, through-bolts, and other connectors as required.

B. Cutting, Fitting and Placement:

1. Perform cutting, drilling and fitting required for installation of miscellaneous metal items. Set work accurately in location, alignment and elevation, plumb level, true and free of rack, measured from established lines and levels with lines visually parallel. Provide temporary bracing or anchors in framework for items which are to be built into concrete or similar construction.

2. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat, do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

C. Field Welding:

1. Comply with AWS D1.1 code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work.

D. Touch-up Paint:

1. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 1.0 mils.

E. Install items plumb and level, accurately fitted, free from distortion or defects.

F. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

G. Obtain approval prior to site cutting or making adjustments not scheduled.

H. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized.

3.5 ERECTION

A. Erect structural steel accurately in locations and to elevations required in compliance with AISC S303.

B. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Field weld components as indicated on drawings in conformance with AWS D1.1.

D. Install and tighten bolted connections as indicated on drawings.

E. Do not field cut or alter structural members without approval of architect.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

G. Grout solidly between bearing plates and bearing surfaces, complying with manufacturer's instructions for non-shrink grout. Trowel grouted surfaces smooth, splaying neatly in accordance with manufacturer's specification for grout.

3.6 ERECTION TOLERANCES

A. Maintain erection tolerances of structural steel with in AISC S303 and the following:

1. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.

2. Maximum Offset from True Alignment: 1/4 inch.

3. Maximum Out-Of-Position: 1/4 inch.

END OF DIVISION 05 5000 – METAL FABRICATIONS

DIVISION 061000 – ROUGH CARPENTY

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Rough Carpentry.

1.2 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings.

1.3 REFERENCES

A. All references shall be the latest adopted edition unless noted otherwise.

B. ASTM C 79 – Standard Specification for Gypsum Sheathing Board.

C. AWPA U2 – Lumber, Timbers, Bridge Ties and Mine Ties—Preservative Treatment by Pressure Processes; American Wood – Preservers' Association.

D. PS 20 – American Softwood Lumber Standard.

E. IBC – International Building Code, 2016 Edition.

F. ICC – International Code Council.

G. WCLB (GR)- Standard Grading and Dressing Rules No. 17; West Coast Lumber Inspection Bureau.

H. WWPA G-5 – Western Lumber Grading Rules; Western Wood Products Association.

1.4 QUALITY ASSURANCE

A. Lumber: Comply with PS 20 and approved grading rules and inspection agencies.

1. Acceptable Lumber Inspection Agencies: WCLB and WWPA.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Cover wood products to protect against moisture and growth of mold/mildew. Support stacked products to prevent deformation and to allow air circulation.

PART 2 – PRODUCTS

2.1 DIMENSION LUMBER

A. Species: As specified in the General Notes on the drawings and these specifications.

B. Grade: As specified in the General Notes on the drawings and these specifications.

C. Sizes: Nominal sizes as indicated on drawings, S4S.

D. Moisture Content: Maximum 19 percent, stack or kiln-dried.

E. Backing: 2 x 6 and larger solid lumber, cut from No. 2 Douglas Fir/Larch dimension lumber that is free of large knots, splits or other defects that would reduce the strength of the backing piece.

F. Wood Nailers and Insulation Stops For Roofing: Preservative pressure treated wood No. 2 Hem/Fir or Douglas Fir/Larch.

2.2 CONSTRUCTION PANELS

A. APA Rated Wall Sheathing: As specified in the General Notes on the drawings and these specifications.

B. APA Rated Roof Sheathing: As specified in the General Notes on the Structural Drawings.

C. Miscellaneous Panels:

1. Electrical /Phone Component Mounting: PS 1, B-C, exterior grade, fire retardant treated.

2.3 ACCESSORIES

A. Fasteners, Anchors and Anchor bolts: As specified in the General Notes on the drawings and these specifications.

1. Fasteners on Building Exterior, in High Humidity or in Preservative Pressure Treated Wood: Stainless steel or hot-dipped galvanized.
   a. Use only stainless steel fasteners in wood treated with ACZA preservative treatment.
2. Anchor For Concrete and Masonry: As specified in the General Notes on the drawings and these specifications and the following:
   a. Concealed Location: Zinc plated steel, expansion type fasteners manufactured by Rawl or Hilti.
   b. Exposed Location: Hot-dipped galvanized or stainless steel.
   c. Preservative Pressure Treated Wood: Hot-dipped galvanized or stainless steel.
      1) Use only stainless steel anchors in wood treated with ACQ or CA preservative treatment.

B. Die-Stamped Framing Connectors: As specified in the General Notes on the drawings and these specifications; hot dipped galvanized steel, ICC approved, Simpson *StrongTie* or similar.

C. Construction Adhesive: APA AFG-01, Waterproof, solvent base, air cure type, cartridge dispensed.

D. Building Paper: 30 lb asphalt saturated felt.

E. Sheet Metal Flashing: Specified in Section 076200 – Sheet Metal Flashing And Trim.

F. Joist Hangers: As specified on the Structural Drawings; hot dipped galvanized steel, ICC approved, sized to suit framing conditions and loads, Simpson StrongTie or similar.

G. Stainless steel fasteners for installation of pressure treated decking as recommended by manufacture's installation instructions.

2.4 FACTORY WOOD TREATMENT

A. Preservative Pressure Treatment (PPT) of Lumber Above Grade at new building deck and at floating docks: AWPA Treatment UC4A Note 1 using waterborne preservative to 0.40 percent retention. Use Alkaline Copper Quaternary (ACQ), Micronized Copper Azole (MCA) or Copper Azole Type C (CAC) preservative. Lumber type to be Douglas Fir.

1. Kiln dry after treatment to maximum moisture content of 19 percent.
2. Do not incise wood exposed to view in the finish construction.
3. Treat wood in contact with roofing, flashing, or waterproofing.
4. Treat wood in contact with masonry or concrete.

B. Preservative Pressure Treatment (PPT) of Lumber in Contact with Soil: AWPA Treatment UC4A using waterborne preservative designated in AWPA as suitable for ground contact to 0.40 percent retention.

C. Clear sealer as recommended by manufacturer of Elite Decking for protection of pressure treated lumber.

PART 3 – EXECUTION

3.1 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.

B. Coordinate the layout of wall, column framing to accommodate the location of penetrations, recessed items and to minimize cutting framing members and/or framing openings in these assemblies.

C. Coordinate the location of holes in framing and sheathing to assure free flow of attic ventilation air through building framing.

D. Coordinate the layout and location of wall framing and solid 2x wood backing required for attachment and support of toilet accessories specified in Section 10 2800.

E. Coordinate the layout and location of wall framing and solid 2x wood backing required for attachment and support of surface-mounted plumbing items specified in Division 22.

F. Coordinate the layout and location of wall framing and solid 2x wood backing required for attachment and support of surface-mounted electrical items specified in Division 26.

3.2 GENERAL

A. Drilling, Notching and Cutting: Coordinate and control drilling, notching and cutting of all framing members required to admit or install work of other trades, do not violate the structural integrity of any woo framed members, comply with restrictions and requirements of Structural Engineer, IBC and local Building Official.

B. Nailing: Nailing shall conform to the size and spacing shown on the drawings; where nailing is not indicated, provide nailing per IBC Table 2304.9.1. Fastener Schedule.

C. Wood In Contact With Concrete & Masonry shall be preservative pressure treated.

1. At ends of beams, behind engineered wood ledgers or at similar situations, separate wood from concrete or masonry with building paper.

3.3 FRAMING INSTALLATION

A. Cut and fit framing members accurately, set members level, plumb, and true to line. Discard crooked or twisted pieces or with defects that would lower required strength or result in unacceptable appearance of exposed member.

B. Wall Plates: Comply with size(s) shown on drawings.

1. Bottom plates bearing on concrete shall be preservative pressure treated.
2. Bore holes of proper diameter for anchor bolts accurately; oversized or elongated holes are not acceptable.

C. Wall Framing: Cull out crooked, twisted or inconsistent width framing, align framing members so that finish walls are straight and free of waviness.

D. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

E. Install structural member's full length without splices.

F. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated on Drawings and General Notes, but not less than required by applicable codes.

G. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.

H. Provide framing members at all vertical ends/edges of GWB and wall sheathing and at ends of floor sheathing.

I. Construct headers at floor, roof and wall openings required by the design and work of other trades. Where not shown, provide double joist headers; use metal joist hangers unless otherwise detailed.

J. Frame wall openings required by the design and for work of other trades. Where not shown, provide minimum two or more studs at each jamb; support heaters on cripple studs.

K. Provide blocking between framing members wherever required by Drawings, IBC, Building Official, or good construction practice.

L. Provide additional framing members and/or modifications required to accommodate work of other trades.

M. Provide backing and miscellaneous members as indicated or as required to support work provided by other trades (finishes, fixtures, specialty items, trim, etc.).

N. Fire Stops: Install solid 2x lumber blocking fire stops (or other approved material) in accordance with the requirements of the IBC and the Building Official including, but not limited to the following locations:

1. In concealed spaces of stud walls and partitions, including furred spaces, at the ceiling and floor levels and at 10-foot intervals both horizontal and vertical.
2. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, cove ceilings and suspended lay-in ceilings.
3. Concealed spaces behind combustible trim and finish: Fire stop at intervals not exceeding 10 feet.
4. Concealed spaces behind exterior cornices or other elements: Fire stop at intervals not exceeding 20 feet.
5. In wall framing in line with stair stringers and between stair stringers and wall.

3.4 INSTALLATION OF CONSTRUCTION PANELS

A. Wall Sheathing: Orient sheathing panels with long dimension perpendicular to wall studs and end over firm bearing, stagger end joints between adjacent panels, securely nail as noted on drawings or, where not noted, per code.

1. Use only full sized panels, cut to fit; do not use cutoff ends pieced together where full size panel will fit.
2. Edge/End Gap: Install sheathing panels with gap between sheets as recommended by APA.

B. Roof Sheathing: Secure panels perpendicular to framing members, with ends staggered and sheet ends over firm bearing.

1. Use only full sized panels, cut to fit; do not use cutoff ends pieced together where a full size panel will fit.
2. Edge/End Gap:Install sheathing panels with gap between sheets as recommended by APA.
3. Provide solid edge blocking between sheets where shown on Drawings.
4. Nail panels to framing at spacing indicated on Drawings.
5. Provide ventilation holes through sheathing for each roof joist bay or areas as indicated on Drawings and as required for free flow of code required attic ventilation air.

3.5 INSTALLATION - WOOD BACKING

A. Provide backing and miscellaneous 2x framing members as indicated or as required to support work provided by other trades (finishes, fixtures, specialty items, trim, etc.).

B. Door Hardware:

1. Provide 2x6 backing for door wall stops.
2. Provide 2x8 solid wood backing for magnetic door hold-opens.

C. Corner Guards: Provide solid 2x wood backing for corner guard screw attachment points that do not occur on framing members to facilitate secure attachment of corner guards.

D. Toilet Partitions: Provide solid 2x wood backing for toilet partition screw attachment points that do not occur on framing members to facilitate secure attachment of partitions.

E. Toilet Accessories: Provide solid 2x wood backing for attachment of toilet accessories. Backing for grab bars shall be installed support 300 pound sustained load on each backing piece without deflection or failure.

F. Janitor's Sink Faucet Wall Brace: Provide solid 2x wood backing for screw attachment points on sink faucet wall braces that do not occur on framing members to facilitate secure attachment of faucet wall brace and integral pail.

3.6 INSTALLATION OF ACCESSORIES AND MISCELLANEOUS WOOD

A. Install sill gasket directly on concrete foundation under exterior wall plates. Puncture gasket cleanly and fit tightly to protruding foundation anchor bolts.

B. Coordinate installation of glue laminated structural units, prefabricated wood trusses, and plywood web joists.

C. Construct curbs at roof openings except where prefabricated curbs are provided. Form corners by alternating lapping side members.

D. Backing for Owner Installed Items: Provide backing for Owner installed items indicated on Drawings.

E. Apply all deck boards in accordance with manufacture’s written instructions.

3.7 SITE APPLIED WOOD TREATMENT

A. Apply factory end cut solution at all field cut ends as per manufacturer's instructions to maintain warranty. Apply clear finish preservative to all pressure treated wood decking as recommended by manufacturer for inhibiting weathering of product.

B. Apply preservative treatment compatible with factory-applied treatment at site-sawn cuts, complying with manufacturer's instructions.

C. Allow preservative to dry prior to erecting members.

3.8 DRILLING, CUTTING AND NOTCHING

A. Do not drill, cut, notch or alter any structural framing, except as noted on the Drawings and in this specification, without the approval of Engineer and/or code requirements.

3.9 WORKMANSHIP

A. Carpentry work shall be accomplished using the best workmanship, including the following:

1. Crooked, bowed, twisted or damaged lumber culled out and used for blocking/backing.
2. End cuts at proper angle and length for tight fit.
3. Nailed connections free of splitting or damage.
4. Framing aligned plumb and square.
5. Framing conforming to specified tolerances.
6. Bolt/anchor holes not oversized or misaligned.
7. Panel ends aligned at center of supporting framing member.
8. Panel ends and edges properly gapped.
9. Consistent nail spacing on panels.

B. Any part of the carpentry work installed with improper or poor workmanship shall be removed and replaced at Contractor's expense.

3.10 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum, provided other tolerances are met.

B. Wall Plane (Flatness): Maximum of 1/4" in 10'-0" out of plane (this equates to no more than 1/8" gap at each end of a 10'-0" long straightedge center on high spot in wall, or no more than 1/8" gap at center of a 10'-0" long straightedge centered on low spot in wall).

C. Variation from Plane (Other than Walls): 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

END OF DIVISION 06 1000 – ROUGH CARPENTRY

DIVISION 07 41 13 - METAL ROOF PANELS

PART 1- GENERAL

1.1 SUMMARY

A. Section Includes: Standing seam steel roofing panels, including trim accessories.

1.2 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings.

1.3 REFERENCES

A. General: Standards listed by reference form a part of this specification section. Standards listed are identified by issuing authority, abbreviation, designation number, title or other designation. Standards subsequently referenced in this Section are referred to by issuing authority abbreviation and standard designation.

B. ASTM International:

1. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A 792 - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
3. ASTM A 1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
4. ASTM D 2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
5. ASTM D 4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
6. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
7. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
8. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
9. ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference.
10. ASTM E 1680 - Standard Test Method for Rate of Air Leakage through Exterior Metal Roof Panel Systems

C. Factory Mutual (FM): FM Approval 4471: Class 1 Panel Roofs.

D. Underwriters Laboratories (UL):

1. UL 263 - Fire Tests of Building Construction and Materials.
2. UL 580 - Tests For Uplift Resistance of Roof Assemblies.
3. UL 790 - Standard Test Methods for Fire Tests of Roof Coverings.
4. UL 2218 - Impact Resistance of Prepared Roof Covering Materials.

E. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA): "Architectural Sheet Metal Manual."

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meetings: Conduct preinstallation meeting to clarify Project requirements, substrate conditions, manufacturer’s installation instructions and manufacturer’s warranty requirements with General Contractor.

1.5 ACTION SUBMITTALS

A. Product Technical Data: For each type of product required, including manufacturer's preparation recommendations, storage and handling requirements, and recommended installation methods.

B. Qualifications Statements: For manufacturer and installer.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For installed products including maintenance methods and precautions against cleaning materials and methods detrimental to finishes and performance.

B. Warranty: Warranty documents required in this section.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Provider of advanced installer training.
2. Minimum of ten years experience in manufacturing metal roof systems.
3. Provider of products produced in a permanent factory environment with fixed roll-forming equipment.

B. Installer Qualifications:

1. At least five years experience in the installation of structural standing seam steel roof panels.
2. Experience on at least five projects of similar size, type and complexity as this Project that have been in service for a minimum of two years with satisfactory performance of the roof system.
3. Employer of workers for this Project who are competent in techniques required by manufacturer for installation indicated and who shall be supervised at all times when material is being installed.

1.8 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.

B. Storage: Store materials above ground, under waterproof covering, protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Provide proper ventilation of metal panel system to prevent condensation build-up between each panel and trim or flashing component. Store products in manufacturer's unopened packaging until ready for installation.

C. Handling: Exercise caution in unloading and handling metal panel system to prevent bending, warping, twisting and surface damage.

1.9 WARRANTY

A. Special Warranty: Installer's standard form in which installer agrees to repair or replace standing seam panels that fail due to poor workmanship or faulty installation within the specified warranty period.

1. Warranty Period: 2 years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 STRUCTURAL STANDING SEAM STEEL ROOF PANELS

A. General: Structural standing seam sheet steel panels complying with ASTM E330.

B. Basis of Design Product: Subject to compliance with requirements provide Metal Sales Manufacturing Corporation; Clip Loc or approved equal.

C. Product Options:

1. Panel Coverage: 16 inches (406.4 mm).
2. Rib Height: 1-5/8 inches (41.3 mm).
3. Profile: Flat
4. Material: Aluminum-zinc alloy-coated steel sheet, ASTM A792, Class AZ50 coating designation, structural quality, Grade 80, 0.0236-inch (0.60-mm) minimum thickness.
5. Minimum Roof Slope Capability: 1:12.
6. Attachment: Concealed clip designed for thermal movement.
7. Insulation Capacity: Accommodate blanket insulation up to 4 inches (101.6 mm) thickness.
8. Side Lap: Snap-seam.
9. Application: Applied over open framing or solid substrate.
10. Surface Finish: PVDF Kynar 500 Colorfast45.
11. Color: As selected by Owner from manufacturer's full product range.
12. Fire Resistance Rating: Comply with UL 263 and UL 790 Class A Fire Resistance Rating.
13. Impact Resistance: Comply with UL 2218 Class 4.
14. Air Infiltration: Tested according to ASTM E 1680.
15. Water Infiltration: Tested according to ASTM E 1646.
16. Wind Uplift Resistance: Tested according to ASTM E 1592 and in compliance with UL 580, Class 90 Wind Uplift, Construction #254, 255,261, 303, 342, 343, 364, 436, 445, 446, 447, 448, 508 and 508A.
17. Sealant: Factory-applied side lap sealant

D. Performance Criteria:

1. Wind Uplift Resistance: 90 mph.

2.2 ACCESSORIES

A. General: Provide all trims and flashings required at walls, rakes and edges for complete finish of roofing system. Provide custom fabricated interior gutter system as shown with rail leaders and downs spouts as shown on drawings.

B. Products:

1. Basis of Design Product: Subject to compliance with requirements provide Metal Sales Manufacturing Corporation or approved equal.
2. Color: As selected by Owner from manufacturer's full product range.

2.3 SOURCE QUALITY CONTROL

A. Source: Obtain structural standing seam steel roof panels, trim and other accessories from a single manufacturer.

B. Quality Control: Obtain structural standing seam steel roof panels, trim and other accessories from a manufacturer capable of providing on-site technical support and installation assistance.

PART 3 EXECUTION

3.1 PREPARATION

A. Miscellaneous Framing: Install furring, eave angles, subpurlins, and other miscellaneous roof panel support members and anchorage according to metal roof panel manufacturer's recommendations.

3.2 STRUCTURAL STANDING SEAM METAL ROOF PANEL INSTALLATION

A. General: Comply with panel manufacturer's installation instructions including but not limited to special techniques, interface with other work, and integration of systems.

B. Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and using proper fasteners as recommended by panel manufacturer.

C. Tolerances: As per manufacturer's recommendations.

3.3 ACCESSORY INSTALLATION

A. General: Install accessories using techniques recommended by manufacturer and which will assure positive anchorage to building and weather tight mounting. Provide for thermal movement. Coordinate installation with flashings and other components.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and the SMACNA "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and install units to true level. Install work with laps, joints, and seams that will be permanently watertight.

3.4 CLEANING

A. Remove temporary coverings and protection of adjacent work areas.

B. Repair or replace any installed products that have been damaged.

C. Clean installed panels in accordance with manufacturer's instructions prior to Owner's acceptance.

D. Remove and lawfully dispose of construction debris from Project site.

3.5 PROTECTION

A. Protect installed product and finish surfaces from damage during construction.

END OF DIVISION 07 41 13 - METAL ROOF PANELS

DIVISION 07 6200 – SHEET METAL FLASHING AND TRIM

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Provide all labor, equipment, and materials fabricate and install the following:

1. Roof flashings
2. Wall flashings
3. Gutters and downspouts
4. Thru-wall flashing
5. Sill flashings
6. Sheet metal fascia's

1.2 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (galvanized) or Zinc- Iron Alloy-Coated (galvannealed) by the Hot-Dip Process.
2. ASTM A 792 Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process.
3. ASTM B 209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
4. ASTM B 221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
5. ASTM D 692 Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
6. ASTM B 32 Solder Metal.
7. ASTM B 486 Paste Solder.
8. ASTM D 226 Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
9. ASTM D 486 Asphalt Roof Cement, Asbestos-free.

