



**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

JRA Commission Number – 25873



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SECTION 00 07 00 - GENERAL CONDITIONS

PART 1 - STANDARD GENERAL CONDITIONS

- A. The "General Conditions of the Contract for Construction" of the American Institute of Architects, AIA Document No. A201-2017, are an integral part of the Specifications as if written in full herein.
- B. Copies of the "General Conditions" are on file and may be examined in the office of the Architect, or may be purchased from the Florida Association, The American Institute of Architects, Document Department, P.O. Box 10388, Tallahassee, Florida, 32302.
- C. The Contractor is hereby specifically directed, as a condition of the Contract, to obtain the necessary number of copies of Document A201, to acquaint himself with the Articles contained therein and to notify and appraise all Subcontractors, Suppliers and any other parties of the Contract or individuals or agencies engaged in the work as to its contents.
- D. No contractual adjustments shall be due or become exigent as a result of, or failure on the part of the Contractor to fully acquaint himself and all other parties to the contract with the conditions of Document A201.
- E. Contractor will be required to comply with 2 CFR – Contract Provision for Non-Federal Entity under Federal Awards.

END OF SECTION 00 07 00

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SECTION 00 07 01 – SUPPLEMENTARY GENERAL CONDITIONS

**SUPPLEMENTS TO AIA DOCUMENT A201, 2017 EDITION
GENERAL CONDITIONS FOR THE CONTRACT FOR CONSTRUCTION**

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GENERAL

These Supplementary General Conditions modify, change, delete from, or add to the "General Conditions of the Contract for Construction," A.I.A. Document A201, 2017 Edition. The A.I.A. Document A201, 2017 Edition is hereby made a part of every Section of these Specifications and shall be binding upon each Contractor, Subcontractor, and Material Supplier. Where any Article of the General Conditions is modified, or any Paragraph, Subparagraph, or Sub-Subparagraph thereof is modified or deleted by these Supplementary General Conditions, the unaltered provisions of the Article, Paragraph, Subparagraph, or Sub-Subparagraph shall remain in effect.

ARTICLE 1 - GENERAL PROVISIONS:

1.1 BASIC DEFINITIONS:

1.1 Supplement Paragraph 1.1 as follows:

“1.1.1.1 The General Contractor’s and Subcontractor's Proposal Forms as accepted by the Owner shall be a part of the Contract Documents.

1.1.9 "Provide", as used in the Contract Documents, includes furnishing all labor, supervision, tools, materials, supplies, equipment, shop drawings, product data and samples, together with all

services, accessories and costs associated with performance of the work, or production or installation of an item or system usable in the complete project.

1.1.10 “Diagrammatic”, as used in the Contract Documents, shall mean to outline in schematic form or an illustration to be used as a guide only.

1.1.11 “Product”, as used in these Contract Documents, includes materials, systems and equipment.”

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS:

1.2.1 Delete subsection entirely and substitute the following:

“1.2.1 The intent of the Contract Documents is to include all items necessary for the execution and completion of the work by the Contractor. The Contract Documents are complementary, and what is required by anyone shall be as binding as if required by all. Performance by the Contractor and Subcontractors shall be required to produce the intended results. In cases of discrepancies between the Contract Documents, the Agreement shall take precedence over the Drawings and Specifications, and the Specifications shall take precedence over the Drawings, except as listed. Large scale plans, sections, and details take precedence over smaller scaled items. Plan schedules shall control over general plans. Addenda and Change Orders supersede only affected portions of the Documents.

1.2.1.1 The Contractor/Subcontractor, however, shall be held to providing completed work, according to the meaning and intent of the Drawings and Specifications whether all the items involved under any trade are mentioned in one or several sections or on one or several drawings.

1.2.1.2 Should any item to be furnished or labor to be performed as specified under more than one Section of the Specification, it will be premised that Subcontractors have included said product and/or labor in more than one Section, unless he shall have obtained a written decision from the Construction Manager prior to the bid. The Construction Manager will decide who shall provide such items. Proper credit shall be given to the Owner when the cost has been included more than once.

1.2.1.3 Should any item or equipment required to be furnished within the drawings or specifications fail to have any or all of its connections or utilities indicated, the Contractor and Subcontractors shall provide (as a minimum) services, utilities and connections to ensure the permanent, proper, code compliant operation of the item or equipment; unless such condition shall have been brought to the attention of the Architect prior to the Bid and a decision rendered through the issuance of addenda or other items of clarification.

1.2.1.4 The Contractor, and Subcontractors shall not take advantage of errors or omissions on Drawings or Specifications.

1.2.1.5 If any errors or omissions appear in Drawings, Specifications, or other Contract Documents, the Subcontractors shall notify the Contractor before time of submitting bid. The Contractor will notify and resolve the issues with the Architect prior to submitting a guaranteed maximum price or Bid Proposal to the Owner. Should conflict occur in or between Drawings and Specifications; Contractor and Subcontractors are deemed to have estimated on the more expensive product, method of installation, and/or the greater quantity, unless he has requested and obtained a written decision before submission of bid proposals as to which method, product, or quantity will be required.