B. American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI):

1. ANSI/SPRI ES-1 Testing and Certification Listing of Pre-Manufactured Fabricated Edge Metal.

C. Warnock Hersey International, Inc., Middleton, WI (WH).

D. Factory Mutual Research Corporation (FMRC).

E. Underwriters Laboratories (UL).

F. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):

1. Latest Edition Architectural Sheet Metal Manual.

G. National Roofing Contractors Association (NRCA):

1. Roofing and Waterproofing Manual.

H. American Society of Civil Engineers (ASCE):

1. ASCE 7-05 Minimum Design Loads for Buildings and Other Structures.

I. FS QQ-L-201 - Specification for Lead Sheet

J. FS O-F-506 - Flux, Soldering, Paste and Liquid

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's specification data sheets for each product.

1. Include material characteristics and installation recommendations.
2. Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specified can be approved.

B. Samples: Submit two samples, 12 x 12 inch in size illustrating typical external comer, internal comer, valley, junction to vertical dissimilar surface, material and finish if requested by Architect.

C. Shop Drawings:

1. For manufactured and ANSI/SPRI approved pre-manufactured metal coping cap system, and all other sheet metal fabrications.
2. Shop drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashing, termination's, and installation details.
3. Indicate type, gauge and finish of metal.

D. Sample Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner. Warranty shall be provided from one manufacturer and part of a total Edge-to-Edge roof warranty that includes the modified bitumen membrane roof system, pre-manufactured metal edge fascia system, and pre-manufactured metal coping cap system.

E. Certification: Submit roof manufacturer's certification that metal fasteners furnished are acceptable to roof manufacturer.

1.5 QUALITY ASSURANCE

A. Reference Standards: Comply with details and recommendations of SMACNA Manual for workmanship, methods of joining, anchorage, provisions for expansion, etc.

B. If required, fabricator/installer shall submit work experience and evidence of adequate financial Responsibility. The Architect reserves the right to inspect fabrication facilities in determining qualifications.

C. Obtain all components of roof system from a single manufacturer including any roll good materials if required. Any secondary products that are required, which cannot be supplied by the specified manufacturer, must be recommended and approved in writing by primary manufacturer prior to bid submittal.

D. Manufacturer shall have in place a documented, standardized method for maintaining quality control such as IS0-9001 approval.

E. The roof material manufacturer shall conduct all required periodic inspections of work in progress as described herein and shall furnish written documentation of all such inspections.

F. Fabricator/Installer Qualifications:

1. Minimum of 5 years experience in fabrication and installation of architectural sheet metal similar in material, design, and scope to this project with a record of successful in-service performance;
2. Installer shall employ only skilled, journeyman sheet metal workers to install the work of this section.
3. Provide list of at least 10 recently completed projects with addresses within 30 miles of this project upon request.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.

B. Stack pre-formed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials which may cause discoloration or staining.

1.7 JOB CONDITIONS

A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for pre-formed metal roofing system.

B. Protection:

1. Provide protection or avoid traffic on completed roof surfaces.
2. Do not overload roof with stored materials.
3. Support no roof-mounted equipment directly on the roofing system.

C. Ascertain that work of other trades which penetrates the roof or is to be made watertight by the roof, is in place and approved prior to installation of roofing.

1.8 DESIGN AND PERFORMANCE CRITERIA

A. ANSI/SPRI ES-1 (Pre-manufactured Metal Edge Fascia System & Pre-manufactured Metal Coping Cap System):

1. ANSI/SPRI ES-1 test reports must be submitted for specific project wind uplift requirements per Section 1.16 Design and Performance Criteria within Modified Bituminous Membrane Roofing specification.

B. Thermal Expansion and Contraction:

1. Completed metal edge coping cap system, and metal edge fascia can dam system, shall be capable of withstanding unlimited thermal expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.

1.9 WARRANTIES

A. Material Manufacturer's Warranty:

1. Pre-finished metal material shall require a written 20-year non-prorated warranty covering fade, chalking and film integrity. The material shall not show a color change greater than 5 NBS color units per ASTM D 2244 or chalking excess of 8 units per ASTM D 659. If either occurs material shall be replaced per warranty, at no cost to the Owner.
2. Provide a manufacturer's Edge-to-Edge roof warranty: Warranted materials shall be free of defects in material and workmanship for 5 years after shipment. The manufacturer shall also furnish their standard decorative finish warranty.
3. At the request of the Owner, the Manufacturer will provide an annual inspection. The request for annual inspections shall be applicable for the life of the warranty.

B. Contractor's Warranty:

1. The Contractor shall provide the Owner with a notarized written warranty assuring that all sheet metal work including caulking and fasteners to be watertight and secure for a period of 2 years from the date of final acceptance of the building. Warranty shall include all materials and workmanship required to repair any leaks that develop. Correct any flashing or sheet metal item that is defective, improperly installed or leaking for a period of 2 years at no cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pre-Finished Sheet Metal: Steel sheet conforming to ASTM A792 with minimum yield of 40,000 psi and AZ50 (Zincalume or Galvalume) protective coating.

1. Finish Coating shall be a premium fluoropolymer coating with minimum of 70% Kynar 500 or Hy/ar 5000 base resin, factory-applied, oven baked and applied under controlled condition; 1 mil dry film thickness minimum (exclusive of primer); 20 year warranty.
2. Color: As specified or from manufacturers standard colors.
3. Protective film: Provide strippable plastic film, applied to finish of coil stock before forming, or plastic interleaf, applied to panel after forming.
4. Manufacturer: Same manufacturer providing metal roofing and siding specified in Section 07 4000.

B. Stainless Steel Sheet: Conform to ASTM A 666, Type 304, mill finish.

C. Aluminum Sheet: Clear anodized aluminum sheet matching appearance of aluminum storefront and conforming to ASTM B209 5005-H14.

D. TPO-Clad/Coated Sheet Metal: 24-gauge galvanized steel with minimum 0.035- inch thick non-reinforced TPO. Coordinate with Single-Ply Roofing Manufacturer.

E. Solder Metal: Conform to ANSI/ASTM B32, provide flux formulated for specific metal to achieve permanent bond to metal substrate.

F. Welded Stainless Steel Wire Mesh (Downspout Strainers): Type 304 welded stainless steel wire mesh, wires spaced at %" on center each way, 0.022 inch wire diameter, available from TWP, Inc. (800) 227-1570.

G. PVC Pipe & Fittings: Schedule 40 PVC pipe and drainage fittings.

1. Provide transition fitting for connection to underground storm drain system.
2. Provide PVC primer and cement for cementing fittings watertight.
3. Provide 4" PVC pipe and T fittings running to downspouts for rain water under canopies. Provide beam clamps, all thread and clevis hangers for suspension of pipe under canopy structure.

H. Pitch Pockets shall be either 22 gauge stainless steel or 20 oz. copper, and have all comers soldered or welded, and a continuous deck flange at comers.

I. Miscellaneous Metals and Flashings:

1. Architectural Metal Wall Panels: Metal trim and flashing is specified in Division 7 Section "Metal Wall Panels".
2. Surface Mounted Counterflashings: Kynar finished Aluminum, 0.050 inch thick.
3. Equipment Slip Flashing: Mill finished Aluminum, 0.040 inch thick.
4. Equipment Support Flashing: Mill finished Aluminum, 0.040 inch thick.
5. Metal Drip Edges: Kynar finished Aluminum, 0.040 inch thick.
6. Solder for Stainless Steel: ASTM B 32, Grade Sn60, used with an acid flux of type recommended by stainless-steel sheet manufacturer; use a noncorrosive rosin flux over tinned surfaces.
7. Solder for Copper: ASTM B 32, Grade Sn50, 50 percent tin and 50 percent lead.
8. Fasteners: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened. Exposed fasteners shall have a neoprene or other suitable weatherproofing washer.
9. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coat.
10. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
11. Sealing Tape: Pressure sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
12. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
13. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.
14. Roofing Cement: ASTM D 4586, Type I, asbestos free, asphalt based.
15. Zinc-Coated Steel Sheet: ASTM A 526, 0.20% copper, 26 gauge (0.0179 inch); designation G90 hot-dip galvanized, mill phosphatized.

16. Stainless Steel Sheet: Type 302/304, ASTM A 167, 26 gauge, (0.0217 inch), annealed except dead soft where fully concealed by other work, 2D (dull) finish.
17. Copper Sheet: ASTM B 370, 20 oz., temper HOO (cold-rolled).
18. Lead-Coated Copper Sheet: ASTM B 101. Type I, Class A (12-15 I lb. of lead coating per 100 sq. ft.), 17.1 oz. (0.022 inch).
19. Zinc Alloy Sheet: Zinc with 0.6% copper and 0.14% titanium; 0.27 inch thick (21 gauge); standard (soft) temper, mil finish.

2.2 ACCESSORIES AND RELATED MATERIALS

A. Metal Primer: Zinc chromate type.

B. Plastic Cement: ASTM D 4586

C. Sealant: As required by material manufacturer.

D. Lead: Meets Federal Specification QQ-L-201, Grade B, 4 pounds per square foot.

E. Solder: ANSI/ASTM B32; 95/05 type.

F. Flux: FS O-F-506.

G. Underlayment: EPDM membrane where specified/detailed, one ply of specified base flashing modified membrane or approved equal.

H. Fasteners:

1. Nails and Fasteners: Non-ferrous metal or hot dipped galvanized fasteners complying with ASTM A 153 and connectors complying with ASTM A 653, Class G185; Type 304 or Type 316 stainless steel fasteners and connectors shall be used with new generation of pressure-treated wood; except that hard copper nails shall be used with copper; aluminum or stainless steel nails shall be used with aluminum; and stainless steel nails shall be used with stainless steel. Fasteners shall be self-clinching type of penetrating type as recommended by the manufacturer of the wood blocking/nailer material. Nails and fasteners shall be flush-driven through flat metal discs of not less than 1 inch diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than 1 inch diameter are used.
2. Fastening shall conform to ANSI/SPRI ES-1 and/or Factory Mutual 1-90 requirements or as stated on section details, whichever is more stringent and per the manufacturer's requirements.

I. Metal Termination Bars:

1. Shall be heavy flat bar aluminum unless otherwise recommended by membrane manufacturers.
2. Material shall be 0.125 inch x 1 inch (minimum) aluminum conforming to ASTM B 221, mill finish. Bars shall have holes for fasteners at 6 inches o.c. maximum.

J. Fasteners: All fasteners shall be manufactured in the United States or Canada.

1. Fasteners For Pre-Finished Sheet Met.al Fabrications:
   a. Exposed Condition - Wood or Sheet Metal Substrate: Type 304 stainless steel screws with self-sealing neoprene head.

b. Exposed Condition - Masonry/Concrete Substrate: %" diameter Rawl Zamac Nailin expansion anchor with mushroom style head, and body formed of Zamac 7 alloy, Type 304 stainless steel nail; 1-1/2" minimum embedment; seal head with sealant.
    1) Powder/power driven fasteners are not permitted.
c. Concealed Condition: Hot dipped galvanized nails or screws or expansion anchors as appropriate for the substrate.
    1) Powder/power driven fasteners are not permitted.

2. Fasteners For Continuous Cleats (Concealed): Hot dipped galvanized screws, nails or expansion anchors as appropriate for the substrate.
    a. Powder/power driven fasteners are not permitted.
3. Fasteners For Downspout Brackets:
    a. Into Sheet Metal: Stainless steel sheet metal screws.
    b. Into Masonry/Concrete:Stainless steel expansion anchors, %" diameter (minimum), 1-3/4" embedment (minimum).
        1) Powder/power driven fasteners are not permitted.

K. Tape For Separation Between Dissimilar Metals: 10 mil PVC adhesive backed tape.

L. Sealant: Provide sealant and accessories specified in Section 07 7900.

M. Plastic Cement: Asphalt cutback mastic conforming to ASTM D 4586 Type II.

2.3 FABRICATION

A. General:

1. Field measure and verify site conditions prior to fabrication, accommodate field conditions.
2. Fabricate in accordance with SMACNA (Architectural Sheet Metal Manual, Current Edition), NRCA and as required by roofing manufacturer to profiles shown on Drawings (where conflicts exist, the most restrictive requirement shall apply).
3. Form sections true to shape, accurate in size, square, and free from distortion or defects.
4. Furnish in minimum 1O' lengths.
5. Hem all exposed edges 1/2 inch on underside.
6. Lap joints shall be fabricated to allow 6 Inches minimum overlap.
7. Fabricate head flashings in walls (at windows, louvers, etc.) with end dams to prevent water running off ends and behind siding.
8. Shop fabricate all items including corners, end terminations and special conditions for neat appearance, field bending and fabrication is not acceptable.
9. Protect pre-finished metal from scratches or damage during fabrication.
10. End conditions, corners, transitions, terminations, and changes in the plane or direction of flashings, copings, cornices, gutters and other sheet metal fabrications shall be custom fit and fabricated to accommodate field conditions and to provide a weatherlapped, watertight assembly and transition. Workmanship and custom fabrications shall conform to similar conditions found in SMACNA Manual and to good sheet metal fabrication practice and shall not rely solely on sealant for their watertight integrity.

B. Reglets and Counter Flashing: Fabricate to match configuration shown on the Drawings from prefinished sheet metal, 24 gauge or as shown on Drawings.

1. Lay out and fabricate for 6 inch lap joints.

2. Cut back hem and fabricate laps with male and female ends to allow for thickness of metal and sealant for proper fit and flush appearance.
3. Fabricate for tight spring action contact to roofing/wall behind; provide wind restraint clips at bottom of counter flashing where tight spring fit cannot be achieved.
4. Counter Flashing Corners: Fabricate watertight with neat appearance, bend at corner and extend past corner at least 12 inches.
5. Provide per roofing manufacturers standard details.

C. Copings/Cap Flashing: Fabricate to match configuration shown on the Drawings and SMACNA Figure 3-4A and 3-4G from prefinished sheet metal.

1. Provide continuous 22 gauge cleat to lock into hem on exposed outside face.
2. Fasten concealed inside face with screw fasteners.
3. Gauge:
   a. Coping widths up to 18" - 22 gauge;
   b. Coping widths over 18" - 20 gauge.
4. Seams: 1 inch high standing seam for horizontal surfaces and 4 inch lap seams for vertical surfaces.
5. Outside Corners: Bend outside vertical face to form corner, overlap top and seal watertight.
6. Inside Corners: Provide 12 inch wide backup metal to support and align ends/corners of flashing; miter cut flashing neatly with hairline crack.

D. Rake Edge Flashing: Fabricate to match configuration shown on the Drawings from 24 gauge pre-finished sheet metal.

1. Provide continuous 22 gauge cleat to lock into hem on bottom edge.
2. Lay out and fabricate for 6 inch lap joints.
3. Cut back hem and fabricate laps with male and female ends to allow for thickness of metal and sealant for proper fit and flush appearance.
4. Provide per roofing manufacturers standard details.

E. Eave Flashing: Fabricate to match configuration shown on the Drawings from pre-finished sheet metal, 24 gauge or as shown on Drawings.

1. Lay out and fabricate for 6 inch lap joints.
2. Cut back hem and fabricate laps with male and female ends to allow for thickness of metal and sealant for proper fit and flush appearance.
3. Shop fabricate outside corners for neat appearance.
4. Provide continuous hook edge to support continuous gutter as shown on Drawings.
5. Provide per roofing manufacturers standard details.

F. Flashing At Window Heads: Fabricate to match profiles/configurations shown on Drawings from 24 gauge factory pre-finished sheet metal.

1. Slope horizontal leg of flashings to provide positive water drainage.
2. Provide end dams at all head and sill flashings to prevent water from leaking off end of flashing behind exterior cladding.

G. Window Sill Flashing: Fabricate to match profile/configuration shown on Drawings from 20 gauge factory pre-finished sheet metal.

1. Sills shall extend full depth to interior face of window frame.

H. Pipe Flashing :- Plumbing Vents: Fabricate to match SMACNA Figure 4-15B (flat roof) and Figure 4-20A (sloped roof) from 4 lb./sq./ ft. hard tempered lead sheet with soldered joints.

1. Fabricate to fit angle of roof slope.
2. Fabricate to accommodate each different pipe size, do not use flashing designed for larger pipe on smaller diameter pipe.
3. Provide pre-fabricated lead cap.
4. Provide per roofing manufacturers standard details.

I. Step Flashing: Fabricate to match configuration shown in SMACNA, Figure 4-?A from 24 gauge pre-finished sheet metal matching color of roof shingles.

1. Length: Fabricate flashing length to allow each flashing piece to extend under the step flashing above 4 inches minimum plus the exposure of the shingle (5-5/8" shingle exposure requires 9-5/8" long step flashing).
2. Width: Fabricate to allow flashing to extend under roofing 6 inches and up wall 6 inches or as shown on Drawings.
3. Bottom Diverter: Fabricate the bottom step flashing to divert water directly into gutter (to avoid water running down between end of gutter and siding).
4. Provide per roofing manufacturers standard details.

J. Flashing At Curbs In Sloped Roofs: Fabricate cricket flashing, step flashing, apron flashing and counterflashings as shown on Orawings and as required to fit field condition similar to SMACNA Figure 4-18A & 4-18B.

1. Step, Apron & Counterflashing:Fabricate from 24 gauge pre-finished sheet metal matching the roofing color.
2. Cricket Flashing: Fabricate from stainless steel sheet metal; spot weld and solder all joints and seams watertight.
3. Extend flashing 6 inches under roofing and 6 inches up the wall in lieu of 4 inches shown in SMACNA Figure 4-18B.
4. Provide per roofing manufacturers standard details.

K. Sheet Metal Fascia: Fabricate to configuration shown on Drawings from 22 gauge prefinished galvanized sheet metal.

1. Shop fabricate corners minimum 36 in long each way for hairline, tight seams; provide backing plates/angles to support corner joint in proper alignment; seal joint on concealed backside with polyurethane sealant water tight.
2. Provide galvanized sheet metal cleats in configuration shown on the Drawings as required by field conditions, gauge as shown, 22 gauge minimum.
3. Punch vent holes in bottom of fascia as shown on Drawings.

L. Sheet Metal Wall Flashing: Fabricate to configuration shown on Drawings from 20 gauge prefinished galvanized sheet metal.

1. Lay out and fabricate for 6 inch lap joints.

2. Cut back hem and fabricate laps with male and female ends to allow for thickness of metal and sealant for proper fit and flush appearance.
3. Fabricate for tight spring action contact to substrate.
4. Provide per roofing manufacturers standard details.

M. Miscellaneous Fabrications: Fabricate from 22 gauge prefinished sheet metal to match configuration shown on the Drawings.

1. Field verify dimensions and connections.

PART 3 - EXECUTION

3.1 PROTECTION

A. Isolate contact areas of dissimilar metals with heavy asphalt or other approved coating, specifically made to stop electrolytic action.

3.2 GENERAL

A. Install work watertight, without waves, warps, buckles, fastening stress, or distortion, allowing for expansion and contraction.

B. Fastening of metal to walls and wood blocking shall comply with ANSI-SPRI ES-1, SMACNA Architectural Sheet Metal Manual, Factory Mutual 1-90 wind uplift specifications and/or manufacturer's recommendations whichever is of the highest standard.

C. All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.

D. Pre-manufactured metal coping cap system's anchor chairs shall be secured to the top and outside face of the wood blocking or wall per the manufacturer's recommendations.

E. Metal fascia extenders shall be secured to wall or metal wall panel at the bottom edge with a continuous cleat. Cleats shall be at least one gauge heavier than the metal it secures.

3.3 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.

B. Coordinate installation of reglets in masonry with Section 04 2000.

C. Coordinate installation of wall flashings with Section 04 2000 Unit Masonry, Section 07 2500 - Weather Resistive Barriers, and Section 07 4000 - Preformed Metal Panel Systems for proper installation sequence and weatherlapped installation.

D. Coordinate installation of sheet metal flashings with Section 07 5400 - (TPO) Single-Ply Roofing for proper sequence and for watertight assembly.

E. Coordinate gutter outlet tube location to align with storm drainage inlet pipe at ground level.

F. Schedule installation of window sill flashing prior to window installation.

3.4 INSPECTION

A. Verify metal wall panels, roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets are in place, and nailing strips located.

B. Verify membrane termination and base flashings are in place, sealed, and secure.

C. Beginning of installation means acceptance of existing conditions.

D. Field measure site conditions prior to fabricating work.

3.5 PREPARATION

A. Field verify that existing conditions and substrate layout are acceptable and comply with Drawing layout.

B. Report any variations, unacceptable substrates/conditions and potential problems.

C. Do not start work until unsatisfactory conditions have been corrected.

D. Start of installation indicates acceptance of substrate and conditions.

3.6 INSTALLATION - GENERAL

A. Installation shall conform to this Section and the Drawings, the roofing manufacturer's requirements, SMACNA Architectural Sheet Metal Manual and NRCA Roofing Manual (where conflicts exist, the most restrictive requirement shall apply).

B. Protect pre-finished metal from scratches or damage during fabrication.

C. Separate dissimilar metals with 2 wraps/layers of PVC tape.

3.7 SHOP FABRICATED SHEET METAL

A. Installer shall be responsible for determining if the sheet metal systems are in general conformance with roof manufacturer's recommendations.

B. Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.