1.2.1.6 References to known standard specifications shall mean the latest edition of such specifications adopted and published at date of invitation to submit proposal. Words which have well-known technical, or trade meanings are used herein accordance with such recognized meanings.

1.2.1.7 When dimensions as shown on the Drawings are affected by conditions already established, the Subcontractor shall take measurements to verify the given scale or figure dimensions in the Drawings.

1.2.1.8 The Specifications, detailed description, or omission of it, concerning any work to be provided shall be regarded as meaning that only the best general practice of the trade is to prevail and that only materials and workmanship of the first quality are to be used. All interpretations of these Specifications shall be made upon this basis and all interpretations shall be made by the Architect.

1.2.1.9 Execute work as per Contract Documents. Make no changes without having first received written permission from the Architect. Where detailed information is lacking, before proceeding with work, refer matter to the Architect for additional information.

1.2.1.10 THE MECHANICAL AND ELECTRICAL SYSTEM DRAWINGS ARE DIAGRAMMATIC IN NATURE AND THE FIELD CONDITIONS MAY ARISE THAT WILL PREVENT THEIR BEING INSTALLED AS PER DRAWING (EX.), SUCH AS PIPE AND CONDUIT RUNS, CROSSOVERS, RISERS, DOORS, FLOOR, WALLS AND CEILING PATTERN COVERING LAYOUTS, ETC. THEREFORE, IT SHALL BE THE RESPONSIBILITY OF EACH AND ALL SUBCONTRACTORS, FOR THE COORDINATION, TIMING AND PROTECTION OF ALL CONDITIONS; AND IN EACH CASE WHERE THERE IS ANY QUESTION OR PROBLEM AS TO CONDITIONS OR LOCATIONS OF THESE ITEMS, SUBMIT A WORKABLE SOLUTION TO THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR AND THE ARCHITECT FOR REVIEW AND WRITTEN APPROVAL BEFORE COMMENCING WITH QUESTIONABLE WORK. IF SUCH ADJUSTMENT SHALL BE MADE BY THE SUBCONTRACTOR WITHOUT WRITTEN APPROVAL, IT SHALL BE AT THEIR OWN RISK AND EXPENSE. ANY REMOVAL OF NON-APPROVED AREAS SHALL BE THE RESPONSIBILITY AND EXPENSE OF THE SUBCONTRACTORS.

1.2.1.11 Where there is conflict between the Drawings, or between Drawings and Specifications, or doubt as to meaning, the Contractor and Subcontractors shall obtain a written decision from the Architect, except where the Contractor deems that there could be immediate damages to life or property. He shall not proceed in uncertainty in any instance.

1.2.1.12 In the case of discrepancies between the INFORMATION TO BIDDERS, CONDITIONS OF THE CONTRACT, DRAWINGS, SPECIFICATIONS, OR ADDENDA as it relates to each Subcontractor's Work Category responsibilities, the most stringent and/or most expensive case applies as determined by the Architect.”

1.2.2 Add the following:

“1.2.2.1 Construction Specifications Institute (C.S.I. Uniform System): To assist the Contract, the Specifications are divided into Divisions and Section numbers generally conforming to "Uniform System for Construction Specifications.”

ARTICLE 2 - OWNER:

2.1 GENERAL:

2.1.1 Add the following subparagraphs:

“2.1.1.1 THE TERM "ARCHITECT" AS USED IN THE GENERAL CONDITIONS SHALL MEAN JRA ARCHITECTS, INC. WHERE THE TERM "A/E", "ARCHITECT/ENGINEER", OR "ENGINEER" IS USED IN THE DOCUMENTS, IT SHALL

BE CONSIDERED AS BEING SYNONYMOUS WITH THE TERM "ARCHITECT" AS DEFINED IN THE GENERAL CONDITIONS.

2.1.1.2 The use of phrases "as directed", "as instructed", "reviewed", "authorized", "accepted", and similar terms implies that such action will be taken by the Architect unless specifically stated otherwise."

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER:

2.2.5.1 Add the following:

"2.2.5.1 The Contractor will be furnished with ONE (1) reproducible digital (PDF format) set of Drawings and Specifications by the Owner (other sets may be furnished but are not a requirement under this contract). A complete set of portable document format (.pdf) documents (plans and specifications) will be made available to the Contractor for the printing processes. The Contractor will make the portable document format documents available to the Subcontractors. The Architect will provide the Contractor with the original digital BIM Revit Model and/or AutoCAD files of the building and site for the Contractor's and Subcontractor's use to prepare Shop Drawings, Coordination Drawings, and Submittals upon receipt of accepted AIA Documents E203-2013 and G201-2013 Digital Protocol Agreements and the Architect's Digital File Release Forms from all users."