C. Hem exposed edges.

D. Angle bottom edges of exposed vertical surfaces to form drip.

E. All comers for sheet metal shall be lapped with adjoining pieces fastened and set in sealant.

F. Joints for the pre-manufactured metal edge fascia system, and metal edge fascia extenders, shall be formed with a 3/8 inch opening between sections. The joints of the metal edge fascia system and the metal edge fascia extenders shall be offset a minimum of 12 inches. The joint openings shall be backed by an

internal drainage plate formed to the profile of fascia piece. The pre-manufactured metal edge fascia system, metal fascia extenders and area divider covers, shall be embedded in two rows of butyl sealant over the internal drainage plate. The internal drainage plate shall be embedded in two rows of butyl sealant over the continuous cant dam and fastened through the opening between the sections and loose locked to the drip edges. The pre-manufactured metal coping cap system shall be embedded in two rows of butyl tape over the internal drainage plate. Joints for counterflashings shall be overlapped a minimum of 3 inches. All counterflashings shall extend down past the roof flashing termination bar a minimum of 4 inches.

G. Install sheet metal to comply with ANSI/SPRI, SMACNA and NRCA standards, and per the manufacturer's instructions.

3.8 INSTALLATION - FLASHINGS

A. Install flashings/caps to achieve a weathertight, leak-free installation.

B. Install flashings/caps straight and true with neat appearance.

C. Lap Joints: Lap 6 inches minimum and seal with two heavy beads of butyl sealant just prior to making lap;

1. Clean metal surfaces to be sealed thoroughly with solvent just prior to sealant application;
2. Trim off back of hem to allow tight interface and proper fit.
3. Flashing shall fit tight to each other, free of any gaps or misfit.

D. Fasten flashings/caps to substrate securely using specified fasteners sized to hold flashings securely and as recommended by manufacturer for substrate and condition.

1. Powder/power actuated fasteners are not permitted.

E. Fasteners shall be concealed wherever possible, seal exposed fasteners watertight.

F. Coping/Cap Flashing:

1. Install continuous cleat on exterior side of wall straight and true and fasten securely @ 12" o.c. maximum;
2. Connect horizontal seams with 1 inch standing seam; weatherlap vertical joints 6 inches and seal watertight, cut off back of hem to allow proper fit;
3. Secure interior side with exposed fasteners spaced at no more than 30 inches apart.
4. Installation shall be completely watertight and free of any looseness or movement.

3.9 FLASHING MEMBRANE INSTALLATION

A. Roof Drain:

1. Prime lead at a rate of 100 square feet per gallon and allow to dry.
2. Set lead flashing (30 inches square minimum) in a 1/4 inch bed of mastic.
3. Install specified roof flashing system.
4. Install metal clamping ring and strainer. Stop all plies short of the clamping ring and seal edge with a three course application of TUFF-FLASH liquid applied flashing system as specified in the modified bitumen roof sysetm specification and reinforcing mesh.

B. Plumbing Stack:

1. Prime flange and sleeve at a rate of 100 square feet per gallon and allow to dry.
2. Install properly sized sleeves in a 1/4 inch bed of roof cement.
3. Turn sleeve a minimum of 1 inch down inside of stack or lead caps on pipes 2 inches or less in diameter.
4. Caulk intersection of the membrane and flange with elastomeric asphaltic sealant or roof cement.

C. Equipment Supports/Exhaust Vents:

1. Mill finished aluminum counterflashing and/or slip flashing extender shall be provided with watertight accessories such as miters, transitions, end caps, etc. and finished to match.
2. Accessories: Joint covers, corners, fasteners, strip flashing at joinings, fastening, and other accessories shall be included.
3. On small units, install an 0.040 mill finished aluminum extender shall be installed under the existing counterflashing or curb lip to cover the newly installed roof flashing system by at least 4 inches. The new extender shall be secured with fasteners and neoprene washers every 8 inches on center.

D. Pitch Pocket:

1. Prime flange and sleeve at a rate of 100 square feet per gallon and allow to dry.
2. Install properly sized and prefabricated stainless steel or copper pitch pockets with welded or soldered watertight joints in a l /4 inch bed of roof mastic.
3. Install specified two ply roof flashing system.
4. Caulk intersection of the flashing membrane and flange with elastomeric asphaltic sealant or roof cement.
5. In accordance with project the detail, fill pitch pocket with non-shrink grout and pourable sealer.

E. Curb Detail/Air Handling Station:

1. Mill finish aluminum slip flashing extender shall be provided with watertight accessories such as miters, transitions, end caps, etc. and finished to match.
2. Accessories: Joint covers, comers, fasteners, strip flashing at joinings, fastening, and other accessories shall be included.
3. Over the termination bar, an 0.040 mill finished aluminum extender will be installed under the existing counterflashing or curb lip to cover the newly installed roof flashing system by at least 4 inches. New counterflashing will be secured with fasteners and neoprene washers every 8 inches on center.

F. Reglet Mounted Counterflashings:

1. Install specified roof flashing system with both plies terminating at the top of the specified flashing height. Secure continuous termination bar through top of flashing system and into wall at a maximum of 6 inches o.c. Caulk top of the termination bar and roof flashing system with a three-course application of asphaltic mastic and reinforcing mesh, or the specified elastomeric asphaltic sealant to provide a watertight seal.
2. Install counterflashing system in accordance with plan details and in accordance with referenced standards and manufacturer's instructions.

3.10 WORKMANSHIP

A. Sheet metal work shall be installed using the best workmanship, including but not limited to the following:

1. Prefinished surfaces of sheet metal free of scratches , dents or damage.
2. Joints and connections shall not rely on sealant for permanent watertight integrity.
3. Flashing and copings shall run straight and true, parallel with building lines.
4. Fabricated items fit field conditions exactly without any element requiring force to install or being too large for the condition.
5. Downspouts shall be plumb and straight.
6. Joints shall interlock and align neatly and with tight fit.
7. All edges exposed to view and the weather neatly hemmed.
8. Lap joints tight and free of gapping.
9. Installation shall not trap or pond water.
10. All work securely fastened and free of loose fit or rattling.
11. Installation shall accommodate thermal expansion and contraction without causing distress to adjacent work or buckling/separation of sheet metal element.

B. Any part of the sheet metal work installed with improper or poor workmanship shall be removed and replaced at Contractor's expense.

3.11 FIELD QUALITY CONTROL AND INSPECTIONS

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 07 6200 -Sheet Metal Flashings and Trim

DIVISION 07 9000 – JOINT SEALERS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Interior & Acoustical Joint Sealers

B. Exterior Joint Sealers.

1.2 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings.

1.3 SUBMITTALS

A. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this Section with minimum 5 years experience.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.

1.5 ENVIRONMENTAL REQUIREMENTS

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

1.6 COORDINATION

A. Coordinate the work with all sections referencing this section.

1.7 GUARANTY

A. The Contractor shall guaranty the sealant installation for a period of 5 years against defects in installed materials and workmanship including a 5 year watertight warranty. Correct any sealant that is found to be defective, improperly installed or leaks within a 5 year period at no cost to the Owner.

PART 2 – PRODUCTS

2.1 SEALANTS

A. Stain-test-response characteristics: where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to astm c 1248 & have not stained porous joint substrates indicated for project.

2.2 LATEX JOINT SEALANTS

A. Latex joint sealant: acrylic latex or siliconized acrylic latex, astm c 834, type op, grade nf.

1. Manufacturers: available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
   a. Basf building systems.
   b. Bostik, inc.
   c. May national associates, inc.
   d. Pecora corporation.
   e. Tremco incorporated.

2.3 ACOUSTICAL JOINT SEALANTS

A. Acoustical joint sealant: manufacturer's standard nonsag, paintable, nonstaining latex sealant complying w/astm c 834. Product effectively reduces airborne sound transmission through perimeter joints & openings in building construction as demonstrated by testing representative assemblies according to astm e 90.

1. Manufacturers: available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
   a. Pecora corporation.
   b. Usg corporation.

2.4 EXTERIOR JOINT SEALANTS

A. Type A – Exterior Joint Sealant: Silicone; ASTM C 920, Type S, Grade NS, Class 50, Uses NT, M, G, A and O; single component.

1. Color: Color as selected to match adjacent material, selected from manufacturer's full range of available colors.
2. Product: *795 Silicone Building Sealant* manufactured by Dow Corning.
3. Applications: Use for:
   a. Exterior masonry control joints – (match mortar color and sand sealant).

B. Type B – Exterior Joint Sealant: Polyurethane; ASTM C 920, Type S, Grade NS, Class 25, Uses NT, M, G, A and O.

1. Color: Color as selected to match adjacent material, selected from manufacturer's full range of available colors.
2. Product: *Dynatrol I XL* single component or *Dynatrol II* two component (as required to achieve required color) manufactured by Pecora, or equal.
3. Applications: Use for:
   a. Sealant for sheet metal flashing installations/joints.
   b. Exterior locations requiring painted finish over sealant.
   c. Other exterior joints for which no other sealant is indicated.
   d. Concealed secondary sealant.

C. Type C – Exterior Lap Joint Sealant: Butyl rubber, non-drying, non-skinning, non-curing.

1. Product: *BC-158 Butyl Rubber Sealant* manufactured by Pecora or approved.
2. Applications: Use for:
   a. Sealant for lap joints in masonry flashings.
   b. Concealed sealant bead in lap joints for sheet metal work.
   c. Concealed sealant bead in lap joints in prefinished wall and roof panels.
   d. Do not use in any location exposed to view.

D. Type D - General Purpose Interior Sealant: Siliconized acrylic emulsion latex; ASTM C 834, single component, paintable.

1. Product: AC-20+Silicone manufactured by Pecora or similar by Tremco or approved.
2. Color: Match color of adjacent materials; or as selected by Architect.
3. Applications: Use for:
   a. Interior wall and ceiling control joints .
   b. Joints between interior door/relite frame and wall surfaces.
   c. Joints between interior side of window frames and wall surfaces.
   d. Between GWB and other materials.
   e. Joints between counter backsplash and wall.
   f . Joints between wainscot and wall.
   g. Other interior joints for which no other type of sealant is indicated.

E. Type E - Plumbing Fixture/Tile Sealant: Neutral-curing silicone; ASTM C 920, Class 50; single component, mildew resistant.

1. Product: 898 Sanitary Mildew Resistant Silicone Sealant manufactured by Pecora or approved.

2. Color: Match color of plumbing fixture or adjacent materials as approved by Architect.
3. Applications: Use for:
    a. Joints between plumbing fixtures and counter, floor and wall surfaces.
    b. Interior joints in stone and ceramic tile or between tile and adjacent materials.
    c. Interior joints between plastic laminate wainscot panels.

2.5 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant of type recommended by sealant manufacturer for type of sealant; ASTM D 1667, oversized as recommended by sealant manufacturer.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Foam Tape: PVC Foam Tape (adhesive both sides).

F. Sand (For Sanded Joints): Provide sand matching color of masonry mortar.

2.6 MISCELLANEOUS MATERIALS

A. Primer: material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests & field tests.

B. Cleaners for nonporous surfaces: chemical cleaners acceptable to manufacturers of sealants & sealant backing materials.

C. Masking tape: nonstaining, nonabsorbent material compatible w/joint sealants & surfaces adjacent to joints.

PART 3 – EXECUTION

3.1 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.

B. Coordinate work sequences and installation with work of other trades to provide a weathertight installation at exterior applications.

3.2 EXAMINATION

A. Inspect the substrate surfaces and joint openings and confirm they are ready to receive sealant work.

B. Confirm that joint size, configuration and conditions conform to sealant manufacturer's requirements so as to achieve manufacturer's published sealant performance.

C. Verify that joint backing and release tapes are recommended for use by sealant manufacturer with the specified sealant.

D. Do not start sealant installation until substrate surfaces and joint opening conform to sealant manufacturer's requirements.

E. Start of sealant installation indicates installer's acceptance and confirmation that substrate, joint openings and conditions are in conformance with sealant manufacturer's requirements.

3.3 PREPARATION

A. Thoroughly clean and prepare joint substrate surfaces in accordance with sealant manufacturer's instructions to achieve published sealant performance.

B. Remove loose materials and foreign matter which might impair adhesion of sealant.

C. Clean and prime joints in accordance with manufacturer's instructions.

D. Protect elements surrounding the work of this section from damage or disfiguration.

3.4 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions to achieve published sealant performance.

B. Perform installation in accordance with ASTM C 1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.

D. Install bond breaker where joint backing is not used.

E. Install foam tape at locations indicated on drawings.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave.

I. Broadcast sand into joints specified to be sanded.

3.5 FIELD QUALITY CONTROL

A. Evaluation of field-adhesion results: sealants not evidencing adhesive failure or noncompliance w/other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates or to comply w/other requirements. Retest failed applications until test results prove sealants comply w/indicated requirements.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-sealant application: interior joints in vertical surfaces & horizontal nontraffic surfaces.

1. Joint locations:
2. Joint sealant: latex.
3. Joint-sealant color: as selected from manufacturer's full range of colors

B. Joint-sealant application: interior acoustical joints in vertical surfaces & horizontal nontraffic surfaces.

1. Joint sealant: acoustical.
2. Joint-sealant color: as selected from manufacturer's full range.

3.7 CLEANING

A. Clean adjacent soiled surfaces.

3.8 PROTECTION OF FINISHED WORK

A. Protect sealants until cured.

END OF DIVISION 07 9000 – JOINT SEALERS

DIVISION 09 9100 – PAINTS AND COATINGS

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Surface preparation and field painting

1.2 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings.

B. Furnish extra materials, from the same product, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.3 REFERENCES

A. All references shall be the latest adopted edition.

B. MPI - Architectural Painting Specification Manual, as published by the Master Painters and Decorators Association.

C. SSPC - Steel Structures Painting Council, Steel Structures Painting Manual.

1.4 SUBMITTALS

A. Refer to Section 01 3300 for submittal procedures.

B. Product Data: Provide product data on each different paint finishing product.

C. Paint Schedule: Provide schedule of all proposed paint products for the items to be painted in format matching the Schedule found in Part 3 of this Section.

D. Paint Draw Down Samples: Submit two painted samples, illustrating selected colors for each color and system selected. Submit on heavy paper card stock, 8 x 10 inch in size.

1. Sheen Samples: Submit samples of different sheens for each color as directed by Architect for selection.

1.5 QUALITY ASSURANCE

A. Single Source Responsibility: All paint products used for painting a given material/surface shall be manufactured by the same company.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years successful experience.

C. All materials, preparation and workmanship shall conform to requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute (MPI) (hereafter referred to as the MPI Painting Manual).

D. All paint manufacturers and products used shall be as listed under the Approved Product List section of the MPI Painting Manual.

E. All surfaces requiring painting shall be inspected by this Contractor and shall notify the General Contractor in writing of any defects or problems, prior to commencing painting work, or after the prime coat shows defects in the substrate.

1.6 REGULATORY REQUIREMENTS

A. Conform to the latest edition of Industrial Health and Safety Regulations issued by applicable authorities having jurisdiction in regard to site safety (ladders, scaffolding, ventilation, etc.).

B. Conform to requirements of local authorities having jurisdiction in regard to the storage, mixing, application and disposal of all paint and related waste materials.

C. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery and Handling: Deliver products to Project site in an undamaged condition in manufacturer's original sealed containers, complete with labels and instructions for handling, storing, unpacking, protecting, and installing. Packaging shall bear the manufacture’s label with the following information:

1. Product name and type (description).
2. Batch date.
3. Color number.

4. VOC content.
5. Environmental handling requirements.
6. Surface preparation requirements.
7. Application instructions.

B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 degrees F (7 deg C) and a maximum of 90 degrees F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

C. Take all necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills. Materials that constitute a fire hazard (paints, solvents, drop clothes, etc.) shall be stored in suitable closed and rated containers and removed from the site on a daily basis.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Provide environmental conditions as required by paint manufacturer, MPI Manual and as follows:

1. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer's written literature.
2. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer's written literature.
3. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.9 EXTRA MATERIALS

A. Supply two gallons of primary interior wall color paint. Supply 1 gallon of other colors and types of paint used on project or as otherwise specified herein; store where directed. Containers to be new and unopened.

B. Label each container with color in addition to the manufacturer's label.

1.10 SCHEDULING

A. Schedule painting operations to prevent disruption of and by other trades.

B. Schedule painting operations in occupied facilities to prevent disruption of occupants in and about the building. Painting shall be carried out in accordance with Owner’s operating requirements. Schedule work such that painted surfaces will have dried before occupants are affected. Obtain written authorization from Tenant / Owner for changes in work schedule.

1.11 PROJECT / SITE REQUIREMENTS

A. UNLESS specifically pre-approved by the specifying body, and the applied product manufacturer, perform no painting or decorating work when the ambient air and substrate temperatures are below 50° F (10° C) for both interior and exterior work.

B. Perform no exterior painting work unless environmental conditions are within MPI and paint manufacturer’s requirements or until adequate weather protection is provided. Where required, suitable weatherproof

covering and sufficient heating facilities shall be in place to maintain minimum ambient air and substrate temperatures for 24 hours before, during and after paint application.

C. Perform no interior painting or decorating work unless adequate continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above minimum requirements for 24 hours before, during and after paint application. Provide supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

D. Perform no painting or decorating work when the relative humidity is above 85% or when the dew point is less than 5° F (3° C) variance between the air / surface temperature.

E. Perform no painting or decorating work when the maximum moisture content of the substrate exceeds:

1. 15% for wood.
2. 12 % for plaster and gypsum board.

F. Conduct all moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple cover patch test.

G. Test concrete, masonry and plaster surfaces for alkalinity as required.

Note: Concrete and masonry surfaces must be installed at least 28 days prior to painting and decorating work and must be visually dry on both sides.

H. Apply paint only to dry, clean, properly cured and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.

I. Perform no painting or decorating work unless a minimum lighting level of 323 Lux (30 foot candles) is provided on surfaces to be painted or decorated. Adequate lighting facilities shall be provided by the Painting Contractor.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Sherwin-Williams Company products indicated or comparable product from one of the following:

1. Benjamin Moore & Co.
2. Duron, Inc.
3. Glidden Professional, Division of PPG Architectural Finishes, Inc.
4. M.A.B. Paints.
5. PPG Architectural Finishes, Inc.
6. ICI Dulux
7. Kelly Moore
8. Master Coating Technologies
9. Parker Paint
10. Sherwin-Williams
11. Tnemec
12. or equal.

B. Source Limitations: Obtain paint materials from single source from single listed manufacturer.

1. Manufacturer's designations listed on a separate color schedule are for color reference only and do not indicate prior approval.

C. Other materials such as linseed oil, shellac, thinners, solvents, etc. shall be the highest quality product of an MPI listed manufacturer and shall be compatible with paint materials being used as required.

D. All materials used shall be lead and mercury free and shall have low VOC content where possible.

E. All paint materials shall have good flowing and brushing properties and shall dry or cure free of blemishes, sags, air entrapment, etc.

F. Paints and Coatings: Ready mixed, select products from the MPI Manual Manufacturer's Product List for Manufacturers listed above which installer has used on other projects and are known to provide excellent performance including:

1. A soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
2. Good hiding characteristics.
3. Good flow and brushing properties.
4. Good mildew-resistance.
5. Capable of drying or curing free of streaks or sags.

G. Colors: Architect will select all colors from standard color palette.

2.2 ACCESSORY MATERIALS

A. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified; commercial quality.

B. Patching Material: Latex-based filler.

C. Sealant: Silicon-latex acrylic sealant as specified in Section 07 9000.

2.3 PAINT, GENERAL

A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."

B. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.

D. Colors: As selected by Architect from manufacturer's full range.

2.4 EQUIPMENT

A. Painting and Decorating Equipment: to best trade standards for type of product and application.

B. Spray Painting Equipment: of ample capacity, suited to the type and consistency of paint or coating being applied and kept clean and in good working order at all times.

2.5 MIXING AND TINTING

A. Unless otherwise specified herein or pre-approved, all paint shall be ready-mixed and pre-tinted. Re-mix all paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity.

B. Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

C. If required, thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.

PART 3 – EXECUTION

3.1 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.

B. Coordinate selection of paint products to be applied over prime coats applied by others for compatibility and good adhesion.

C. Schedule work to follow completion of all dust/dirt producing work.

3.2 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers. Where acceptability of substrate conditions is in question, apply samples and perform in-situ testing to verify compatibility, adhesion, and film integrity of new paint application.

1. Report, in writing, conditions that may affect application, appearance, or performance of paint.

B. Substrate Conditions:

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

    a. Concrete: 12 percent.
    b. Masonry (Clay and CMU): 12 percent.

c. Wood: 15 percent.
d. Portland Cement Plaster: 12 percent.
e. Gypsum Board: 12 percent.

2. Portland Cement Plaster Substrates: Verify that plaster is fully cured.

3. Exterior Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

C. Test shop-applied primer/paint for proper adhesion and compatibility with subsequent cover materials.

D. Measure moisture content of surfaces. Do not apply finishes unless moisture content of surfaces conforms to the recommendations of the MPI Manual and paint manufacturer.

E. Proceed with coating application only after unsatisfactory conditions have been corrected; application of coating indicates acceptance of surfaces and conditions.

F. Do not start paint application until problems with substrate surfaces, GWB finish and shop-applied primer/paint have been satisfactorily resolved.

3.3 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.

F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."
3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.

H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

I. Aluminum Substrates: Remove loose surface oxidation.

J. Wood Substrates:

1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

K. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

L. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

M. Sand, clean, dry, etch, neutralize and/or test all surfaces under adequate illumination, ventilation and temperature requirements.

N. Marks: Seal with shellac those which may bleed through surface finishes.

O. Factory Primed/Painted Items to be Painted: Hand sand factory finished surfaces to provide proper tooth for good adhesion of finish coats.

3.4 PROTECTION

A. Protect all finish surfaces, landscaping, adjacent property and elements surrounding the work of this Section from overspray, damage or disfiguration.

B. Maintain subfloor surfaces free from paint and spills using heavy paper or other method.

3.5 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
3. Paint dock edge metal.
4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.

B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.

C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

E. Apply paint and coatings within an appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or the manufacturer's paint specifications require earlier applications.

F. Painting coats specified are intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations.

G. Do not apply finishes on surfaces that are not sufficiently dry. Unless manufacturer's directions state otherwise, each coat shall be sufficiently dry and hard before a following coat is applied.

H. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

I. Apply sufficient wet film thickness to provide good hiding, do not thin product.

J. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

K. Vacuum clean surfaces of loose particles. Remove dust and particles just prior to applying next coat.

L. Gypsum Board: After paint has been spray or roller applied to uniform wet film thickness, backroll entire surface in same direction to provide uniform texture, reflective value and appearance, free of roller marks or lines.

3.6 FIELD QUALITY CONTROL

A. All surfaces, preparation and paint applications shall be inspected.

B. Painted exterior and interior surfaces shall be considered to lack uniformity and soundness if any of the following defects are apparent:

1. Brush / roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
2. Evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
3. Damage due to touching before paint is sufficiently dry or any other contributory cause.
4. Damage due to application on moist surfaces or caused by inadequate protection from the weather.
5. Damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).

C. Painted surfaces shall be considered unacceptable if any of the following are evident under natural lighting source for exterior surfaces and final lighting source (including daylight) for interior surfaces:

1. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm (39”).
2. Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm (39”).
3. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
4. When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.

D. Painted surfaces rejected by the Architect shall be made good at the expense of the Contractor. Small, affected areas may be touched up; large affected areas or areas without sufficient dry film thickness of paint shall be repainted. Runs, sags of damaged paint shall be removed by scraper or by sanding prior to application of paint.

3.7 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

E. Clean equipment and dispose of wash water / solvents as well as all other cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers / strippers in accordance with the safety requirements of authorities having jurisdiction.

F. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.8 REPAINTING OF EXISTING FINISHES

A. Refer to MPI Maintenance Repainting Manual for repainting of existing finishes.

B. Use finish coat of respective new surface paint system for minor repair of existing finishes. Use system primer where existing finishes are damaged down to bare surface.

3.9 PAINTING SCHEDULE

A. All materials/surfaces scheduled hereinafter shall be painted in accordance with designated MPI or proprietary Systems and Product requirements.

1. Sheen on finish coats shall be as selected by Engineer from manufacturer’s paint sheen samples.

2. Use the same manufacturer for each coat specified for a given system, do not intermix different manufacturer's products within the same paint system unless specifically approved by manufacturer(s) and products are known to be compatible for use together.
    a. Where primer is applied by others:
        1) Select paint system compatible with primer installed by others.
        2) Test compatibility and adhesion of proposed paint products over primer prior to application.
    b. Paint failure due to incompatibility between different manufacturer's products is Contractor's responsibility to correct.

B. Ferrous Metal, Galvanized-Metal, and Aluminum Substrates: Finish all surfaces.

1. Exterior: MPI EXT 5.1T

    a. Prime Coat: Shop primer specified in Section where substrate is specified.
    b. First Coat: H.B. Self-priming Epoxy, MPI Product #120
    c. Second Coat: Polyurethane, MPI Product #72.
    d. Topcoat: Polyurethane, MPI Product #72.
    e. Application: Spray.

C. Wood:

1. Wood Trim:
    a. Interior: MPI INT 6.3E
        1) First Coat: Latex Primer, MPI Product #39
        2) Second Coat: Latex, MPI Product #54
        3) Third Coat: Latex, MPI Product #54
        4) Application: Spray

D. Gypsum Board:

1. Interior: MPI INT 9.2.A.
    a. First Coat: Waterborne primer/sealer, MPI Product #50
    b. Second Coat: Interior latex, MPI Product #43
    c. Application: Spray and backroll
    d. MPI Gloss Level: MPI Gloss Level 4 or as selected by Architect for specific use areas.

END OF DIVISION 099113 – PAINTS AND COATINGS

DIVISION 21 0000 – GENERAL FIRE PROTECTION REQUIREMENTS

PART 1 – GENERAL

1.1 GENERAL

A. Includes, but not limited to, furnishing labor, materials, and equipment for completion of work unless indicated or noted otherwise. See Division 1 for sequence of work.

B. The Fire Protection Contractor shall review all Architectural drawings to determine if the installed work is to be "Phased". The Fire Protection Contractor shall make the necessary accommodations on the submittal drawings to conform with the Architect's "Phasing Plan".

C. This Contractor shall obtain and pay for all permits required by State and local authorities governing the installation of the fire protection work.

D. The fire protection specifications are performance based. It is the Fire Protection Contractor's responsibility to determine the exact pipe routing, elevations, and device locations that will meet N.F.P.A. #13, N.F.P.A. #24, local Authority Having Jurisdiction, and project specification requirements.

E. The Fire Protection Contractor for each Fire Protection specification section of this project shall submit the information described in paragraph 4.01.A of this Specification Section for the qualifications to bid this project prior to bid date for evaluation and approval. Contractors that do not meet the qualifications to bid this project will not be allowed.

F. A pre-design meeting shall be held consisting of the Architect, Fire Protection Engineer, Fire Protection Contractor, General Contractor, and building Owner to discuss the expectations and criteria of the fire protection system.

G. All fire protection sprinkler system components and devices shall be domestically made, imported components will not be allowed.

H. All piping over 6" in length shall have the manufacturers stenciling that is installed at the factory along the length of the pipe. The stenciling shall consist of the manufacturer's identifier (name or logo) at a minimum. Piping that does not contain the information described (i.e. no stenciling on black pipe, white dashes on black pipe, etc.) shall be assumed to be imported and shall be replaced at the contractors expense. All exposed piping that is to be painted shall be visually inspected by the engineer prior to being painted.

I. Mill Testing Reports (MTR's) shall be submitted to the Architect/Engineer prior to any pay requests for the fire protection sprinkler system installation being approved.

1.2 COORDINATION

A. The Fire Protection Contractor is responsible for initiating coordination meetings with the General Contractor. The General Contractor shall also involve the Mechanical Contractor and Plumbing Contractor as part of these coordination meetings.

B. The fire protection sprinkler system contractor shall participate in the on-site coordination meetings to coordinate the sprinkler system installation with the H.V.A.C. ductwork, H.V.A.C. units, plumbing piping, hydronic piping, and/or existing conditions. This coordination shall consider elevations, clearances, and routings of all trades to assure that all trades can be installed without conflict.

C. The installation of plumbing waste lines and H.V.A.C. unit placement (induction boxes, VAV boxes, etc.) shall take precedence over the sprinkler piping during these meetings.

D. The sub-contractor that deviates from the coordination meeting agreements during installation shall be responsible for the fees associated with the cost impacts to the other trades. These cost impacts may include changes in sizing, changes in routing, changes in elevation, additional material, etc. that effect the installation of the other trades.

E. Failure to coordinate with other trades and/or existing conditions that result in the removal and re-installation of piping shall not be charged as additional cost to the Owner.

F. Priority of installation for each of the trades shall be as follows:

1. Plumbing waste lines.
2. H.V.A.C. Refrigeration Piping.
3. H.V.A.C. unit placement and required access clearances.
4. Fire Protection System Piping.
5. Fire Protection Suppression System Piping.
6. Domestic System Piping.
7. Electrical Conduit.

G. Priority for locations in finished ceilings for each of the trades shall be as follows:

1. Electrical Lights.
2. H.V.A.C. Diffusers and Grilles.
3. Fire Protection Sprinkler Heads.
4. Fire Protection Suppression System Nozzles.
5. Fire Alarm System Devices.

1.3 PIPE PENETRATIONS

A. Provide pipe sleeves or core-drilled holes where piping passes entirely through concrete walls, floors, platforms, and foundations. Secure sleeves in position and location during construction and provide sleeves of sufficient length to pass through entire thickness of walls, floors, platforms, and foundations. Provide minimum clearances per N.F.P.A. #13 between exterior of piping and interior of sleeve or core-drilled hole. Firmly pack annular space with mineral wool insulation and seal both ends of the sleeve or core-drilled hole with plastic waterproof cement. Where piping passes through fire walls and fire floors, seal both end of pipe sleeves or core-drilled holes with U.L listed or Factory Mutual Global approved fill, void, or cavity material.

B. Sleeves:

1. Sleeves in masonry and concrete walls, floors, platforms, and foundations: Provide hot-dip galvanized steel, ductile-iron, cast-iron, or PVC sleeves. Core drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.
2. Sleeves in other than masonry and concrete walls, floors, platforms, and foundations: Provide 26 gage galvanized steel sheet material as a minimum thickness.
3. Sleeve Sizing: A nominal diameter of 2" larger than the nominal diameter of the pipe is acceptable for pipe sizes 1" through 3W' and a nominal diameter 4" larger than the nominal diameter of the pipe is acceptable for pipe sizes 4" and larger.
4. Clearance Omission: No clearance is necessary for piping passing through gypsum wallboard or equally frangible material that has no fire resistance rating or if flexible couplings are installed within 1'-0" of each side of the wall, floor, platform, or foundation.

C. Core-drilled Holes:

1. Core Sizing: A diameter of 2" larger than the actual diameter of the pipe is acceptable for pipe sizes 1" through 3%" and a diameter 4" larger than the actual diameter of the pipe is acceptable for pipe sizes 4" and larger.
2. Clearance Omission: No clearance is necessary for piping passing through gypsum wallboard or equally frangible material that has no fire resistance rating or if flexible couplings are installed within 1'-0" of each side of the wall, floor, platform, or foundation.

1.4 FIRE ALARM I ELECTRICAL CONNECTIONS

A. The fire protection contractor shall provide all fire alarm devices associated with the fire protection system (flow switches, pressure switches, tamper switches, electric bells, etc.).

B. The electric bell and back box shall be provided by the fire protection contractor, but shall be installed by the electrical contractor.

C. All electrical work performed under this Section of the Specifications shall conform to all applicable portions of the Division 16 specifications and shall conform to all governing codes.

D. Where a piece of equipment specified includes an electric motor, the motor shall be furnished and mounted by this Contractor. Motor starter, disconnect switches and wiring from the electrical panel to the motor control devices and to the motor shall be provided by the Division 16 Contractor unless stated otherwise in the fire protection specifications and on the fire protection drawings (schedules and/or notes).

1.5 RELATED SECTIONS

A. The following sections apply to this section:

1. General and Supplementary Conditions and Division 1 apply to this Section.
2. Section 21 1316 "DRY PIPE AUTOMATI C SPRINKLER SYSTEMS".

1.6 SITE INSPECTIONS OF EXISTING BUILDINGS PRIOR TO BIDDING

A. The Fire Protection Contractor shall examine premises and understand the existing conditions that may affect performance of contractor's work of this Division before submitting proposals and/or bids for this work.

B. No subsequent allowance for time or money will be considered for any consequence related to failure to examine site conditions.

C. Existing site conditions may not be fully depicted on the contract documents and is the bidding Fire Protection Contractor's responsibility to full understand the existing conditions of the project.

1.7 CONTRACT DOCUMENTS:

A. Fire Protection drawings show general arrangement of exposed piping in critical or highly sensitive areas of the building. Follow as closely as actual building construction and work of other trades will permit.

B. The Fire Protection Contractor shall be responsible for reviewing all architectural, electrical, mechanical, plumbing, structural, and fire protection drawings for any additional fire protection related notes and details. These drawings furnish information relating to design and construction of building.

C. Architectural drawings take precedence over mechanical drawings.

D. Because of small scale of fire protection drawings, it is not possible to indicate all offsets, fittings, and accessories which may be required. Investigate structural and finish conditions affecting this work and arrange work accordingly, providing such fittings, valves, and accessories required to meet conditions.

E. Where piping locations are shown on the contract documents, the piping shall be designed and installed in a similar fashion. The Fire Protection Contractor is responsible for providing the required elbows, fittings,

transitions, and offsets to accommodate structural members, architectural features, and coordination with other trade work.

F. The fire protection system installation shall be made in accordance with the drawings, specifications, and applicable standards. Should a conflict occur between the drawings and specifications, the specifications shall prevail.

G. In the case that criteria contained on the drawings is omitted from the specifications or the specifications have criteria that is omitted from the drawings, the criteria given in one location shall apply as if shown in both the drawings and in the specifications (what's in one document applies to both documents). The drawings and specifications are complementary and what is called for in either is binding as if called for in both.

1.8 SUBMITTALS

A. All material used on the project shall be new and free of defects. The Architect and/or Engineer reserves the right to reject any material, the appearance of which has been damaged on the site or in shipment. The material shall be of pre- approved equal quality to that which is specified. Should the make and type of material differ from that specified, the Contractor may be required to submit catalog and engineering data (samples if requested) necessary to make a comparison and determine its suitability.

B. The Contractor shall also bear the cost of all changes to any aspect of the project (electrical, mechanical, building, etc.) made necessary by any approved substitutions. Approved substitutions include those listed as approved manufacturers or approved substitutions. Tentative approval of substitute material and equipment will be made prior to bid only. Such request for approval shall be made two weeks in advance of the bid opening to allow time to assess its suitability. Failure to obtain approval prior to bid shall require the successful bidder to furnish materials and equipment only as specified herein (see Specification Section 21 0000 Paragraph 2.1).

C. Provide copies as specified by Division 1 and at a minimum provide six (6) sets of shop drawings, calculations, and manufacturers data sheets to the Architect/Engineer for approval prior to the purchase, fabrication, or installation of any system component. Failure to receive the Architect/Engineer approval that result in reordering of material, refabrication of piping, removal of installed system components, and the re-installation of the fire protection system shall not be charged as additional cost to the Owner or General Contractor.

D. Equipment submittals shall be presented to the Architect I Engineer for review and approval within 20 calendar days from the date of the Contract signing.

E. Shop drawings and calculations are not required to meet the 20 calendar days from the date of the Contract signing and may be a deferred submittal.

F. The hydraulic calculations, seismic bracing calculations, and equipment submittals shall be contained within a single 3-ring hard cover binder.

G. The information contained in the Equipment Submittals shall be grouped in an orderly arrangement by specification index within a single 3-ring hard cover binder. The Equipment Submittals shall have a typewritten index and divider sheets between categories with identifying tabs. The tabs shall be organized into the items described in the "Submittals" paragraph of each individual specification section associated with this project. The covers shall be imprinted with the name of the job, Owner, Architect, and Mechanical Contractor.

H. Equipment Submittals shall contain original brochures supplied by manufacturers (Xerox copies of originals will only be accepted if they are clear and legible). Each type of device provided shall be identified in the

Equipment Submittals using the same identification as shown on the drawings and specifications. The information included must be the exact equipment to be installed, not the complete "line" of the manufacturer. Where sheets show the equipment installed and other equipment, the installed equipment shall be neatly and clearly identified on such sheets.

I. Submitting portions of the equipment submittals will not be accepted.

J. Review of submittal data by the Engineer or Architect does not relieve the Contractor of responsibility for quantities, measurements, and compliance with the intent of all contract documents.

K. Any material found to be installed without prior approval will be required to be removed and replaced with only specified material at Contractor's cost.

L. See each individual specification section associated with this project for the equipment submittals required.

1.9 OPERATION AND MAINTENANCE MANUAL FOR FIRE PROTECTION SYSTEMS

A. Bind Operation & Maintenance Manual for the Fire Protection System in a single three-ring, hard-backed binder with clear plastic pocket on spine. Spine of each binder shall have following typewritten lettering inserted:

OPERATION AND MAINTENANCE MANUAL
FOR FIRE PROTECTION SYSTEMS

B. Provide master index at beginning of Manual showing items included. Use plastic tab indexes for Sections of Manual.

C. First section shall consist of name, address, and phone number of Architect, General Contractor, and Mechanical, Plumbing, Sheet Metal, Refrigeration, Temperature control, and Electrical Subcontractors. Also include complete list of equipment installed with name, address, and phone number of each vendor.

D. Provide Section for each type of item of equipment.

E. Submit copies as specified by Division 1 and at a minimum provide three (3) copies of Operation & Maintenance Manual to Architect for approval.

F. Submit Operation and Maintenance manuals for each piece of equipment requiring instructions on operation and/or maintenance.

G. Operation and Maintenance manuals shall contain shop drawings, wiring diagrams, operating and maintenance instructions, replacement parts lists, and equipment nameplate data for all equipment and systems installed under the project.

H. Include descriptive literature (Manufacturer's catalog data) of each manufactured item. Literature shall show capacities and size of equipment used and be marked indicating each specific item with applicable data underlined.

I. Operation and Maintenance manuals shall contain original brochures supplied by manufacturers (Xerox copies of originals will not be accepted).

J. The information included must be the exact equipment installed not the complete "line" of the manufacturer. Where sheets show the equipment installed and other equipment, the installed equipment shall be neatly and clearly identified on such sheets.

K. Parts lists shall give full ordering information assigned by the original parts manufacturer. Relabeled and/or renumbered parts information as reassigned by equipment supplier is not acceptable.

L. The following information shall be provided for each device:

1. Manufacturer's name, address, and phone number.
2. Local supplier's name, address, and phone number.
3. Complete parts lists including quantities and manufacturer's part numbers.
4. Installation instructions.
5. Recommended maintenance items including maintenance procedure and recommended interval of maintenance listed in hours of operation, calendar unity or other similar time unit.

M. Operating Instructions shall include:

1. General description of each fire protection system.
2. Step-by-step procedure to follow shutting down each fire protection system.
3. Step-by-step procedure to follow putting each fire protection system back into operation.

N. A copy of N.F.P.A. #25 shall be provided as part of the Operations and Maintenance manual. The edition of N.F.P.A. #25 provided shall correspond to the edition of N.F.P.A. #13 utilized in the sprinkler system design.

0. The Operation and Maintenance manual shall be assembled in a single 3-ring hard cover binder. The information contained in the Operation and Maintenance manuals shall be grouped in an orderly arrangement by specification index. The Operation and Maintenance manuals shall have a typewritten index and divider sheets between categories with identifying tabs. The covers shall be imprinted with the name of the job, Owner, Architect, Mechanical Contractor, and year of completion.

1.10 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Perform work in accordance with applicable Codes.
2. In case of differences between building codes, state laws, local ordinances, utility company regulations, and Contract Documents, the most stringent shall govern.

B. Product Approvals: See each individual specification section associated with this project for the prior approved products.

C. Materials: Use domestic made pipe, fittings, valves, hangers, sprinklers, and devices on this Project.

1.11 CODES AND STANDARDS

A. Codes and agencies having jurisdictional authority over mechanical installation.

1. International Building Code -- Latest Approved Edition
2. International Fire Code - Latest Approved Edition
3. Local Water District Requirements

4. State and County Department of Health
5. Local Fire Marshal
6. Occupational Safety and Health Administration (OSHA)
7. Washington Industrial Safety and Health Act (WISHA)
8. National Fire Protection Association (N.F.P.A.)

1.12 PRODUCT HANDLING AND PROTECTION

A. Contractor is responsible for protection of all piping, fittings, and devices provided under this specification section free from damage, water, corrosion, rust, or foreign matter build up both in storage and when installed, until final project acceptance.

B. Materials in the staging areas shall be protected by an approved means to prevent corrosion of the sprinkler system components.

C. Failure to do so shall result in the material not being approved and if found installed will be replaced at the fire protection contractor's expense.

D. Equipment finish that is damaged by handling, storage, etc. shall be corrected by the Contractor at no additional cost to the Owner.

1.13 WARRANTIES

A. In addition to the guarantee specified in General Conditions, the fire protection contractor shall guarantee that the fire protection systems are installed to N.F.P.A. code and approved shop drawings.

B. In order to be protected, secure proper guarantees from suppliers and any Subcontractors. Include all warranties/guarantees including extended warranties.

C. Provide a "Certificate of Warranty" letter at the completion of the project. The date of "Substantial Completion" shall be clearly shown on the letter indicating when the warranty period begins and the "Certificate of Warranty" letter shall be signed by the fire protection sprinkler contractor.

D. The "Certificate of Warranty" shall be included as part of the Operation and Maintenance Manual. The date of "Substantial Completion" shall be the date indicated on the approved test certificate that was signed by the Authority Having Jurisdiction for system acceptance.

1.14 TEST CERTIFICATES

A. The following completed test shall be contained as a minimum on the "Test Certificates" provided as part of the close out material. Some of these may not be required if not part of the domestic water system and is Port owned fire system.