2.4 OWNERS RIGHT TO CARRY OUT THE WORK:

2.4.1 Add the following:

"2.4.1 The Owner will assist the Architect and Contractor in determining in general that the Work of the Subcontractors is being performed in accordance with the Contract Documents and will endeavor to guard the Owner against defects and deficiencies in the Work of the Contractor and Subcontractors."

ARTICLE 3 - CONTRACTOR:

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR:

3.2.1 Add the Following:

"3.2.1.1 Examination of site shall include determination of the nature and scope of the work and all difficulties that accompany its execution. The Contractor shall be responsible for coordinating with the owner to inspect and locate existing site conditions and providing existing as built drawings for the following existing site items documented by GPS coordinates:

Valve and Valve Boxes, Main Water and Sewer tie-ins, clean outs and Junction Boxes
Chilled Water Lines, main water lines, main gas lines and electrical conduits.

Existing change of directions for chilled water lines, main water lines, main gas lines,
irrigation lines and electrical conduits.

Electrical Transformers.

3.2.3 Add the following:

"3.2.3.1 The Contractor, Subcontractors and material suppliers shall examine the Architectural, Structural, Mechanical, Plumbing, and Electrical Drawings and Specifications, and verify all measurements and requirements before ordering materials or performing any work to avoid problems during construction.

3.2.3.2 Before ordering materials or doing any work, the Contractor and Subcontractors shall verify all measurements at the project site and shall be responsible for their correctness. No extra compensation will be allowed on account of differences between actual dimensions and those indicated on the Drawings. Any decided difference which may be found shall be reported to the Architect in writing, for consideration before proceeding with the Work.”

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES:

Add the following Subparagraph 3.3.2.1 through 3.3.2.7:

3.3.2.1 The Contractor and/or subcontractor and their employees shall refrain from use of vulgarities around students, staff and faculty.

3.3.2.2 Clothing shall have no vulgarities or sexually suggestive graphics.

3.3.2.3 Direct contact with students, faculty or staff is strictly prohibited.

3.3.2.4 Violation of Special Conditions may result in immediate termination of that employee, Contractor or Subcontractor.

3.3.2.5 State regulations prohibit alcohol, drugs, and firearms from being brought onto school property. Violators will be prosecuted under State Law.

3.3.2.6 Bay County School Board Policy states that there shall be no smoking or use of tobacco products which include e-cigarettes, allowed in any facility or on any real or personal property owned by or under the control of the Bay County School System. Contractor and Subcontractor employees are required to leave the school campus for tobacco use. Job-site trailers are not exempt from this requirement.

3.3.2.7 The Contractor shall present a plan, for approval by the Owner, showing all areas for safety fencing staging, storage, job office, ingress and egress to the site. No work shall be done until this is approved.

3.4 LABOR AND MATERIALS:

3.4.1 Add the following:

“3.4.1.1 Material Standards - Unless otherwise specifically provided in this Contract, reference to any equipment, material, article, or patented process, by trade name, make, or catalog number, shall establish a standard of quality and the Base Bid shall include only materials and items exactly as specified or called for by name. Architect to list at least three acceptable manufacturers in the Specifications, where possible, however each manufacturer shall meet the basis-of-design requirements.”

3.4.2 Delete subparagraph 3.4.2 and substitute the following:

“3.4.2 Substitutions During Bidding Period - Requests for Substitutions during the bidding period will be considered and treated only as stated in Specification Section 008200, Special Conditions, Article 15, Substitution of Materials and Equipment. Once bids have been received, the Owner and Architect will prepare the Contract on the basis that all items are those specified in the Specifications, shown on the Drawings, or approved in Addenda during the bidding period. The approval of a product during the bid period does not negate the requirement for the submission of complete data during the construction in accordance with the Section 013300, Submittals, nor does it negate the burden of complying with all specification requirements. Should further investigation of a product approved during the bid period indicate that the product does not meet the essential requirements of the project the Contractor and Subcontractors shall make such modifications as are necessary to meet these essential requirements.

3.4.2.1 Approval After Bids are Opened - Substitutions or approval of products will be considered after bids are opened only under the following conditions:

.1 The Subcontractor shall place orders for specified materials and equipment promptly upon award of Contract. No excuses or proposed substitutions will be considered for materials and equipment due to unavailability, unless proof is submitted that firm orders were promptly placed for the item listed in the Specifications.

.2 The reason for the unavailability shall be beyond the control of the Subcontractor, such as strikes, lockouts, bankruptcy, discontinuance of the manufacturer or a product, or acts of God, and shall be made known in writing to the Architect within ten (10) days of the date that the Subcontractor ascertains that he cannot obtain the material or equipment specified. Requests shall be accompanied by a complete description of the materials or equipment which the Subcontractor wishes to use as a substitute.”

3.5 WARRANTY:

Add the following:

“3.5.1 Under this warranty for a period of one (1) year from date of Completion, as evidenced by the date of "Substantial Completion" of the Work, the Contractor and Subcontractors shall remedy, at his own expense, any such failure to conform on any such defects. Where warranties are written in any Section for longer than one (1) year, such terms will apply.

3.5.2 Nothing in the above intends or implies that this warranty shall apply to work which has been abused or neglected by the Owner.”

3.6 TAXES:

Add the following:

“3.6.1 Unless otherwise specified, the Bid price includes all Federal, State and local taxes imposed prior to the execution of the Agreement and which are applicable to the Work. If any new privilege, sales gross receipt or other excise tax, exclusive of taxes and net income or undistributed profit applicable to the Work and payable by the Subcontractor is imposed by the State of Florida, or such present tax be increased as of the date thereof, then the Contract price will be adjusted accordingly and the Owner will reimburse the Contractor therefore without any allowance for overhead or profit upon separate payment application containing such pertinent details as the Owner may require. The Contractor will organize, implement and manage the Owner’s direct purchase tax recovery program. Direct purchases shall be for orders of five-thousand dollars (\$5,000) or more for any single item.”

3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS:

3.7 Delete paragraph 3.7.1 and substitute the following:

“3.7.1 A local building permit will be required for this project. The "Florida Building Code 2020 shall govern. The Owner will engage a qualified Building Department to facilitate the document review and building permit process, as well as related inspection services in accordance with the FBC. The Owner is exempt from all other county, district, municipal, and local building codes, ordinances, interpretations, building permits and assessments of fees for building permits, impact fees and service availability fees other than those defined within the Florida Building Code 2020, the Florida Statutes and the Florida Administrative Code. The Contractor and Subcontractors shall secure all required permits, governmental fees, anti-pollution fees, and licenses necessary for the proper execution and completion of his Work,

which are applicable at the time the bids are received. The Contractor and Subcontractors shall be familiar with all Federal, State, and local laws, codes, ordinances, and regulations which in any manner effect those engaged or employed in the Work and any material or equipment used in the conduct of the Work.

3.7.1.1 Before proceeding with the Work, securing permits or necessary licenses, the Contractor and Subcontractors shall carefully study and compare the Drawings and Specifications and shall at once report in writing, to the Architect/Engineer, any error or omission he may discover that is in variance with applicable laws, statutes, building codes, and regulations.”

3.7.2 Add the following:

“3.7.2.1 The Contractor and Subcontractors at all times shall comply with the Florida Building Code 2020 installation requirements (including amendments and supplements), and all Federal, State and local laws, codes, ordinances and regulations as applicable, which in any manner affects the Work, and he and his surety shall indemnify and hold harmless the Owner, and Architect/Engineer, to the extent allowable by law, against any claim or liability arising from or based on the violation of such law or decree, whether by himself or his employees.”

3.10 CONTRACTOR’S CONSTRUCTION AND SUBMITTAL SCHEDULES:

Add the following Subparagraphs 3.10.5 through 3.10.7:

3.10.5 The Contractor shall furnish sufficient forces, construction plant and equipment, and shall work such hours, including night shifts and overtime operations, as may be necessary to insure the prosecution of the Work in accordance with the approved progress schedule. If the Contractor falls behind the progress schedule, the Contractor shall take such steps as may be necessary to improve the progress by increasing the number of shifts, overtime operations, days of work and the amount of construction plant, all without additional cost to the Owner.

3.10.6 Failure of the Contractor to comply with the requirements under this provision shall be grounds for determination by the Engineer that the Contractor is not prosecuting the work with such diligence as will ensure completion within the time specified and such failure constitutes a substantial violation of the conditions of the Agreement.

3.10.7 Upon such determination, the Owner may terminate the Contractor’s right to proceed with the work, or any separable part thereof, in accordance with Article 14 of the General Conditions, or may withhold further payments as indicated in Article 9.5.1.

3.11 DOCUMENTS AND SAMPLES AT THE SITE:

3.11.1 Add the following:

“3.11.1 At the completion of the Work, each Subcontractor shall submit "Record Drawings" to the Contractor on digital media, and the Contractor in turn will produce (or cause to have produced) As-Built Drawings on ELECTRONIC MEDIA on Autodesk AutoCAD Architectural Desktop (2019 Version). The Architect will provide the Contractor with the digital related AutoCAD files of the project for the Contractor’s and Subcontractor’s use to prepare Shop Drawings, Coordination Drawings, and As-Built (Record) Drawings upon receipt of accepted AIA Documents E203-2013 and G201-2013 Digital Protocol Agreements and the Architect’s Digital File Release Forms from all users. Said Record Drawings shall be delivered to the Architect for review. The Architect will forward reviewed Final As-Built Drawings to the Owner for their future use.