B. Water Based Sprinkler Systems:

1. Private Fire Service Mains
    a. Underground lead-in hydrostatic testing
    b. Underground purification testing
    c. Underground lead-in flushing per N.F.P.A. #13 and N.F.P.A. #24 requirements
2. Wet pipe automatic fire protection sprinkler system
    a. Overhead hydrostatic testing

b. Overhead fire alarm connection point interface testing
c. Purification of piping on the potable side of the backflow preventer
d. Full forward flow testing of the backflow preventer
e. Backflow preventer certification testing
f. Main drain testing

3. Dry pipe automatic fire protection sprinkler system
   a. Overhead hydrostatic testing
   b. Overhead fire alarm connection point interface testing
   c. Purification of piping on the potable side of the backflow preventer
   d. Main drain testing
   e. Air pressure testing of the dry pipe automatic fire protection sprinkler system
   f. Pneumatic air testing of dry pipe automatic fire protection sprinkler system
   g. Trip time testing of the dry pipe automatic fire protection sprinkler system

1.15 DEFINITIONS

A. Cold Space: Spaces outside of the building's envelope in which ambient temperatures are expected to be below 40°F.

B. Warm Space: Spaces within the building's envelope in which ambient temperatures are not expected to be below 40°F.

C. Finished Spaces: Spaces used for habitation or occupancy where rough surfaces are plastered, paneled, or otherwise treated to provide a pleasing appearance.

D. Unfinished Spaces: Spaces used for storage or work areas, such as sprinkler riser rooms, mechanical rooms, electrical rooms, etc., where appearance is not a factor.

E. Exposed: Open to view i.e. a room that is not covered by other construction.

F. Concealed Spaces: Spaces out of sight i.e. above ceilings, below floors, between double walls, furred-in areas, pipe and duct shafts, and similar spaces.

1.16 AS-BUILT DRAWINGS

A. The Contractor shall maintain, in addition to any reference drawings, an As-Built set of drawings, which have been reproduced from the approved site set on which all deviations from the original design shall be drafted in a neat legible manner with red colored pencil.

B. The Contractor shall update all references to specific products to indicate products actually installed on project.

C. Upon completion of work, the Fire Protection Contractor shall deliver the red lined drawings and one set of neatly drafted As-Built drawings on electronic media in ACAD format to the Architect for the Engineer to review and accept prior to being forwarded to the Owner for their records.

D. Submit full-scale drawings that are not larger than the contract documents (out of scale drawings will not be allowed)

E. The As-Built drawings shall show actual installation from all change orders, field authorizations, design changes, installation modifications, etc.

F. As-Built drawings shall contain dimensions to all main piping (from structure or gridlines), elevations of all piping (both above finished floor and below structure), and pipe length for all piping including riser nipples, sprigs, drops, and dry sprinkler heads.

G. Schematic details provided on submittal drawings shall be changed to project specific details with all piping and devices sized and drawn to scale.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Any reference in the specifications or on the drawings to any article, device, product, or material, by manufacturer, name, make, model, or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition.

B. The manufacturer listed as "Approved Manufacturer" have been approved for this project for the items indicated and does not require obtaining prior approval. Other manufacturers not listed shall require prior approval.

C. The listing of a manufacturer as an "Acceptable Manufacturer" does not necessarily mean that the products of that manufacturer are equal to those specified. The listing is only an indication of those manufacturers which may be capable of manufacturing, or have in the past manufactured, items equal to those specified, and is intended to aid the Contractor in identifying manufacturers.

D. A product provided by an "Approved Manufacturer" shall be equal to or superior to the specified manufacturer's item in function, appearance, and quality, and shall fulfill all requirements of the contract documents and specifications. The Architect/Engineer shall be the final judge as to whether an item meets these requirements or not. If a manufacturer is not certain that his product meets these requirements or not, then the manufacturer shall submit data as required to obtain the Architect/Engineer's approval prior to bid opening.

E. The approval of a manufacturer applies to the manufacturer only and does not relieve the Contractor from the responsibility of meeting all applicable requirements of the plans and specifications.

F. Contractor shall be responsible for all costs to other trades and all revisions required to accommodate any products which are different from those specified or shown.

G. In reviewing a manufacturer for acceptance, factors considered include the following: engineering data showing item's performance, proper local representation of manufacturer, likelihood of future manufacturer's local support of product, service availability, previous installation, previous use by Owner/Engineer/Architect, product quality, availability/quality of maintenance and operation data, capacity/performance compared to specified items, and similar concerns.

H. If approval is received to use other than specified items, responsibility for ensuring that items to be furnished will fit space available lies with this Division.

I. If non-specified equipment is used and it will not fit job site conditions, the Fire Protection Contractor assumes responsibility for replacement with items named in project specifications.

J. See "Substitute Request Form" (3 pages) contained at the end of this specification section for all product substitutions.

PART 3 ·EXECUTION

3.1 WORKMANSHIP

A. This Contractor shall provide completed systems with a neat and finished appearance. If, in the judgment of the Engineer, any portion of the work has not been performed in a workmanlike manner or is left in a rough unfinished state, the Fire Protection Contractor will be required to remove, reinstall, or replace same and patch and paint surrounding surfaces in a manner acceptable to the Engineer, without increase in cost to the Owner or General Contractor.

3.2 CLOSEOUT SUBMITTALS

A. Requirements: Final approval of fire protection installation will be recommended upon completion of the following:

1. Completion of all punchlist items
2. Operation instruction period to Owner's satisfaction
3. Permit Submittal
4. As-Built drawings on electronic media in ACAD format delivered to Architect
5. Signed Warrantee Letter
6. Operations and Maintenance Manuals
7. Completed and Signed Test Certificates
8. Backflow Preventer Full Forward Flow Test Certificate

3.3 FINAL INSPECTION

A. Prior to acceptance of the fire protection work, the Fire Protection Contractor shall put all fire protection systems into operation for a period of not less than 5 working days so that they may be inspected by the Architect/Engineer and the Owner's representatives.

B. The time of the final inspection shall be mutually agreed to by the Owner, Engineer, and Fire Protection Contractor.

3.4 OPERATION AND MAINTENANCE TRAINING

A. Upon completion of the work, and after all tests and final inspection of the work by the Authority Having Jurisdiction (AHJ), the Fire Protection Contractor shall demonstrate and instruct the Owner's designated operation and maintenance personnel in the operation and maintenance of the various fire protection systems. The Contractor shall arrange for scheduled instruction periods with the Owner. The Contractor's representatives shall be Superintendents or Foremen knowledgeable in each system and Supplier's Representative when so specified.

B. All drain locations and inspector's test locations shall be shown in addition to showing the access required to obtain the valves.

C. A general description of each fire protection system shall be demonstrated including the following.

1. Step-by-step procedure to follow shutting down each fire protection system.

2. Step-by-step procedure to follow putting each fire protection system back into operation.
3. Dry system air compressor locations and procedure for replacement.

D. Scheduled instruction periods shall be:

Underground Systems	1 Hour
Water Based Fire Protection Systems:	2 Hours for each system type

E. Costs for time involved by the Fire Protection Contractor shall be included in the bid.

3.5 FIRE PROTECTION CONTRACTORS RESPONSIBILITY FOR BUILDINGS

A New Buildings:

1. The Fire Protection Contractor shall bear expense of cutting, patching, painting, repairing, and replacing of work of other trades that are required because of the Fire Protection Contractors fault, error, tardiness, or because of damage caused by the fire protection installation.

B. Existing Buildings:

1. Cut carefully to minimize necessity for repairs to existing work. Do not cut beams, columns, or trusses.
2. This work shall be scheduled such that services and/or existing systems for the facility are not interrupted during normal operating hours, without prior written permission of the Owner's representative. Work that is performed during normal operational hours shall not interfere with the normal function of the facility's daily operation.
3. The Fire Protection Contractor shall also be responsible for the removal and reinstallation of all existing fire protection equipment that will interfere with installation and operation of any new construction indicated or required.
4. All fire protection equipment (other than piping) to be removed shall remain the property of the Owner, and shall be transported, stored, or disposed of, as directed by the Owner. This will be at no additional cost to the Owner.

3.6 INSTALLATION

A. Install fire protection equipment to permit easy access for normal maintenance, and so that parts requiring periodic replacement or maintenance can be readily removed.

B. Design and provide each system with full consideration to blind spaces, piping, electrical equipment, ducts, other construction, and equipment in accordance with detailed working drawings to be submitted to the Architect/Engineer for approval.

C. The Fire Protection Contractor shall modify or relocate all items that interfere with access to other trade work.

D. Provide access doors to access all valves installed in finished areas.

E. If circumstances at a particular location make the accessible installation of an item difficult or inconvenient, the situation shall be discussed with the Architect/Engineer before installing the item in a poor access location.

F. Provide separations between all dissimilar metals with a dielectric connection.

G. Provide offsets around all electrical panels and similar electrical equipment (transformers, main distribution panels, etc.) to maintain the clear space required by N.F.P.A. #70 (National Electrical Code). A 6'-0" clear

space is required above all electrical panels, a 6'-6" clearance is required from the floor to the top of the electrical panel, and a clear space of 3'-6" is required directly in front of the panel, except where indicated otherwise or required by N.F.P.A. #70 (National Electrical Code) to be more. Such offsets are typically not shown on the contract documents, but are required per this paragraph.

H. All piping and related items installed by the Fire Protection Contractor shall not present a safety hazard (i.e., items installed at/near head height, items projecting into maintenance access paths, etc.) or it will be required to be relocated at no additional cost to the Owner or General Contractor.

I. Access to equipment is of utmost importance. The Fire Protection Contractor shall apply extra attention to the laying out of pipe and in coordinating all work. Poor access to other trade work equipment will not be accepted.

J. Ensure that items to be furnished fit space available. Make necessary field measurements to ascertain space requirements including those for connections and furnish and install equipment of size and shape so final installation shall suit true intent and meaning of contract documents.

K. Install piping in longest reasonable lengths. The use of short lengths of pipe with multiple couplings where a single length of pipe could have been used is not acceptable.

3.7 REQUESTS FOR INFORMATION (RFI)

A. It is our intent to provide a timely response to any Request for Information (RFI) regarding the fire protection work. To further expedite this process, if a suggestion can be determined or derived at by the initiator of the Request for Information (RFI), it is required that this suggestion is supplied with the submitted Request for Information (RFI). If no suggestion is given where one is possible, the RFI will be returned as incomplete.

END OF SECTION 21 0000 – GENERAL FIRE PROTECTION REQUIREMENTS

DIVISION 21 1316 – DRY-PIPE SPRINKLER SYSTEM

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Dry-Pipe Sprinkler System at canopies tied into existing Dry-Pipe Sprinkler system. System is design-build by Contractor. Run supply lines as required on inside of building and then outside to canopy sections as required. Remove any existing system piping as required. Sprinkler heads shall be wall mounted and no piping shall be hung from canopy structure. Match design of existing new canopies constructed in 2024.

B. Includes, but not limited to, the following:

1. Provide all material, labor, equipment, design, and services necessary to perform the installation for modifying the existing installation of (1) dry pipe automatic fire protection sprinkler system(s) in accordance with the required and advisory provisions of the latest edition of N.F.P.A. 313 accepted by the Authority having Jurisdiction (City of Pasco Fire Department), project specifications, except as modified herein.
2. The Contractor is to obtain a permit and final approval from City of Pasco Fire Department for the fire protection sprinkler system. All permits, fees for plan review, inspections, testing, etc. shall be included in the bid proposal.

3. The Contractor shall simultaneously submit shop drawings, hydraulic calculations, seismic bracing calculations, and manufacturers data sheets to the local Authority Having Jurisdiction and Architect/Engineer for review and shall be approved by the Architect/Engineer prior to the purchase, fabrication, or installation of any system component as detailed in paragraph 1.13 of Specification Section 21 1316.
4. All fire protection equipment installed shall be by a manufacturer contained within "PART 2 - PRODUCTS" of this specification unless prior approval has been received for "Requests For Substitution" following the guidelines set forth in Specification Section 21 0000 paragraphs 1.8 and 2.1.

1.2 RELATED WORK

A. Coordinate the work of this section with all other sections of the project-specific Specifications and the Contract Drawings.

1.3 GENERAL SYSTEM REQUIREMENTS

A. Notify the Architect, Fire Protection Engineer, General Contractor, and building Owner to coordinate the pre-design meeting stated in Specification Section 21 0000 Paragraph 1.01.E.

B. When the trip time testing required by paragraph 3.13 of this specification section can't be met, the fire protection sprinkler system contractor shall provide an additional dry pipe automatic fire protection sprinkler system at no additional cost to the owner.

C. The sprinkler riser detail shown on the contract documents is conceptual in nature with the minimum quantity and types of sprinkler risers being required for this project. Actual quantity and types of system risers required for this project shall be determined by the fire protection sprinkler system contractor. If additional system risers are necessary, the fire protection sprinkler system contractor shall include them in their scope of work, prior to bidding.

D. Devices and equipment for fire protection service shall be U.L. listed or Factory Mutual Global approved for use in dry pipe sprinkler systems.

E. All H.V.A.C. mechanical units and associated ductwork larger than 1O" shall be shown on the drawings as part of the backgrounds.

F. All H.V.A.C supply grilles shall be shown on the submittal drawings to verify that the correct temperature sprinkler heads are being provided near heat sources, in accordance with N.F.P.A. #13.

1.4 LOCATION OF SPRINKLER HEADS

A. Sprinkler heads located in acoustical ceiling tiles shall be installed in a consistent pattern, centered both directions within the ceiling tiles (12" from a ceiling grid), and placed to avoid all lights and air diffuser grilles.

B. Sprinkler heads located in gypsum wallboard ceilings shall be installed in a consistent pattern within the gypsum wallboard ceiling and placed to avoid all lights and air diffuser grilles.

C. Sprinkler heads in exposed areas shall be installed in a consistent pattern while avoiding all lights, ductwork, and structural members.

D. Sprinkler protection shall be provided under all exterior roofs or overhangs where the assembly is of combustible construction (not just the exposed surface) and exceeds 4'-0" in depth.

E. All semi-recessed sprinkler heads shall be installed in such a manner that the deflector distance shall be within W' of each other as measured vertically down from the ceiling. Sprinkler heads that are determined to be installed outside of this installation range shall be modified to meet this criteria.

F. All semi-recessed sprinkler heads shall be installed in such a manner that the center part of the escutcheon that is attached to the sprinkler head is not installed at an elevation lower than the trim ring that conceals the ceiling penetration.

G. All pendent sprinkler heads with 2-piece escutcheons shall be installed in such a manner that the deflector distances shall be within W' of each other as measured from the ceiling. Sprinkler heads that are determined to be installed outside of this installation range shall be modified to meet this criteria.

H. Sprinkler heads shall be installed within all ceiling pockets except when all of the following criteria of N.F.P.A. #13 are met:

1. The total volume of the unprotected ceiling pocket does not exceed 1,000 cubic feet.
2. The depth of the unprotected pocket does not exceed 3'-0".
3. The entire floor under the unprotected ceiling pocket is protected by sprinklers at the lower ceiling elevation.
4. Each unprotected ceiling pocket is separated from any adjacent unprotected ceiling pocket by a minimum 10'-0" horizontal distance.
5. The unprotected ceiling pocket is constructed of non-combustible or limited combustible construction.
6. Quick response sprinkler heads are utilized throughout the compartment.

I. All semi-recessed and pendent sprinkler heads installed below a ceiling within each room shall have the frame arms aligned parallel to each other. Multiple heads installed in a single room shall not be allowed to have the frame arms not parallel to each other.

J. All upright sprinkler heads shall be installed with the frame arms parallel to the branch line.

K. Spacing of sprinkler heads shall not exceed that permitted by N.F.P.A. #13 for occupancy.

1.5 WATER DISTRIBUTION

A. Sprinkler head discharge shall be uniform throughout the area in which the sprinkler heads will open. Discharge from individual heads in the hydraulically most remote area shall be at a minimum of 100% the specified density.

1.6 SPRINKLER DENSITY AND DISCHARGE AREA OF OPERATION

A. Size piping to provide the required density when the system is discharging over the entire most demanding area.

B. Using the "Pipe Schedule" method to determine pipe sizing will not be allowed.

C. Basing hydraulic calculations upon the "Room Design" method to determine pipe sizing will not be allowed.

D. Application rates to horizontal surfaces below the sprinklers (floor area) shall be 0.10 g.p.m. per square feet over the hydraulically most demanding 1,950 square feet for light hazard occupancy (Open Offices,

Restrooms, Corridors, Conference Rooms, Break Rooms, combustible ceiling voids, combustible attic spaces, and under exterior canopies or overhangs).

E. Application rates to horizontal surfaces below the sprinklers (floor area) shall be 0.15 g.p.m. per square feet over the hydraulically most demanding 1,950 square feet for ordinary hazard group I occupancy (Janitor's Rooms).

F. Application rates to horizontal surfaces below the sprinklers (floor area) shall be 0.20 g.p.m. per square feet over the hydraulically most demanding 1,950 square feet for ordinary hazard group II occupancy (Electrical Rooms, MDF Rooms, Mechanical Areas, Elevator Machine Rooms, Elevator Shafts, and Storage Rooms).

G. When sloped ceilings or roofs are present and the slope exceeds· 2" per foot, the remote area shall be increased by 30%.

H. For buildings having unsprinklered combustible spaces (including areas used for roof venting), the minimum area of sprinkler operation shall be 3,000 square feet after all other remote area modifications have been made.

1.7 HOSE STREAM ALLOWANCES

A. Hose stream allowances for hydraulic calculations shall be per N.F.P.A. #13.

B. Light hazard occupancy shall require 100 g.p.m. combined hose streams.

C. Ordinary hazard occupancy shall require 250 g.p.m. combined hose streams.

1.8 PIPE C-VALUES FOR CALCULATING FRICTION LOSSES

A. Calculate losses in piping in accordance with Hazen-Williams equation using a 'C' value of:

1. 100 for unlined cast iron, unlined ductile iron, or black steel dry systems.
2. 120 for black steel wet systems or galvanized (both wet and dry systems).
3. 140 for cement lined cast iron or ductile iron.
4. 150 for listed P.V.C., copper tube, or stainless steel.

1.9 WATER SUPPLY

A. Base hydraulic calculations (for the bid) on a computer generated flow test performed on December 1999 of 110 p.s.i. static pressure with a residual pressure of 96 p.s.i. while flowing 2,000 g.p.m. Test hydrant elevation is approximately 370 feet and is located at intersection of Maitland Avenue and Ainsworth Avenue. Flow test information provided by City of Pasco Pubic Works.

B. After award of the project, the Contractor shall verify available water supply with a flow test recorded within six months of bid date. If a new flow test is required, the Contractor shall coordinate with local authorities for a new flow test and the fees associated with a new flow test shall be included in the bid. Information obtained from this flow test and indicated on the drawings shall be: test hydrant static pressure, test hydrant residual pressure, associated pitot reading from flowing hydrant, test hydrant location, test hydrant elevation, and underground water main configuration.

1.10 PIPE HANGER DETAILS AND SEISMIC BRACING DETAILS

A. Provide pipe hanger details and seismic bracing details in strict accordance with N.F.P.A #13 and manufacturer's literature. Details shall be unique to each installation configuration with all components clearly identified including the means of attachment and structure to be attaching to.

B. For all trapeze hangars, provide a table indicating the size of the pipe to be supported, size and type of the trapeze member, section modulus of the trapeze member, distance from the structure to pipe being supported (A and B dimensions), and the section modulus required.

C. Seismic bracing details may be incorporated into the seismic bracing calculations to from a single detail for each brace configuration.

1.11 SEISMIC BRACING CALCULATIONS

A. Provide seismic calculations for each seismic brace configuration showing the total calculated load, size of bracing material, type of bracing material, length of bracing material, seismic brace design angle, allowable load of the bracing component, allowable horizontal bracing load of the sprinkler system, structure for bracing connection, size of fastener, length of fastener, allowable load per fastener, and the number of braces required. Seismic bracing material for connections to structural members shall be sized per assigned load tables in N.F.P.A. #13 with a maximum 1/r ratio of 200. The "Total Calculated Load" divided by the "Allowable Load per Fastener" shall not exceed a maximum value of 0.90.

1.12 SYSTEM AIR CAPACITY

A. The size of the air compressor shall be based upon the total volume of the dry system piping. The Contractor shall create a table (located adjacent to the riser detail) indicating pipe size, pipe type, pipe diameter, and the associated total lineal length for each pipe size. The volume of air contained in the sprinkler system shall be the sum of all the individual pipe sizes and shown at the bottom of the table.

1.13 SUBMITTALS

A. See Specification Section 21 0000 Paragraphs 1.08 and 2.01 for "Submittal" requirements.

B. Sprinklers shall be referred to in the equipment submittals by the sprinkler identification or model number as specifically published in the appropriate agency listing or approval. Trade names or other abbreviated designations shall not be allowed.

C. Follow the guidelines set forth in Specification Section 21 0000 Paragraphs 1.08 and 2.1 for "Requests For Substitution" procedures. Product substitution during installation from the approved Equipment Submittals will not be allowed and shall result in the removal and re-installation of system components at no additional cost to the Owner.

D. Equipment submittal tabs shall include, at a minimum, the following:

1. Piping.
2. Fittings I Couplings.
3. Sprinkler Heads and Accessories.
4. Backflow Preventers.
5. Valves.
6. Dry Pipe Valves and Accessories.
7. Electrical I Fire Alarm Components.
8. Air Compressors and Accessories.