3.11.1.1 Pipelines and ducts which are installed in furred spaces, pipe chases, or other spaces which can be readily inspected using access panels or other means of access will not be considered as being concealed. With reference to electrical and mechanical work the exact (not diagrammatic) conduit, pipe, and duct runs shall be shown on these drawings.

3.11.1.2 Record Drawings” shall be the daily in-use set of contract documents at the job site. At the end of each day, the foreman of each trade shall mark and date any and all changes that occurred during the day’s work. Lines shall be located by dimension and equipment shall be noted and located. These documents will be delivered to the Contractor as noted in 3.11.1 above.

3.11.1.3 Upon completion of the work this data shall be recorded to scale, by a competent draftsman on electronic media copies of the contract drawings. Where changes and actual locations are to be recorded, the electronic media shall be erased before the changes are made. The work shall be shown as installed and the Contractor shall deliver the black line drawing prints and electronic media files with every drawing marked "As-Built". In showing the changes the same legend shall be used to identify piping, etc., as was used on the contract drawings. A separate set of drawings shall be prepared for electrical, plumbing, heating, air conditioning, and ventilating work, and A/V & Data, unless two (2) or more divisions are shown on the same sheets of the contract drawings. Each change of the original Contract Documents shall be “clouded” and referenced, except pipe runs may be noted, and each sheet shall bear the date and name of the Subcontractor submitting the changes to the drawings.

In addition, Contractor shall provide the following upon completion of the project:

- Electrical:
 - Panel schedule to be verified by Engineer of Record
 - On the Receptacle show label with Panel and Breaker
 - On Main Panel label phase rotation
 - Provide permanent Tag on Transformer for every main panel going to Transformer.
 - Provide on every Panel and switchgear paired Transformer
 - Provide the following standard color coding on J-Boxes:
 - Red – Fire Alarm
 - Yellow – 120/208/240 low voltage
 - Orange – 277/480 high voltage
 - Green – Camera
 - Blue – Communication/AV
- Plumbing:
 - For Valve Boxes above Ceiling locations, provide orange/blue stencil at grid intersection nearest to Valve Box
- Mechanical:
 - For Fire Damper, Air Damper locations provide pop-rivet sign
- Site As-Built drawings shall include the following:
 - location of all existing valves and valve boxes by GPS coordinates
 - location of all new valves and valve boxes by GPS coordinates.
 - location of main sewer service tie in points by GPS coordinates.
 - location of main water tie in points by GPS coordinates.
 - location of clean outs and junction boxes by GPS coordinates.
 - line drawings for chilled water lines, main water lines, main gas lines, Electrical lines.
 - change of direction for chilled water lines, main water lines, main gas lines, electrical lines.

- Electrical Transformer location by GPS coordinates.

3.11.1.4 The Contractor shall review the complete as-built drawings. He shall ascertain and certify that all data furnished on the drawings are accurate and truly represent the work as actually installed. When manholes, boxes, underground conduits, plumbing, hot or chilled water lines, inverts, etc. are involved as part of the work, the Subcontractor shall furnish true elevations and locations, all properly referenced by using the original benchmark for the project. The “Record Drawings” from each Subcontractor, including those unchanged and changed, shall be submitted to the Architect, when completed, together with three (3) sets of black line prints (produced from the As-Built Electronic Media) with the Contractor’s stamp and each Subcontractor's certification for forwarding to the Owner, at the time of Substantial Completion. Final payment shall not be made until said “As-Built” documents have been received by the Architect, reviewed, and accepted as complete, and in accordance with the contract documents.

3.11.1.5 The Contractor shall be responsible for collecting, identifying, indexing, and collating the specified Close-Out Documents including the following materials from the Subcontractors, and will deliver three (3) copies of the finished documents to the Architect. Complete equipment diagrams, operating instructions, maintenance manuals, parts lists, wiring diagrams, pneumatic and/or electrical control diagrams, test and balance reports, inspection reports, guarantee and warranties, as applicable for each and every piece of fixed equipment furnished under this contract to be supplied in a three-ring binder, hard-cover book, properly indexed for ready reference. Also, specific information regarding manufacturer's name and address, nearest distributor and service representative's name and address, office, and home phone numbers, make and model numbers, operating design, and characteristics, etc. will be required. All information submitted shall be updated to reflect existing conditions. Final payment shall not be made until said documents have been received by the Architect/Engineer, reviewed, and accepted as complete and in accordance with the contract documents. Also refer to Section 01 77 00, Close-Out Procedures.”

3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES:

3.12.11 Add the following Subparagraph:

“3.12.11 The requirements of Article 3.12 are supplemented by a separate Section, Submittals in Division One, Section 013300.”

3.14 CUTTING AND PATCHING OF WORK:

3.14 Add the following Subparagraphs:

“3.14.3 The Subcontractor shall do all cutting required for installation of his work. Patching required because of such cutting shall be performed as follows:

3.14.3.1 Wherever cutting occurs within unexposed materials, or in materials which are to remain unfinished when completed, patching shall be performed by the Subcontractor who did the cutting. This includes all concrete and masonry other than listed below.

3.14.3.2 Wherever cutting occurs in finished surfaces, patching shall be performed by the Subcontractor specializing in that particular trade and paid for by the Subcontractor who did the cutting. This includes, but is not limited to, roofing, painting of plaster and finished surfaces, ceramic tile, structural facing tile, marble, concrete block in finished areas, metal lath and plaster, acoustical materials and their supports.”

ARTICLE 4 - ARCHITECT:

4.1 GENERAL:

4.1 Add the following paragraph:

“4.1.4 Disputes arising under Subparagraph 4.1.2 and 4.1.3 shall be subject to litigation.”

ARTICLE 5 - SUBCONTRACTORS:

5.1 DEFINITIONS:

5.1. Add the following:

“5.1.3 Material Supplier is a person or organization who has furnished materials to the General Contractor, Subcontractor, Sub-subcontractor or Owner to be used in the construction of the Work, a building or structure, but has not performed any on or off site work other than delivering construction materials and shall not have or created any contractual relation between the Owner or the Architect/Engineer.

5.1.4 The Contractor, and all Subcontractors, Sub-Subcontractors and Material Suppliers shall be responsible for reading, studying, and understanding the Conditions of the Contract, Drawings and Specifications.”

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS:

6.4 Add the following paragraph:

“6.4 INSTALLATION OF EQUIPMENT:

6.4.1 The Contractor and Subcontractors shall allow the Owner to take possession of the use of any completed portions of this structure or Work, or to place and install as much equipment and machinery during the progress of the Work, as is possible without interference before its entire completion. Such possession and use of structure of work or such placing and installation of equipment, or both, shall not in any way evidence the completion of the Work or any portion of it, or signify the Owner's acceptance of the Work or any portion of it.”

ARTICLE 7 -CHANGES IN THE WORK:

7.2 CHANGE ORDERS:

7.2 Add the following:

“7.2.2 The Contractor is responsible for all affected work that is a result of an approved Change Order. Any changes required as a result of a Change Order shall be reflected in the price of the Change Order. Any additional work that becomes necessary after the Change Order has been approved will be made at the Contractor's expense.”

7.3 CONSTRUCTION CHANGE DIRECTIVES:

7.3.3 Delete paragraph and substitute the following:

“7.3.3 The cost or credit to the Owner resulting from a change in the Work shall be determined as follows:

1. By Unit Prices stated in the Contract Documents or subsequently agreed upon; or for changes not covered by Unit Prices.

2. By mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation; or if no agreement can be reached,

3. By the method provided in Subparagraph 7.3.6.

The lump sum proposals shall be based upon:

1. Estimate of Labor.

2. Estimate of Materials.

3. Estimate of Applicable Taxes.

4. Estimate of Equipment Rentals.

5. Estimate of Subcontractor Costs.

6. Estimate of Contractor Costs.

7. Estimate of Field Supervision (directly attributed to change) shall be included in labor breakdown.

8. Cost of Bond Premium.

9. Contractor and Subcontractor overhead and profit applied to the above items shall not exceed fifteen percent (15%) percent in total. Subcontractor overhead and profit shall not exceed ten percent (10%). Contractor overhead and profit shall not exceed five percent (5%) plus the cost for related bond premium. All lump sum proposals shall include a detailed cost breakdown for each component of work indicating both quantities and unit prices shall be submitted to the Architect within seven (7) calendar days after receipt of the proposal request.”

7.3.7 Add the following:

“7.3.7.1.1 All labor, material, and equipment expenditures for work performed at actual cost shall be approved daily by the Construction Manager. Material invoices shall be presented to the Owner and Architect with all payment requests.

7.3.7.1.2 No amount or percentage of overhead and profit will be allowed on items of perks, fringe benefits, bonuses, retirement benefits (other than social security withholdings), or health and life insurances.”

ARTICLE 8 - TIME:

8.2 PROGRESS AND COMPLETION

8.2 Add the following paragraph:

“8.2.4 Work shall be commenced by the date established in the Notice to Proceed, but in no case more than ten (10) consecutive calendar days after such date and shall proceed in accordance with a schedule to be developed by the Contractor and presented to the Architect and the Owner’s Agent. The Contract Time is specified in the Agreement Between Owner and Construction Manager.

A. LIQUIDATED DAMAGES:

1. If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time or as otherwise required by the Contract Documents, the Owner shall be entitled to retain or recover from the Contractor and/or its Surety, liquidated damages and not as a penalty, the per diem amounts specified in the Contract Between the Owner and Construction Manager, and commencing upon the first day following expiration of the Contract Time and continuing until the actual date of Substantial Completion for each Phase of Work identified. Such

liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner would incur as a result of delayed completion of the Work.