9. Pipe Hangers.
10. Seismic Bracing Components.
11. Access Doors.
12. Miscellaneous Equipment.

E. Equipment submittals shall include, at a minimum, the following:

1. Piping (Potable and Non-Potable).
2. Fittings I Couplings (Flanged, Grooved, Threaded, Etc.).
3. Sprinkler Heads I Head Guards.
4. Backflow Preventers.
5. Hose Valves for Full Forward Flow testing of the Backflow Preventer.
6. Valves.
7. Dry Pipe Valves.
8. Quick Opening Devices (Accelerators).
9. Local Alarm Devices.
10. Pressure Switches.
11. Tamper Switches.
12. Air Compressors.
13. Air Maintenance Devices.
14. Inspector's Test Assemblies.
15. Adjustable Drop Nipples.
16. Flexible Piping Serving Pendent Sprinkler Heads.
17. Pipe Hangers.
18. Seismic Bracing Components.
19. Water Pressure Gauges.
20. Air Pressure Gauges.
21. Access Doors.
22. Spring Isolators.

F. All re-submitted drawings shall have the areas of revision clearly marked with revision clouds.

G. When the drawings are created in AUTOCAD, the submittal drawings shall be in plotted to the following criteria:

1. Black and white plots shall consist of the following as a minimum:
   a. Light Black for drawing background.
   b. Dark Black for all sprinkler related components and text.

1.14 PIPING SYSTEM LAYOUT

A. Prepare detailed working drawings that are not larger than the contract documents for the system layout in accordance with N.F.P.A. #13, "Working Drawings (Plans)". Show data essential for the proper installation of each fire protection sprinkler system per N.F.P.A. #13 consisting of floor plans (1/8" = 1'-0" minimum), building sections, piping details, and elevations to clearly show pipe routing, head spacings, system water supply, devices, valves, and fittings.

B. The cover sheet of the shop drawings shall contain a site plan (1" = 50'-0" minimum) that clearly shows all fire service main routing with size and type of pipe indicated, fire hydrant locations, fire department connection location, devices, valves, and fittings, regardless of who performed the underground work.

C. A graphical scale shall be provided for each floor plan or detail on the shop drawings in accordance with N.F.P.A. #13, "Working Drawings (Plans)".

D. The minimum text size on full scale drawings shall be 1/8" high.

E. The cover sheet of the shop drawings shall clearly state the scope of Contractor's work, Contractor's exclusions, Contractor's start point, which version of N.F.P.A. #13 was used for the sprinkler design, sprinkler system design density, remote area size for all occupancies, and current water flow information used in the hydraulic calculations.

F. Projects that require more than one sheet to show the entire fire protection sprinkler system shall require a key plan. The key plan shall be located in the lower right hand corner of the drawing, shall identify the location of the fire protection sprinkler system that is contained on that sheet, and shall contain a reference north arrow.

G. All sheets shall contain a "Matchline" designation to indicate where the building and fire protection sprinkler system continue, even if on the same sheet.

H. All flexible grooved coupling that are to be installed to meet the requirements of N.F.P.A. #13 for vertical and horizontal pipe runs shall be designated on the drawings.

I. Sprinklers shall be referred to in the sprinkler legend by the sprinkler identification or model number as specifically published in the appropriate agency listing or approval. Trade names or other abbreviated designations shall not be allowed.

1.15 SPRINKLER SYSTEM DESIGN

A. Hydraulic calculations for the fire protection sprinkler system design are to be based upon the area/density method.

B. Hydraulic calculations for all tree type and looped type sprinkler systems shall be performed on a computer utilizing an approved fire protection hydraulics program. Tree type sprinkler systems may utilize "Excel" to perform the hydraulic calculations. Hydraulic calculations performed by hand will not be accepted.

C. Small rooms (closets, restrooms, etc.) contained within the remote area shall be included in the hydraulic calculations. Omission of small rooms will not be allowed.

D. 1" piping shall not serve (2) upright or (2) pendent sprinkler heads unless hydraulic calculations are provided to verify the pressure losses associated with multiple flows through 1" pipe.

E. An equivalent length of 1'-0" shall be added to the hydraulic calculations for each roll groove installed on the piping and shall be added to the pipe containing the roll groove.

F. An equivalent length of pipe for flexible piping drops (manufacture's literature) shall be added to the hydraulic calculations and shall be added to the pipe containing the flexible sprinkler drop.

G. All changes in piping elevation shall be reflected in the hydraulic calculations at the point in which the elevation change occurs. Adding an accumulated total for elevation at a single point will not be allowed.

H. A margin in the hydraulic calculations shall be maintained between the system demands and water availability. The margin shall consist of 5 p.s.i. or 10% depending upon whichever is greater and is based upon the available static pressure.

I. Hydraulic node numbers shall be unique for each remote area, shall not be duplicated for auxiliary remote areas, shall not be duplicated for other sprinkler systems installed as part of this project, and shall be shown on the submittal drawings.

J. Hydraulic node numbers shall be unique for each reference point and only used once per system. A common reference point for multiple hydraulic calculations shall only have one hydraulic node designation, multiple references to the same hydraulic reference point will not be accepted.

K. An equivalent "K-factor" for sprinkler head drops or sprigs (stub-ups) will not be acceptable. The actual "K-factor" of the sprinkler head, associated lineal pipe footage, equivalent lineal footage for associated pipe fittings, and elevations shall be part of the main body of the hydraulic calculations. Separate one line calculations to determine an equivalent "K-factor" that is inserted into the hydraulic calculations will not be acceptable.

1.16 SPRINKLER SYSTEM VELOCITY REQUIREMENTS

A. Maximum permissible velocity in tree-type branch lines and mains shall be 26 feet per second.

B. The maximum velocity allowed in the underground mains shall be 8 feet per second.

C. The maximum velocity allowed through the backflow preventer shall be 16 feet per second maximum.

1.17 SPRINKLER SYSTEM CONTROL VALVE LOOP REQUIREMENTS

A. Provide a control valve loop for piping serving spray booths, elevator pits, elevator mechanical rooms, or sprinklers at the top of elevator shafts. The control valve loop shall consist of a grooved coupling on the supply side of the control valve and shall contain a grooved coupling on the discharge side of the control valve at approximately the same elevation to create a U-shaped control valve loop. The loop piping shall also contain an auxiliary drain outlet with a ball valve. The drain discharge shall be piped to an acceptable location and shall not terminate in the wall. The control valve loop shall be concealed in an interior wall and provided with an access door.

PART 2 - PRODUCTS

2.1 ABOVEGROUND PIPING SYSTEMS

A. Provide fittings for changes in direction of piping and for connections. Make changes in piping sizes through tapered reducing pipe fittings and perform all welding in the shop. Bushings and field welding will not be permitted.

B. Conceal all piping in areas with suspended and hard ceilings.

C. All sprinkler system piping and fittings installed outside of the building's envelope shall be galvanized.

D. All fire protection sprinkler system components and devices shall be domestically made.

2.2 SPRINKLER PIPE AND FITTINGS

A. All above-ground wet pipe or dry pipe automatic sprinkler system piping and fittings shall meet the following criteria:

1. Threaded or Cut Groove: Black and galvanized steel pipe Schedule 40 for sizes less than 8 inches. Black and galvanized steel Schedule 30 for sizes 8 inches and greater. Piping with a lesser schedule value (thinner walled pipe i.e. "Dyna-Thread", XL, or other schedule 40 "Replacement" pipe) will not be allowed for threaded or cut groove connections regardless of the corrosion resistance ratio.
2. Roll Groove or Welded: Black and galvanized steel pipe to be either having a minimum wall thickness in accordance with Schedule 10, Schedule 40, U.L. listed, or Factory Mutual Global approved pipe having a U.L. corrosion resistance ratio equal to or greater than 1.0.
3. Grooved Fittings and Coupling: All grooved fittings and couplings shall be manufactured to ASTM A536 requirements for ductile iron castings. The couplings shall consist of two ductile iron housing segments with an elastomer pressure responsive gasket and zinc electroplated bolts and nuts.
    a. Rigid Style Grooved Couplings: All rigid style couplings shall consist of housings casted with an offset, angle pattern bolt pads to provide rigidity and system support. The coupling installation shall be complete at visual, pad-to-pad offset contact. Rigid couplings that require exact gapping of bolt pads at specified bolt torques are not permitted.
    b. Flexible Style Grooved Couplings: All flexible style couplings shall consist of housings casted with parallel pattern bolt pads to provide flexibility for vibration attenuation, stress relief, or seismic movement. The coupling installation shall be complete at visual, pad-to-pad contact. Flexible couplings that require exact gapping of bolt pads at specified bolt torques are not permitted.
    c. Gaskets: All gaskets for dry systems shall be Grade EPDM Type A and for freezer applications Grade L Silicone.
4. All fire protection piping and fittings (above-ground) shall be threaded, grooved, or flanged end fittings. The use of plain end, lock-type, friction type, compression type, or any other type of fitting that is plain end ("prepared end", "polished end", beveled end, "FIT" end such as Victaulic "FIT", Gruvlok "Sock-It", Victaulic "Pressfit") is not permitted.
5. Welded Outlets and Drilled Outlets for Mechanical Tees: Use outlets for main, branch line, arm-overs, drops, and sprigs only and shall be U.L. listed or Factory Mutual Global approved. Welded outlets with grooved ends shall have a nominal diameter equal to or smaller than the pipe to which they are attached. Welded outlets with threaded ends and drilled outlets for mechanical tees shall have nominal size outlets at least one pipe diameter smaller than the pipe to which they are attached.
6. Underground Supply Piping From Flange Above Finished Floor to the Backflow Preventer: Provide cement mortar lined Class 52 ductile iron piping, AWWA standard bell and spigot Class 150 ductile iron piping or C-900 Class 200 DR14 U.L. labeled PVC pipe. If acceptable by the Authority Having Jurisdiction, type 304 or 316 stainless steel piping or type K roll grooved drawn copper tubing may be installed. All fittings shall be U.L listed or F.M. approved for fire protection installations, shall utilize full flow standard radius fittings, and shall match the type of underground piping to be installed.
7. Approved manufacturers are as follows:
    a. Black and Galvanized Pipe: Allied Tube and Conduit, AMS Tube Corporation, Bull Moose Tube Company, North West Pipe and Casing, State Pipe and Supply Company, Wheatland Tube Company, or prior approved equal.
    b. Threaded Products: Anvil International, Ward, or prior approved equal.
    c. Grooved Products: Tyco (Central), Victaulic, or prior approved equal.
    d. Factory Segmentally Welded Grooved Products: Fablok (Allied Tube and Conduit), Iowa Fittings, Texline, Victaulic, or prior approved equal.
    e. Flanged Products: American Cast Iron Pipe Company, Anvil International, Merit Manufacturing (Mueller), Trinity Valley Iron & Steel Company, Pacific Coast Flange Incorporated, Tyler Pipe, Union Foundry Company, U.S. Pipe and Foundry Company, Ward, or prior approved equal.

f. Welded outlets: Anvil International, Island Fitting, Merit Manufacturing (Mueller), NAP (North Alabama Pipe Corporation), Ward, or prior approved equal.
g. Ductile Iron Pipe: American Cast Iron Pipe Company, Pacific States Cast Iron Pipe Company, U.S. Pipe and Foundry Company, or prior approved equal.
h. Mechanical Joint Products: American Cast Iron Pipe Company, EBBA Iron Incorporated, Pacific States Cast Iron Pipe Company, U.S. Pipe and Foundry Company, or prior approved equal.
i. P.V.C. Pipe: Diamond Plastics Corporation, Johns Manville (Blue Brut), North American Pipe Corporation, PW Pipe, or prior approved equal.
j. Stainless Steel Fittings: Anvil International, Fablok (Allied Tube and Conduit), Greensboro Pipe Company, Victaulic, or prior approved equal.
k. Stainless Steel Pipe: Alaska Copper and Brass, American Pipe and Supply, Greensboro Pipe Company, or prior approved equal.
l. Copper Fittings: Alaska Copper and Brass, Nibco, Victaulic, or prior approved equal.
m. Copper Pipe: Alaska Copper and Brass, Cerro Flow Products Inc., Mueller Industries Incorporated, Victaulic, or prior approved equal.

2.3 SPRINKLER HEADS

A. Provide minimum nominal Y:z-inch orifice commercial sprinkler heads with a release mechanism meeting the requirements of N.F.P.A. #13 for.thermal sensitivity and temperature rating. Commercial sprinkler heads less than Y:z-inch orifice will not be allowed unless prior approval is obtained.

B. Extended coverage sprinkler heads will be allowed, but it will be the fire protection sprinkler Contractor's responsibility to assure proper implementation.

C. Extended coverage sprinkler heads will not be allowed in areas requiring sprinkler head guards unless a U.L. listed or Factory Mutual Global approved sprinkler head guard is available. Sprinkler head guard shall be specifically listed for use with proposed extended coverage sprinkler heads.

D. Provide white finished semi-recessed sprinklers with escutcheons of matching finish in acoustical ceiling tile ceilings.

E. Provide white finished pendent sprinklers with 2-piece escutcheons of matching finish in gypsum wallboard ceilings.

F. Provide white finished semi-recessed horizontal sidewall sprinklers with escutcheons of matching finish in walls of normally occupied rooms or rooms that are finished and painted.

G. Provide white finished semi-recessed dry style sprinklers (pendent or sidewall) with escutcheons of matching finish for all installation locations.

H. Provide bronze uprights in exposed areas (no ceilings) and in ceiling voids.

I. All quick response sprinkler heads shall be glass bulb style.

J. All sprinkler heads that utilize "0-Rings" will not be allowed.

K. Provide corrosion-resistant sprinkler heads as required by N.F.P.A. #13.

L. Intermediate temperature rated sprinkler heads shall be required for all sprinkler heads placed closer than 2'-6" from the center of an H.V.A.C. ceiling mounted supply grille.

M. Provide sprinkler head guards on exposed piping installed at an elevation less than 8'-0", or in areas subject to mechanical damage. Head guards shall be specifically listed for the sprinkler head in which they are protecting.

N. Approved manufacturers are as follows:

1. Sprinkler Heads: Globe, Reliable, Tyco, Victaulic, Viking, or prior approved equal.
2. Sprinkler Head Guards: Globe, Reliable, Tyco, Victaulic, Viking, or prior approved equal.

2.4 BACKFLOW PREVENTER

A. Provide letter of certification to Owner after testing.

B. The backflow preventer type shall conform to local water purveyor requirements.

C. The backflow preventer shall be a double detector check valve assembly style made from cast iron or fabricated steel consisting of (2) independent check valves, (2) OS&Y shut-off valves, ball type test cocks, a bypass valve, and meter trim. The backflow preventer shall conform to U.L., Factory Mutual Global, FCCC, and HR flow rate with maximum velocity across the backflow preventer of 16 feet per second.

D. The backflow preventer type and installation configuration shall be listed in the "Backflow Prevention Assemblies Approved for Installation in Washington State" from the Washington State Department of Health.

E. Approved manufacturers are as follows:

1. Backflow Preventers: Ames, Conbraco, Watts, Wilkins, or prior approved equal.

2.5 HOSE VALVES FOR FULL FORWARD FLOW TESTING OF THE BACKFLOW PREVENTER

A. Provide downstream of the backflow prevention assembly either 2" angled hose valves or 2W' straight pattern hose valves for full forward flow testing of the backflow preventer.

B. Provide (1) 2W' hose valve for each 250 g.p.m. of system demand.

C. Provide a bronze valve body with a rising stem, brass internal parts, natural rubber seal, ductile iron hand wheel, 2W' National Pipe Thread by male hose thread outlet.

D. Provide each hose valve with a cap and chain.

E. Valve shall be rated for a working pressure of at least 300 p.s.i.

F. Approved manufacturers are as follows:

1. Angle Hose Valves: Croker, Elkhart, Guardian, Nibco, Potter Roemer, Powhattan, or prior approved equal.

2.6 VALVES

A. Provide valves of types approved for fire service in accordance with N.F.P.A.#13.

B. Control valves for fire protection systems shall be either NRS, OS&Y or butterfly style. All butterfly style valves shall be provided with an integral tamper switch and weatherproof actuator.

C. Provide a valve with an integral tamper switch to piping for sprinkler heads, elevator pits, elevator mechanical rooms, and sprinklers at the top of elevator shafts. The valve shall be installed at an elevation approximately 5'-0" above finished floor.

D. Check valves shall be grooved or flanged clear opening spring assisted swing- check type for sizes 2Yz" and larger (butterfly style check valves are not allowed).

E. Gate valves shall open by counterclockwise rotation.

F. Approved manufacturers are as follows:

1. Butterball Valves: Milwaukee, Nibco, Victaulic, or prior approved equal.
2. Butterfly Valves: Anvil International (Gruvlok), McWane (Kennedy), Nibco, Tyco, Victaulic, or prior approved equal.
3. Ball Valves: Anvil International, Milwaukee, Nibco, United Brass, Victaulic, Watts, or prior approved equal.
4. Check Valves: Anvil International (Gruvlok), Reliable, Tyco, United Brass, Victaulic, Viking, or prior approved equal.
5. N.R.S. Gate Valves: McWane (Kennedy), Mueller, Nibco, Victaulic, Wilkins, or prior approved equal.
6. OS&Y Gate Valves: AVK, McWane (Kennedy), Mueller, Nibco, Victaulic, Wilkins, or prior approved equal.

2.7 DRY PIPE VALVES

A. Provide a dry pipe valve for each system complete with control valve, main drain valve, pressure gauge and all accessories for a code complying fire protection riser.

B. The dry pipe valve shall have a water to air p.s.i. ratio not less than 5 to 1.

C. The internal components of the dry pipe valve shall be replaceable without removing the dry pipe valve from the installed position.

D. Approved manufacturers are as follows:

1. Dry Pipe Valves: Reliable, Tyco, Victaulic, Viking, or prior approved equal.

2.8 PRIMING WATER CONNECTION

A. Provide an outlet on the system manifold that consists of a ball valve with copper- tubing that is routed to the fill cup for the priming water supply of the dry pipe valve. In lieu of a priming water connection, a dry pipe valve with an internal priming chamber will be acceptable.

2.9 QUICK OPENING DEVICES (ACCELERATORS)

A. Provide a quick-opening device (accelerator) by the same manufacturer as the dry pipe valve for systems when required by paragraph 3.11 of this specification section. The quick opening device shall have an integral anti-flooding device to prevent water or contamination from entering the internal restriction areas of the accelerator and shall be installed at the system riser.

B. Approved manufacturers are as follows:

1. Accelerators: Globe, Reliable, Tyco, Victaulic, Viking, or prior approved equal.

2.10 LOCAL ALARM DEVICE

A. Provide a 10" electric alarm bell and back box of the approved weatherproof and guarded type that sounds locally upon the flow of water actuating the paddle of the water flow indicator. The electric bell shall be tied into the fire alarm system and operate on a 24 volts D.C. power source. If a fire alarm system is not installed, the electric bell shall operate on a 120 volts A.C. power source. The Fire Sprinkler Contractor shall cover all costs associated with the installation, power connection, and low voltage connection for the electric bell. Mount the alarm bell on the outside of the exterior wall of the building and coordinate with the electrical Contractor the power available for the alarm bell.

B. Approved manufacturers are as follows:

1. Electric Bells: Potter Electric, System Sensor, or prior approved equal.

2.11 PRESSURE SWITCH ·ALARM

A. Provide a pressure switch - alarm switch with (2) sets of single pole I double throw (SPOT) Form "C" contacts for the automatic transmittal of an alarm over the facility fire alarm system. The pressure switch is to be installed by the Sprinkler Contractor and wiring of the pressure switch is be performed by the Electrical Contractor.

B. Approved manufacturers are as follows:

1. Pressure Switch - Alarm: Potter Electric, System Sensor, or prior approved equal.

2.12 PRESSURE SWITCH - SUPERVISORY AIR

A. Provide a pressure switch - supervisory air switch with (2) sets of single pole I double throw (SPOT} Form "C" contacts for the automatic transmittal of a supervisory condition to the facility fire alarm system when the air pressure in the fire protection sprinkler system becomes low. The pressure switch is to be installed by the Sprinkler Contractor and wiring of the pressure switch is be performed by the Electrical Contractor.

B. Approved manufacturers are as follows:

1. Pressure Switch - Supervisory Air: Potter Electric, System Sensor, or prior approved equal.

2.13 TAMPER SWITCHES

A. Provide tamper switches that are suitable for mounting to the type of control valve to be supervised either in the open or closed position. The tamper switch shall be tamper resistant and contain one set of SPOT (Form C) contacts arranged to transfer upon opening or closing of the valve of more than two rotations of the valve stem. Tamper switches shall be provided for all control valves, backflow preventer valves, post indicating valves, or any other valve used for system shutdown.

B. Approved manufacturers are as follows:

1. Tamper Switches: Potter Electric, System Sensor, or prior approved equal.

2.14 AIR COMPRESSORS

A. Provide an air compressor that is an automatic electric motor-driven type with a 10-gallon minimum air tank.

B. The air compressor shall be sized such that the time to charge the complete sprinkler system to normal system air pressure is less than 30 minutes.

C. The size of the air compressor motor shall be based upon the capacity of the dry pipe system divided by the c.f.m. output of the compressor under normal operating conditions.