2. The Liquidated Damages amount per calendar day are fixed and agreed upon by and between the Contractor and the Owner because of the impracticality and difficulty of ascertaining actual damages the Owner will sustain. The Owner will suffer financial damage if the Project is not substantially completed on the dates set forth in the Contract Documents. Therefore, it is agreed that the liquidated damages amount per calendar day is adequate to cover damages which the Owner will sustain by reason of the inconvenience, loss of use, loss of monies, additional costs of contract administration by the Architect and Owner.
3. Permitting the contractor to continue and finish the Work or any part of the Work after time fixed for its completion or after date to which time for completion may have been extended shall in no way constitute a waiver on the part of the Owner of any of his rights under the Contract.
4. Liquidated Damages shall also be assigned to the Contractor if punch list items have not been completed within the specified number of days after Substantial Completion. Liquidated Damages for punch list items shall commence on the after Substantial Completion is established and accrue until the final Application for Payment has been approved by the Architect. The Contractor, and its Surety, shall pay to the Owner the sums stipulated as fixed, agreed and liquidated damages for each calendar day of delay until the punch list items are complete.”

ARTICLE 9 - PAYMENTS AND COMPLETION:

9.5 DECISION TO WITHHOLD CERTIFICATION:

9.5 Add the following:

“9.5.4 The Architect may withhold or cause to be withheld from any monies payable on account for work performed by the Contractor, or Subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Contractor or Subcontractors for damages.”

9.10 FINAL COMPLETION AND FINAL PAYMENT:

9.10.2 Add the following paragraph:

“9.10.2.1 Final payment consisting of the entire unpaid balance of the Contract Amount will be paid by the Owner to the Contractor thirty (30) days after receipt of the Final Certificate for Payment from the Architect, Close-Out Documents including Record Drawings, and the “Final Consent of Surety. Final Payment will not be made until all Close-Out Documents and As-Built Drawings have been submitted and approved.”

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY:

10.2 SAFETY OF PERSONS AND PROPERTY:

10.2.2 Add the following subparagraph:

“10.2.2.1 This requirement shall include, but not necessarily be limited to, all health, safety, and fire protection regulations of the Florida Industrial Commission and the Department of Labor Safety and Health Regulations and construction promulgated under the Occupational Safety and Health Act of 1970 (P191-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (P191-54). These regulations are administered by the Department of Labor who shall have full access to the Project for inspection, etc. Compliance with the above is strictly and exclusively the responsibility of the Contractor and Subcontractors and shall in no event be considered reason for additional time or monetary compensation. In the event that a hurricane or storm emergency is imminent, the Subcontractor shall, at his own expense and without cost to the Owner, take all necessary measures to secure all his movable property, building work or plant in such a manner that no damage to public or private property or to persons may result by reason of displacement of the Subcontractor's material, equipment or plant during such hurricane or storm.”

10.2.7 Add the following subparagraph:

“10.2.7.1 The Subcontractor shall adequately protect preceding and existing Work from damage caused by his operations. Breakage or damage shall be repaired by the erector of the Work at cost to the party causing the damage. The Construction Manager shall be the sole judge determining the party causing the damage, notwithstanding any dispute resolution.”

ARTICLE 11 INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

Delete Subparagraph 11.1.1 and substitute the following:

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the State of Florida such insurance as will protect the Owner, Contractor, Architect and Architect's consultants from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. All insurance policies shall be issued and countersigned by representatives of such companies duly authorized for the State of Florida and shall be written on ISO standard forms or their equivalents. The Contractor shall provide the ISO Commercial General Liability policy for general liability coverages. All liability policies shall provide that the Owner, Bay County School Board, is a named additional insured (being named as Certificate Holder is not acceptable) as to the operations of the Contractor under the Agreement and shall provide the Severability of Insured's Provision. The Owner shall be exempt from, and in no way liable for, any sums of money which may represent a deductible in any insurance policy. The payment of such deductible shall be the responsibility solely of the Contractor and/or Subcontractor providing such insurance. This insurance shall protect the Contractor from the following claims:

.1 claims under workers' or workmen compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

- .2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 claims for damages insured by usual personal injury liability coverage including claims which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person;
- .5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and
- .7 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

Delete Subparagraph 11.1.2 and substitute the following:

11.1.2 The insurance required by Subparagraph 11.1.1 provides Coverages, whether written on an occurrence or claims-made basis, that shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located. Insurance must be maintained for one (1) year after final payment. The insurance required by Subparagraph 11.1.1 shall include contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18 and coverage for the "XCU" exposure. The amounts set forth herein and by Law shall apply equally or whether on or off the site of the Work.

11.1.2.1 Contractor's Liability: Shall include Comprehensive General Liability, Premises and Completed Operations, Contractual Liability and Broad Form coverage.

- a. Bodily injury in at least the amounts of \$1,000,000 per occurrence, with an Aggregate of \$1,000,000.
- b. Property damage, including Complete Operations and Broad Form: in at least the amount of \$1,000,000 per occurrence, with an Aggregate of \$1,000,000.
- c. Personal Injury (with the employment exclusion deleted) in at least the amounts of \$1,000,000 per occurrence, with an Aggregate of \$1,000,000.