D. The selection of the air compressor motor shall be sized not to exceed a X H.P. motor rated for a 115 Volts AC. single phase power source.

E. The air compressor shall allow the tank to be pressurized to a minimum of 110 p.s.i. before the motor shuts off.

F. All pipe and fittings between the air compressor tank and the point of connection to the system riser shall be hard piped with Schedule 40 galvanized steel, except that a 2'-0" section of flexible air line shall be installed near the air compressor unit.

G. The air compressor shall be bolted to spring isolators that are to be located at each corner of the mounting base to minimize vibration transmissions to the building structure. See the paragraph below contained in this specification section for requirements on spring isolators.

2.15 AIR MAINTENANCE DEVICES

A. Provide a U.L. listed or Factory Mutual Global approved fire protection system automatic air maintenance device for each system riser.

B. The air maintenance device shall regulate the air pressure contained within the dry system piping between 30 p.s.i. and 40 p.s.i.

C. Approved manufacturers are as follows:

1. Air Maintenance Device: General Air Products, Reliable, Tyco, Victaulic, Viking, or prior approved equal.

2.16 INSPECTOR'S TEST CONNECTION

A. Provide test connections approximately 6 feet above the floor for each sprinkler system or portion of each sprinkler system equipped with an alarm device. Inspector's test connection shall be located at the most remote part of each system.

B. All inspector's test connection drain discharges shall be piped down the wall to an elevation approximately 6" above exterior grade before penetrating the exterior wall.

C. Provide test connection discharge piping to a location where the discharge will be readily visible and where water may be discharged without property damage.

D. All pipe and fittings on the exterior of the building shall be galvanized and the drain discharge shall terminate with a down turned 45° elbow. Exterior discharge shall be placed to minimize impacts on landscaping features and coordinated with the General Contractor and building Owner.

E. Provide a site glass when the inspectors test discharge cannot be readily visible.

F. Inspector's test valves installed in finished areas shall be recessed in the wall and provided with a lockable access panel.

G. Inspector's test discharge orifice shall be a smooth bore corrosion resistant orifice giving a flow equivalent to one sprinkler of a type having the smallest orifice installed on that system.

H. The inspector's test discharge shall not terminate on the roof or on the roof of a building overhang. The inspector's test discharge shall be piped down to discharge just above exterior grade level. The piping shall be located inside a wall or vertical shaft in finished areas.

2.17 DRAINS

A. Provide main drain discharge piping to a floor drain of adequate size to readily receive the full flow from the main drain through a 2" air gap.

B. Provide auxiliary drains for trapped sections of system piping and route all drain discharge piping to a safe point outside the building.

C. All auxiliary drain valves shall be piped down to an elevation less than 6'-0" above finished floor.

D. All auxiliary drain discharges shall be piped down the wall to an elevation approximately 6" above exterior grade before penetrating the exterior wall.

E. Auxiliary drain valves installed in finished areas shall be recessed in the wall and provided with a lockable access panel.

F. Coordinate all drain locations with the General Contractor and building Owner.

G. All pipe and fittings on the exterior of the building shall be galvanized and the drain discharge shall terminate with a down turned 45° elbow. Exterior discharge shall be placed to minimize impacts on landscaping features and coordinated with the General Contractor and building Owner.

H. Termination of main drains or auxiliary drains that allow the discharged water to flow across concrete, asphalt, roof, building overhang roof, gutter, or other finished material will not be allowed.

2.18 ADJUSTABLE DROP NIPPLES

A. If the Contractor chooses to, provide adjustable drop nipples that are cold formed from steel tube conforming to ASTM A53 that contain (2) ethylene propylene (EPDM) 0-rings for sealing of the independent barrels. The adjustable drop nipples shall be U.L. listed or Factory Mutual Global approved for installation in accordance with N.F.P.A. #13.

B. Approved manufacturers are as follows:

1. Adjustable Drop Nipples: Cold Extrusion Company of America (CECA), Merit Manufacturing, or prior approved equal.

2.19 FLEXIBLE PIPING SERVING PENDENT SPRINKLER HEADS

A. If the Contractor chooses to, provide flexible pipe assemblies for drops to pendent sprinkler heads that are U.L. listed and Factory Mutual Global approved for use in fire protection sprinkler systems.

B. The flexible pipe assembly shall utilize braided 1" corrugated hose with factory installed adapters (1" MPT for connection to the sprinkler system and W' FPT for connection of the sprinkler head) that are fully welded (no compression fittings) as a unit.

C. The flexible piping unit shall be held securely to acoustical ceiling assemblies by using clips that snap onto the ceiling runner and utilizing a self tapping screw though the center tab of each mounting bracket and the ceiling runner.

D. The flexible piping unit shall be held securely to gypsum wallboard ceilings by securing the mounting bracket with four self tapping screws (two on each end) into the metal stud ceiling framing members.

E. Flexible piping shall be installed to limit the bends from branch lines to the sprinkler heads. Flexible piping drops shall not be installed to form a loop and shall be limited to a change in direction not exceeding 270° over the length of the installation.

F. Approved manufacturers are as follows:

1. Flexible Piping Serving Pendent Sprinkler Heads: FlexHead Industries (FlexHead), or prior approved equal.

2.20 PIPE HANGERS

A. Hanger components that attach directly to sprinkler piping or the building structure shall be U.L listed or Factory Mutual Global approved.

B. All C-clamp type hangers shall be fitted with retainer straps.

C. Hangers consisting of a hanger ring, all thread rod, and a hanger ring attached to a pipe at a higher elevation will not be allowed.

D. All pipe stands shall be a minimum of 2" or can be sized in accordance with the 2001 edition of N.F.P.A. #15 Table 6.3.2.2.1 and Table 6.3.2.2.2 for size, height, and spacing.

E. The only kwik bolt listed and approved for support in cracked concrete is Hilti Kwik Bolt Modeil KB-TZ. All other kwik bolts will not be allowed.

F. Approved manufacturers are as follows:

1. Hangers: Afcon, Anvil International, Erico, Nibco (Tolco), PHO, or prior approved equal.
2. Attachments: Hilti, ITW Ramset, Simpson Manufacturing Company, Speedy Products (Sammy Super Screw), Textron (HangerMate), or prior approved equal.

2.21 SEISMIC BRACING COMPONENTS

A. Seismic braces shall be connected to major frame members wherever possible with connections to joists being made only when necessary and must be coordinated with the Structural Engineer.

B. The only kwik bolt listed and approved for seismic bracing in concrete is Hilti Kwik Bolt Model KB-TZ. All other kwik bolts will not be allowed.

C. Approved manufacturers are as follows:

1. Seismic Braces: Afcon, Erice, Nibco (Tolco), or prior approved equal.
2. Attachments: Hilti, ITW Ramset, or prior approved equal.

2.22 WATER PRESSURE GAUGES

A. Each system shall have a stainless steel pressure gauge to provide visual supervision of the water pressure. Provide a minimum 3Yz" diameter pressure gauge with a Y-i" natural pipe thread connection that is accurate to within 2.0 p.s.i. The pressure gauge shall be calibrated to register up to a maximum of 300 p.s.i. for static water pressures less than 175 p.s.i. and a minimum of 50 p.s.i. above static water pressure when the static water pressure exceeds 175 p.s.i.

B. Provide a water pressure gauge in the following locations at a minimum.

1. Supply side of the backflow preventer check valves to read the system supply pressure.
2. On the system riser above all check valves or alarm valves to read the system pressure.

C. Approved manufacturers are as follows:

1. Water Pressure Gauges: Argco, Ashcroft, Moeller Instrument Company Inc., Potter Roemer, US Gauge Products, Victaulic, Wika, or prior approved equal.

2.23 AIR PRESSURE GAUGES

A. Each pneumatic air system shall have a stainless steel pressure gauge to provide visual supervision of the air pressure contained within the dry pipe sprinkler system. Provide a minimum 3Yz" diameter pressure gauge with a Y-i" natural pipe thread connection that is accurate to within 1.0 p.s.i. and is calibrated to register up to a maximum of 80 p.s.i.

B. Approved manufacturers are as follows:

1. Air Pressure Gauges: Ashcroft, Moeller Instrument Company Inc., US Gauge Products, Victaulic, or prior approved equal.

2.24 ACCESS DOORS

A. Provide access doors for auxiliary drain valves installed in finished areas, inspector's test valves installed in finished areas, and for all control valves serving sprinkler heads located in elevator pits, elevator mechanical rooms, or at the top of elevator shafts.

B. Access doors shall be installed at an elevation approximately 5'-0" above finished floor.

C. Access doors in rated walls shall be fire rated with 2" of insulation sandwiched between an inner and outer door panels.

D. Access doors in non-rated walls are not required to be fire rated.

E. The access doors shall be cold rolled steel and constructed with a minimum 18 gauge frame and a 18 gauge door panel minimally.

F. Access doors shall be a minimum of 18" X 18" in size for control valve loops and drum drip assemblies and 9"x9" for auxiliary drain valves.

G. Access doors shall mount flush to the finished wall and are not allowed to be surface mounted, unless the wall is CMU or concrete.

H. Access doors shall be U.L. listed or Factory Mutual Global approved and shall have a continuous hinge, self latching, key operated cylinder lock, and a baked- on primer coating.

I. All doors shall have an interior latch release mechanism.

J. Approved manufacturers are as follows:

1. ·Access Doors: Acudor, Elmdor, Greenheck, JL Industries, Milcor, Nystrom, or prior approved equal.

2.25 SPRING ISOLATORS

A. Spring Isolators shall consist of wound-steel compression springs or high- strength spring alloy steel with a spring diameter not less than 0.8 of compressed height of spring at rated loads.

B. Provide minimum additional travel to solid of that equal to 50% of rated deflection. Provide spring wire with elastic limit stress exceeding at solid deflection.

C. Provide units with telescoping cast iron or steel housing complete with resilient alignment inserts and a top and bottom loading plate.

D. The housing shall have a minimum 1/4 inch thick rubber or neoprene sound- deadening pad bonded to the base of housing.

E. The housing shall have pre-manufactured holes for kwik bolting the spring isolator to the concrete floor or to a concrete pad.

F. The spring isolators shall comply with minimum static deflections recommended by ASHRAE.

G. The spring isolators shall comply with manufacturer's recommendations for selection and application of vibration isolation materials and units.

H. The spring isolators shall have a minimum of 2" of deflection and shall be provided with limit stops to prevent undue motion during start and stop, but unrestrained movement during normal operation.

I. Approved manufacturers are as follows:
1. Spring Isolators: Amber-Booth Company, Mason Industries Incorporated, or prior approved equal.

2.26 AIR COMPRESSOR PADS

A. The air compressor spring isolators shall be kwik bolted to a raised reinforced concrete pad that is poured in place in areas that do not contain a concrete floor. The air compressor pad shall extend beyond the footprint of the air compressor a minimum of 1'-0" in all directions and shall be a minimum 3W' high

2.27 WALL PLATES

A. Provide a split hinge type metal plate for piping passing through walls, floors, platforms, and ceilings installed in exposed spaces. Wall plates shall either be chrome plated or factory painted to match the surrounding color scheme.

2.28 OVERSIZED ESCUTCHEON TRIM RINGS

A. The fire protection sprinkler system contractor shall provide oversized escutcheon trim rings to conceal the ceiling system penetrations that are oversized to meet the requirements of the International Building Code (1.B.C.) and ASCE 7.

B. The oversized escutcheon trim rings shall be the same finish as the sprinkler head and escutcheon in which it is to be installed.

C. The oversized escutcheon trim rings shall be made of cold rolled steel.

D. To maintain the fire ratings, plastic or other materials that will not maintain a rating will not be allowed.

E. Approved manufacturers are as follows:

1. Oversized Escutcheon Trim Rings: Fire Lock (Victaulic), Reliable, or prior approved equal.

2.29 IDENTIFICATION SIGNS

A. Provide a permanently marked metal or engraved rigid plastic identification sign with proper lettering and secured with corrosion resistant wire, chain, or other approved methods for all control valves, drains, inspector's test valves, and fire department connection zones in accordance with N.F.P.A. #13.

2.30 HYDRAULIC SIGNS (PLACARDS)

A. Each sprinkler system riser shall have a hydraulic sign placed near the control valve that is permanently marked and made either of weatherproof metal, rigid plastic, or weatherproof tyvek. The hydraulic sign shall be permanently secured with corrosion resistant wire, chain, or adhesive backing. The hydraulic sign shall identify the location of the design area, discharge density, design area size, system demands at the base of riser, hose stream allowances, current water flow information, and auxiliary design parameters (densities and areas) associated with the system installed.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Only a Contractor that is state certified as a level IV technician by National Institute for Certification in Engineering Technologies (NICET) in the automatic sprinkler system layout sub field of fire protection engineering technology (in accordance with NICET 1014-7) shall be allowed to perform the fire protection work. The installing Contractor shall have a minimum of five (5) years experience in the design, installation, and testing of dry pipe automatic fire protection sprinkler systems, or similar fire protection systems. A list of installations of a similar nature and scope shall be provided on request.

B. Installation, workmanship, fabrication, assembly, erection, examination, inspection, and testing shall be in accordance with N.F.P.A. #13, except as modified herein.

C. All piping and fittings installed prior to the backflow preventer are considered part of the potable water system and shall be required to be of a type that maintains a clean and rust free potable system. The use of black and galvanized pipe and fittings on the potable waterside of the backflow preventer will not be allowed.

D. Grooved couplings and fittings shall be installed in accordance with the manufacturer's recommendations. Grooved ends shall be clean and free from indentations, projections, and roll marks in the area from the pipe end to the groove. Grooved coupling gaskets shall be molded and produced by the coupling manufacturer.

E. The grooved coupling manufacturer's factory trained representative shall provide on-site training for contractor's field personnel in the use of grooving tools and installation of grooved joint products. The representative shall periodically visit the jobsite to review the contractor's work and to evaluate that the contractor is following the best recommended practices in grooved product installation.

F. The fire protection sprinkler system contractor shall remove and replace any piping joints deemed improperly installed or show signs of leakage.

G. The fire protection sprinkler system contractor shall remove and replace any piping that has been damaged upon installation and shows signs of being bent, warped, or dented.

H. Do not install sprinklers heads that have been dropped, damaged, show signs of corrosion, show signs of foreign matter buildup, show signs of a cracked glass bulb, or show a visible loss of fluid.

I. The glass bulb protector shall remain in place until the sprinkler head is completely installed. The fire protection sprinkler system contractor shall remove the glass bulb protector by hand after installation and prior to the sprinkler system being placed in service.

J. Install piping straight and true to bear evenly on hangers and supports. Hangers for piping to attach to structural members with no hanger being attached to acoustical ceiling tiles or gypsum wallboard ceilings.

K. All sprinkler heads that are installed to protect the area under ductwork or similar obstructions shall be restrained from lateral movement.

L. Ends of new piping and existing piping affected by Contractor's operations shall be thoroughly cleaned of water, cutting oil, and foreign matter. Keep piping systems clean during installation by means of plugs or other approved methods and securely close open ends of piping when work is not in progress to prevent entry of foreign matter. Inspect all piping before placing into position for foreign matter and remove as necessary.

M. All piping in finished areas shall be installed concealed above the ceiling space unless specifically noted otherwise. Any portion of the sprinkler system that is to be installed exposed shall be addressed in writing with sketches (prior to the piping being fabricated or installed) to the Architect and Engineer to evaluate.

N. Install piping at such heights and in such a manner so as not to obstruct any portion of windows, doorways, passageways, or lights. Coordinate installation of piping with all trades (mechanical, electrical, plumbing, and structural) to avoid conflicts and offset piping as required to clear any interferences that may occur.

3.2 CEILING SYSTEM PENETRATIONS

A. All pendent sprinkler heads installed in ceiling systems shall meet the requirements of the International Building Code (1.B.C.) and ASCE 7 by one of the following options:

1. Oversized ceiling system penetrations shall be required on all hard piped pendent sprinkler heads installed in ceiling systems. The oversized ceiling system penetration shall have a 1" annular space around the ceiling penetration that will allow free movement of at least 1" in all directions.
2. Tight ceiling system penetrations shall be allowed when a swing joint is installed at the top of the sprinkler head drop that can accommodate 1" of ceiling movement in all directions.
3. Tight ceiling system penetrations shall be allowed when a flexible sprinkler drop is installed that can accommodate 1" of ceiling movement in all directions
4. Tight ceiling system penetrations shall be allowed when the sprinkler system and ceiling system are tied together as an integral unit and evaluated by a registered design professional hired by the fire protection sprinkler system contractor.

3.3 RESTRAINT OF SPRINKLER SYSTEM BRANCH LINES AND DROPS

A. All sprinkler system branch lines and drops shall be restrained against excessive movement per the following minimum criteria listed below. Pendent sprinkler heads or drops to pendent sprinkler heads that move more than 3" from the stagnant position (from a light push) after installation of the system or allows the pendent sprinkler head or drops to pendent sprinkler heads (with or without flexible piping assemblies) to oscillate without dampening to the stagnant position (in a reasonable amount of time) shall be provided with additional restraint as follows.

1. Branch lines up to 20'-0" long shall require no additional means of restraints provided that the end hanger restrains upward movement of the end sprinkler head.
2. Branch lines from 20'-0" up to 40'-0" long shall require additional means of restraint in both the upward and lateral directions. Additional restraint shall be at the last sprinkler head and at the midpoint of the branch line.
3. Branch lines over 40'-0" long shall require additional means of restraint in both the upwards and lateral directions. Additional restraint shall be at the last sprinkler head and at a maximum of 30'-0" intervals along the length of the branch line.
4. Sprinkler drops to pendent sprinkler heads shall require additional means of restraint utilizing the lateral restraint criteria listed below.
5. Upward restraint shall be performed at each hangar assembly by bottoming out the hanging rod against the sprinkler piping or by adding surge protectors to the hangar assembly.
6. Lateral restraint shall be performed in intervals not exceeding 30'-0 by adding #12 restraining wires installed at least 45 degrees from the vertical plane and anchored on both sides of the pipe, by adding lateral seismic bracing assemblies, or by an approved alternative method (approved by the Engineer).
7. When flexible piping assemblies are installed, the branch lines and piping drops will be allowed to have more movement. The movement of the branch lines or piping drops shall be less then the amount allowed by the flexible piping assembly. When the branch lines or drops movement is sufficient to cause the flexible piping to pull on the installed sprinkler head, additional restraint will be required, as detailed in the section above.

3.4 SPRINKLER PROTECTION OF EXTERIOR CANOPIES

A. Exterior canopies of combustible construction (entire canopy construction, not just exposed surface) that exceed 4'-0" in width.

B. Exterior canopies of non-combustible construction (entire canopy construction, not just exposed surface) that exceed 4'-0" in width with storage or handling of combustible materials beneath the canopy.

C. Exterior canopies of combustible or non-combustible construction (entire canopy construction, not just exposed surface) that are 4'-0" or less in width with storage or handling of combustible materials beneath the canopy.

D. As required by the local Authority Having Jurisdiction.

3.5 PURITY TESTING OF PIPING INSTALLED BEFORE BACKFLOW PREVENTION DEVICE

A. Disinfect the new water piping affected by Contractor's operations in accordance with the health authority, water purveyor having jurisdiction and AWWA C651. Exercise caution when mixing chlorine disinfectant solutions. Fill piping systems or piping affected by Contractor's operations with solution containing a minimum of 50 parts per million of chlorine and allow solution to stand for minimum of 24 hours or use a solution containing a minimum of 200 parts per million of chlorine and allow solution to stand for minimum of 3 hours. Following the required standing time, the piping shall be flushed with clean potable water until the maximum residual chlorine content is not greater than that of the domestic water supply or 0.2 part per million. Have a certified laboratory analyze the results from two consecutive satisfactory bacteriological samples and submit these results before the piping is placed into service. Purity testing of piping supplied by non- potable water sources will not be required.

3.6 PREPARATION OF SPRINKLER PIPING FOR PAINTING IN EXPOSED AREAS

A. The fire protection sprinkler system contractor shall clean the exterior surface to the sprinkler piping that is to be painted. The piping shall be cleaned and prepped in the following manner.

1. The fire protection sprinkler system contractor shall remove all pipe tags or fabrication labels that have been adhered to the sprinkler system piping as part of the listing/fabrication process.
2. Any adhesive that remains on the sprinkler piping after removal of the pipe tags or fabrication labels shall be removed with an acceptable adhesive solvent.
3. All sprinkler piping and fittings that show signs of surface rust shall be sanded to remove the rust from the sprinkler piping.
4. Sprinkler system piping shall be wiped down with a solvent soaked rag to remove cutting oil residue, finger prints, adhesive solvents, and other foreign materials that could prevent the primer and/or finished color coats of paint from adhering properly to the sprinkler system piping.

3.7 PROTECTION OF SPRINKLER HEADS DURING PAINTING

A. The fire protection sprinkler contractor shall provide and install a suitable means of protecting the sprinkler heads against the accumulation of paint during the time that the exposed structure is being painted. At the conclusion of the painting process the fire protection sprinkler contractor shall be responsible for removing the protective coverings, visually inspecting the sprinkler heads for foreign matter build-up, and shall replace all sprinkler heads where build-up of paint is notice at no additional cost to the owner.

3.8 HYDROSTATIC TEST

A. Hydrostatically test each system at 200 P.S.I. or 50 P.S.I. in excess of the systems working pressure (whichever is greater), for a 2-hour period with no leakage or reduction in pressure. Piping above ceilings shall be tested, inspected, and approved before installation of ceiling material. Test the alarms and other devices by flowing water through the inspector's test connection. When tests have been completed and corrections made, submit a signed and dated certificate similar to that specified in N.F.P.A. #13.

3.9 FLUSHING OF PIPE

A. Flush piping with potable water in accordance with N.F.P.A. #13 at a minimum velocity of 10 feet per second.

B. Flow for Class 52 Ductile Iron piping shall be at least 290 g.p.m. for 3-inch pipe, 440 g.p.m. for 4-inch pipe, 970 g.p.m. for 6-inch pipe, 1,725 g.p.m. for 8-inch pipe, 2,650 g.p.m. for 10-inch pipe, and 3,800 g.p.m. for 12-inch pipe.

C. Flow for Class 200 C-900 PVC piping shall be at least 450 g.p.m. for 4-inch pipe, 920 g.p.m. for 6-inch pipe, 1,590 g.p.m. for 8-inch pipe, 2,485 g.p.m. for 10-inch pipe, and 3,370 g.p.m. for 12-inch pipe.

D. Flow for Type 304 or Type 316 Stainless Steel piping shall be at least 235 g.p.m. for 3-inch pipe, 400 g.p.m. for 4-inch pipe, 905 g.p.m. for 6-inch pipe, 1,560 g.p.m. for 8-inch pipe, 2,460 g.p.m. for 10-inch pipe, and 3,535 g.p.m. for 12-inch pipe.

E. Flow for Type K copper piping shall be at least 210 g.p.m. for 3-inch pipe, 365 g.p.m. for 4-inch pipe, 810 g.p.m. for 6-inch pipe, 1,410 g.p.m. for 8-inch pipe, 2,190 g.p.m. for 10-inch pipe, and 3,135 g.p.m. for 12-inch pipe.

F. Continue flow for a sufficient time to ensure thorough cleaning.

3.10 FULL FORWARD FLOW TESTING OF THE BACKFLOW PREVENTER

A. The backflow preventer assembly shall be tested at system flow demand, including all applicable inside hose stream allowances.

B. The fire protection sprinkler system contractor shall provide all equipment and instruments necessary to conduct a complete full forward flow test of the backflow assembly including 2%" hoses for each angled hose valve installed, calibrated pressure gauges, playpipe nozzles, and pitot tube gauge.

C. At the system demand flow, the pressure readings and pressure drop across the backflow prevention assembly shall be recorded.

D. A metal placard shall be provided on the backflow prevention assembly that lists the pressure readings both upstream and downstream of the assembly, total pressure drop, and the system test flow rate.

E. The pressure drop shall be compared to the manufacturer's data and the readings observed during the final inspections and tests.

3.11 AIR PRESSURE TEST - DRY PIPE SYSTEM

A. As specified in N.F.P.A. #13, an air pressure leakage test at 40 p.s.i. shall be conducted for 24 hours. The test piping shall include all piping downstream of the air maintenance device. There shall be no drop in gauge pressure in excess of 1.5 p.s.i. for th_e 24 hour test. This air pressure test is in addition to the required hydrostatic test. Air leaks shall be fixed by tightening the piping connections or by replacing installed components.

3.12 AIR PRESSURE TEST - PNEUMATIC PIPING

A. An air pressure leakage test at 120 p.s.i. shall be conducted for 24 hours. The test shall include the compressor and all piping up to the air maintenance device. There shall be no drop in gauge pressure during

the 24 hour test. Air leaks shall be fixed by tightening the piping connections or by replacing installed components.

3.13 TRIP TIME TEST

A. A trip time test shall not be required on dry pipe automatic fire protection sprinkler systems in which the total system air capacity is 500 gallons or less.

B. A trip time test shall not be required on dry pipe automatic fire protection sprinkler system in which the total system air capacity is 750 gallons or less that have a quick opening device (accelerator) installed.

C. A trip time test shall be required for all dry pipe automatic fire protection sprinkler system that have a system air capacity larger than 500 total gallons that do not have a quick opening device (accelerator) installed. The trip test shall be conducted at the inspector's test valve and shall discharge water from the test port (smooth bore orifice or site glass) with a 60 second time period.

D. A trip time test shall be required for all dry pipe automatic fire protection sprinkler system that have a system air capacity larger than 750 total gallons. The trip test shall be conducted at the inspector's test valve and shall discharge water from the test port (smooth bore orifice or site glass) with a 60 second time period.

E. When the dry pipe automatic fire protection sprinkler system requires the trip time test and the 60 second time limit is still exceeded with the quick opening device (accelerator) being installed, the fire protection sprinkler system contractor shall provide exhausters to the end of the dry pipe automatic fire protection sprinkler system to speed up the water delivery time.

F. When the dry pipe automatic fire protection sprinkler system requires the trip time test and the 60 second time limit is still exceeded with the quick opening device (accelerator) and exhausters being installed, the fire protection sprinkler system contractor shall provide an additional dry pipe automatic fire protection sprinkler system to reduce the overall total system air capacity at no additional cost to the owner.

3.14 FORMAL TESTS AND INSPECTIONS

A. Do not submit a request for formal test and inspection until the preliminary test and corrections are completed and approved. Submit a written request to local fire protection authority for formal inspection at least 15 days before the inspection date. An experienced technician regularly employed by the system installer shall be present during the inspection. At this inspection, repeat any or all of the required tests as directed. Correct defects in work provided by the Contractor, and make additional tests until the system(s) comply with contract requirements. Furnish appliances, equipment, electricity, instruments, connecting devices and personnel for the tests. The Owner will furnish water for the tests. Furnish Architect with three (3) copies of certificates required by testing agencies that shall contain the results from the three pressure tests described above as a minimum.

END OF SECTION 21 1316 – DRY-PIPE SPRINKLER SYSTEM

Section 2:

Permits: Owner shall be responsible for obtaining all City of Pasco Building Department, Hazardous Materials removal and any state, county or local governmental permits and any costs and fees associated with and applicable to this project for these permits and applications. Any sprinkler system plan review or permits. Contractor shall be responsible for the costs of disposal of all building debris associated with project. The plan review fee will be paid for by the Port of Pasco.

Section 3:

Disposal & Notification: Contractor shall be responsible for the disposal of all debris in a legal manner according to all applicable laws, codes and regulations. Notification of proper authorities for hazardous materials removal if required shall be the responsibility of the contractor. All fees associated with disposal of hazardous materials and general construction debris shall be included in Contractors scope of work.

Section 4:

Dust Control and Water: Contractor shall, at all times during the length of the contract, maintain proper dust control at the project sites. Water may be taken from the nearest Port of Pasco fire hydrant that is not painted blue.

Section 5:

Utilities: Contractor shall be responsible to coordinate with Port of Pasco and other local utility companies for the proper closing/capping of water, sewer, gas, telephone and electrical connections where required.

Section 6:

Security: Contractor shall erect temporary construction fencing as determined by contractor to extent they determine necessary to secure the site during construction and maintain public safety. Materials shall be stored to protect nearby properties from wind-blown debris.

Section 7:

Health and Safety: The Contractor's attention is alerted to the strict enforcement and requirements of the "Occupational Safety and Health Act" (OSHA) and "The Washington Industrial Safety and Health Act of 1973" (WISHA), which apply to all operations within this contract. The Contractor shall comply with all provisions thereof and make such reports and maintain such records as the acts require. The Contractor shall prepare a project-specific health and safety plan in full compliance with OSHA and WISHA requirements. The Contractor shall be solely and completely responsible for conditions of the job site including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.

Section 8:

Plans: The plans are for reference only. Dimensions are estimated and location details are general in nature.

Section 9:

Cleanup: Contractor shall leave the job site clean on a daily basis.

BID FORM
Small Works Contract

To: Port Of Pasco
1110 Osprey Pointe Blvd, Suite 201
P O Box 769
Pasco, WA 99301

Project: Big Pasco Industrial Center Warehouse Two Bay Three Canopy

Submitted By: _____
(Full Name)

_____
(Address)

_____
(City, State and Zip Code)

_____ _____
(Phone Number) (Employment Security Dept. Number)

Offer: Furnish labor, equipment, and material, to complete "Big Pasco Industrial Center Warehouse Two Bay Three Canopy" according to the specifications and other descriptive documents, for the amount of (including Washington Sales Tax):

1	Base Bid-WH2B3 W section design, paint structural members and underside of metal roofing panels	LS	$
	WSST 8.9%	LS	$
Total Base Bid Incl. WSST		(use numbers)	$
		(use words)	dollars

_____ _____

Signature Date

_____ _____

Print Name (Contractor License Number)

Title:_____ _____

If Corporation please affix Corporate Seal. (Contractor UBI Number)

_____

(Federal Employer ID Number)

CERTIFICATION OF COMPLIANCE WITH WAGE PAYMENT STATUS

PORT OF PASCO

Certification of Compliance with Wage Payment Statutes

The bidder hereby certifies that, within the three-year period immediately preceding the bid solicitation date (March 30, 2025), the bidder is not a "willful" violator, as defined in RCW 49.48.082, of any provision of chapters 49.46, 49.48, or 49.52 RCW, as 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.

I certify under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

_____
Bidder's Business Name

_____
Signature of Authorized Official*

_____
Printed Name

_____
Title

_____ _____ _____
Date City State

Check One:

Sole Proprietorship ☐ Partnership ☐ Joint Venture ☐ Corporation ☐

State of Incorporation, or if not a corporation, State where business entity was formed:

_____

If a co-partnership, give firm name under which business is transacted:

_____

**** If a corporation, proposal must be executed in the corporate name by the president or vice-president (or any other corporate officer accompanied by evidence of authority to sign). If a co-partnership, proposal must be executed by a partner.***

Port of Pasco
BIDDERS'S CHECKLIST

The bidder's attention is especially called to the following forms which must be completed in full as required and submitted collectively as the bid proposal package:

____1. Proposal Form- The unit prices must be shown in the space provided. Show all unit prices in both words and figures when indicated.
____2. Bid Bond- Surety bond or Cashier's Check. The amount of the bid bond shall not be less than five percent (5%) of the total amount of the bid.
____3. Addenda- All Addenda shall be signed and included in sealed bid.
____4. Certification of Compliance with Wage Payment Status. Certification of Compliance with Wage Payment Status form shall be completed, signed and included in sealed bid.
____5. Sealed Envelope- Proposals shall be prepared on the standard proposal form attached. The proposal shall be placed in a sealed envelope marked in the lower left corner with "Proposal for *Job Name*". Please place name of company on front of envelope as well. See bidder instructions for further information.

The following forms shall be executed and submitted within ten (10) calendar days after Notice of Award.

____1. Contract- To be executed by the successful bidder.
____2. Payment and Performance Bonds- Separate performance and payment bonds shall be completed on Standard AIA bond forms by Contractor's Surety and submitted with Contractor executed Contracts.
____3. Certificate of Insurance- Contractor shall furnish Certificate of Insurance and all applicable Endorsements naming the Port of Pasco as additional insured on its Commercial General Liability and Automobile Liability Policies per General Instructions under Insurance in bid specifications Instructions to Bidders.
____4. Construction Schedule- To be submitted by Contractor prior to scheduled Pre-Construction meeting.
____5. Schedule of Values- To be submitted by Contractor with executed Contract.
____6. List of Subcontractors- To be submitted by Contractor with executed Contract.
____7. Contractor's W-9- To be submitted by Contractor with executed Contract.

The following shall be filed prior to Notice to Proceed.

____1. Statement of Intent to Pay Prevailing Wages- To be filed immediately by the Prime Contractor after Contract is awarded and before work begins and subsequently by all those providing labor on the project.

AGREEMENT

Agreement between Port of Pasco and Contractor

Small Works Contract

THIS AGREEMENT is made on the __ day of ___, 2025 between the Port of Pasco (hereinafter "the Port") and the contractor, , (hereinafter "the Contractor"), who in consideration of the mutual promises contained herein, agree as follows:

ARTICLE 1: The Work

1.1 The Contractor shall perform all the work required by the contract documents identified in Article 5 and by this reference incorporated herein, for the project entitled Big Pasco Industrial Center Warehouse Two Bay Three Canopy.

ARTICLE 2: Time of Commencement and Completion

2.1 The work to be performed under this contract shall commence not later than Notice to Proceed date and shall be completed not later than 30 calendar days following the date of commencement (hereinafter the "completion date").

ARTICLE 3: Contract Sum

3.1 The Port will pay the Contractor, for the satisfactory performance of the work, a contract sum of ($), which includes applicable Washington State sales tax.

ARTICLE 4: Payment

4.1 Monthly progress payments will be made for invoices submitted by the first of the month. Invoices should reflect work completed to date and are subject to approval by the Engineer. Materials and equipment not incorporated in the Work, but delivered, suitably stored, and accompanied by documentation satisfactory to the Port will be paid at 75% of cost (with the balance being retainage until fully incorporated into the Work).

4.2 Upon final acceptance of the work by the Port, the Contractor shall submit a final invoice in the amount of 100% of the contract sum, plus 100% of the applicable Washington State sales tax.

4.3 The Port may withhold payment (or a portion thereof) otherwise due the Contractor on account of:

A. defective work not remedied;
B. claims filed;
C. failure of the Contractor to make payment properly to subcontractors or for labor, materials or equipment;
D. damages to another Contractor; or
E. unsatisfactory performance of the work by the Contractor.

4.4 The acceptance of the final payment by the Contractor shall constitute a waiver of all claims, of whatever sort or nature, by the Contractor against the Port.

4.5 Unless withheld pursuant to paragraph 4.3, final payment to the Contractor shall be made upon occurrence of the following:

A. The expiration of 45 days following the final acceptance of the project, and
B. The receipt by the Port of the department of revenue certificate of payment of state excise taxes if contract is for a sum of $35,000.00 or more, and
C. Satisfaction of the Port that the claims of materialmen and laborers incurred in filing and processing such claims have been paid or provided for, and
D. All requirements of RCW 39.12 relating to Prevailing Wage have been met.

4.6 Retainage of 5% will be withheld until the requirements in Section 4.5 hereinabove and RCW 60.28 are met when contractor elects to furnish a performance and payment bond for the project of $150,000 or less. If contractor elects not to furnish a performance and payment bond on project of $150,000 or less, retainage of 10% will be withheld until the requirements in Section 4.5 hereinabove and RCW 60.28 are met.

ARTICLE 5: The Contract Documents

5.1 The contract documents, which by this reference are incorporated herein, consist of those documents listed below specifically:

A. This Agreement.
B. Invitation for Bids, Addenda, Small Works Roster.
C. General Conditions

D. Specifications.
E. Bid Form submitted by Bidder
F. Drawings.
G. Prevailing Wages Schedule.

5.2 The contract documents set forth above form the entire and integrated agreement between the Parties hereto, and supersede all prior negotiations, representation, or agreements, either written or oral. The contract may be amended or modified only by a written amendment to the contract signed by both parties or by a change order.

5.3 By his execution of the contract, the Contractor represents that he has visited the site of the work and familiarized himself with all conditions under which the work is to be performed.

5.4 The Contractor shall comply with all applicable Federal/State laws, City/County ordinances, and rules and regulations of all authorities having jurisdiction of project construction. Said laws will be deemed to be included the same as though written out in full.

ARTICLE 6: Owner

6.1 The Port of Pasco, as owner, shall issue all instructions to the Contractor through an authorized representative. The Port shall at all times have access to the work wherever it is in preparation or progress.

ARTICLE 7: Contractor

7.1 The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures, and for performing, scheduling and coordinating all portions of the work under the contract in a proper fashion and in strict compliance with all applicable codes, rules, regulations and laws.

7.2 Contractor shall carry on the Work in a safe manner, and shall comply with all applicable federal, state and local laws, regulations, standards, and recognized trade practices for the protection and safety of its employees and other persons about its Work, including without limitation those governing labor, safety, health, sanitation, and protection of the environment.

7.3 Contractor is solely responsible for protection and safety of its employees, for final selection of safety methods and means, and for

establishing, supervising, inspecting and enforcing its safety obligations in accord with this Agreement and applicable law.

7.4 Contractor shall defend, indemnify and hold the Port, its officers, officials, employees, engineer and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or resulting from the acts, errors or omissions of the Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them in performance of this Agreement, except for injuries and damages caused by the sole negligence of the Port. Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them and the Port, its officers, officials, employees, engineer and volunteers, the Contractor's liability, including the duty and cost to defend, hereunder shall be only to the extent of the Contractor's negligence, or of any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them. It is further specifically and expressly understood that the indemnification provided herein constitutes the Contractor's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Agreement.

7.5 Unless otherwise specifically noted, the Contractor shall provide and pay for all labor and materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the work.

7.6 The Contractor shall pay prevailing wages, all sales, consumer, use, and other similar taxes required by law, and shall secure and pay for all permits, fees, and licenses necessary for execution of the work.

7.7 The Contractor will warrant to the Port that all materials and equipment furnished under the contract will be new unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with the specifications. All work not so conforming to these standards may be considered defective. If required by the Port, the Contractor shall furnish satisfactory evidence as to the kind and

quality of materials and equipment. This warranty shall be in addition to and not in limitation of any other warranty or remedy afforded by law.

7.8 RCW 39.06.020 requires a public works contractor to verify responsibility criteria for each first tier subcontractor, and a subcontractor of any tier that hires other subcontractors must verify responsibility criteria for each of its subcontractors. Verification is to include that, at the time of subcontract execution, each subcontractor meets the responsibility criteria listed above and in RCW 39.04.350(1) and additionally – if applicable – possesses an electrical contractor license, plumbing contractor license or an elevator contractor license.

ARTICLE 8: Separate Contracts

8.1 The Port reserves the right to award other contracts in connection with other portions of the project.

ARTICLE 9: Time

9.1 All time limits stated in the contract documents are of the essence of the contract.

ARTICLE 10: Independent Contractor

10.1 Contractor represents, warrants and understands that it is an independent contractor and employing unit, duly licensed to perform the Work (including without limitation state contractor registration), subject to all applicable Social Security, Unemployment Compensation and Workers' Compensation statutes, and shall keep records and make reports and payments of all taxes or contributions required. Contractor agrees to indemnify, defend and hold Port harmless from any expenses or liability incurred under such statutes in connection with employees of Contractor.

10.2 If any Work hereunder is performed by principals of Contractor who are not covered by Workers' Compensation, the principals agree that they shall have no claim against Port or its insurers or its Workers' Compensation coverage in the event they are injured while performing such Work.

ARTICLE 11: Miscellaneous Provisions

11.1 This agreement is executed on the day first above written.

11.2 In the event of any dispute between Port and Contractor arising out of or relating to this Agreement, the prevailing party shall be entitled, whether or not a suit, action, or arbitration proceeding is instituted, to recover all costs incurred in connection with the dispute, including without limitation reasonable attorneys' and expert witness fees, whether at trial, on appeal or denial of any petition for review, or in connection with enforcement of any judgment.

11.3 This Agreement shall be interpreted in accordance with the laws and court rules of the State of Washington in effect on the date of execution of this Agreement. In the event any party deems it necessary to institute legal action or proceedings to ensure any right or obligation under this Agreement, the parties agree that such action shall be brought in a court of competent jurisdiction situated in Franklin County, Washington.

11.4 The Defend Trade Secrets Act provides that an individual may not be held criminally or civilly liable under any federal or state trade secret law for disclosure of a trade secret: (1) made in confidence to a government official, either directly or indirectly, or to an attorney, solely for the purpose of reporting or investigating a suspected violation of law; and/or (2) in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. Additionally, an individual suing an employer for retaliation based on the reporting of a suspected violation of law may disclose a trade secret to his or her attorney and use the trade secret information in the court proceeding, so long as any document containing the trade secret is filed under seal and the individual does not disclose the trade secret except pursuant to court order.

PORT OF PASCO:	CONTRACTOR:
By: _____	By: _____
Title: _____	Title: _____
By: _____	By: _____
Title: _____	Title: _____
	Washington State Contractors License No.: _____

PREVAILING WAGES

DRAWINGS

CONNECTING HERE WITH THERE

PORT OF PASCO

Port of Pasco Administrative Office
Phone: 509.547.3378
Fax: 509.547.2547
portofpasco@portofpasco.org
1110 Osprey Pointe Blvd.
Suite 201
Pasco, Washington U.S.A. 99301

Port Commissioners
Vicki Gordon
Jean Ryckman
Hans J. Engelke

Executive Director
Adam Lincoln

March 1, 2025

SUBJECT: Big Pasco Industrial Center Warehouse Two Bay Three Canopy
BIDS DUE MAY 15, 2025 AT 10:00 AM

Dear Small Works Roster General Contractor:

Please find enclosed the bidding documents for the Port of Pasco, Big Pasco Industrial Center Warehouse Two Bay Three Canopy project. The project involves constructing a metal canopy at WH2B3.

We would appreciate your bid proposal or a response indicating that you will not be submitting a bid.

If you have any questions, please feel free to contact me at (509) 547-3378.

Respectfully,

Jaime Vera
Project Manager