11.1.2.2 Worker's Compensation: The Contractor shall secure and maintain for the life of this Agreement, valid Worker's Compensation Insurance as required by Chapter 440, Florida Statutes. Copies of the insurance policy shall be filed with the Owner no later than 60 days after execution of the Owner-Contractor Agreement. All subcontractors shall maintain valid Worker's Compensation Insurance as required by Florida Statutes.

- a. Applicable Per Florida Statute – Chapter 440
- b. Railroad Required NO
- c. Maritime Required NO
- d. Employer's Liability \$500,000

11.1.2.3 Motor Vehicle Liability (Owned, Non-owned and hired): The Contractor shall secure and maintain, during the life of this Agreement, Motor Vehicle Liability insurance on all vehicles for the following:

- a. Bodily injury in at least the amounts of \$1,000,000 per occurrence, with an Aggregate of \$1,000,000.
- b. Property damage in at least the amount of \$200,000 per occurrence, with an Aggregate of \$400,000.

11.1.2.4 Owner and Contractor's Protective Liability: The Contractor shall provide an Owner's and Contractor's Protective Liability Policy with the following limits: (A separate policy in the name of the Owner must be provided.)

- a. Bodily injury in at least the amounts of \$1,000,000 per occurrence, with an Aggregate of \$1,000,000.
- b. Property damage in at least the amount of \$1,000,000 per occurrence, with an Aggregate of \$1,000,000.
- c. Personal Injury in at least the amounts of \$1,000,000 per occurrence, with an Aggregate of \$1,000,000.
- d. Optionally, the Owner may purchase and maintain other insurance for self-protection against claims which may arise from operations under the Contract

11.1.2.5 Public Liability: Shall include Comprehensive General Liability and Products and Completed Operations Liability coverage against bodily injury, personal injury and property damage, in limits as specified.

Delete Subparagraph 11.1.3 and substitute the following:

11.1.3 Two (2) Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner; this shall be noted on the Certificates of Insurance. The foregoing insurance coverages are required to remain in force for one (1) year after final payment if written on a claims-made basis; therefore an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2 The Contractor shall furnish one copy each of Certificates of Insurance for each copy of the Agreement which shall specifically set forth evidence of all insurance coverage required by the Contract Documents. The Certificate of Insurance shall be dated and show the name of the insured Contractor, the specific job by name and job number, the name of the insurer, the number of the policy, its effective date, and its termination date. The Contractor shall furnish a copy of the insurance policy to the Owner within 30 days following execution of the Agreement. The Supplemental Attachment form, AIA document G715 shall be completed, signed by the Contractor's insurance representative, and attached to the Acord certificate. Furnish to the owner a letter from the insurance company stating that all required insurance has been complied with as specified.

The Supplemental Attachment, The American Institute of Architects' (AIA) Document G715 is included at the end of this section.

Add the following Subparagraph 11.1.4:

11.1.4 The Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the State of Florida, property insurance, written on a Builder's Risk completed value form, in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site, on a replacement cost basis. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Paragraph 11.1 to be covered, whichever is earlier. This insurance shall include interests of the Owner, the Contractor and Subcontractors in the Work. Perils insured shall be "All Risks" including flood, Earthquake, and Sinkhole. Contractor remains responsible for any deductible under such policy."

Property Insurance coverage shall include coverage of perils of windstorms, fire, lightning vandalism, malicious mischief and those included in extended coverage in the amount of one hundred percent (100%) of the values at risk.

Extended coverage, vandalism, and malicious mischief insurance may contain the standard deductibles.

The Owner and Contractor waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance provided under this paragraph, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee. The Contractor shall require similar waivers by Subcontractors and Sub-subcontractors.

Add the following Subparagraphs 11.1.4.1, through 11.1.4.5:

11.1.4.1 Property insurance shall be on a Special Causes of Loss form or its equivalent, including reasonable compensation for the Architect/Engineer's services and expenses required as a result of such insured loss.

11. 1.4.2 If the Owner requests in writing that other special insurance be included in the property insurance policy, the Contractor shall, if possible, include such insurance, and the cost thereof shall be charged to the Owner by appropriate Change Order.

11.1.4.3 If the property insurance provides deductibles, the Contractor shall pay costs not covered because of such deductibles.

11.1.4.4 Any insured loss is payable to the Owner as trustee for the insured, as their interest may appear.

11.4.5 Unless otherwise provided in the Contract Documents, property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

Add the following Subparagraph 11.1.5:

11.1.5 Boiler and Machinery Insurance: The Contractor shall purchase and maintain an appropriate installation floater which shall specifically cover such insured objects which are

subject to the boiler and machinery hazards during installation and until final acceptance by the Owner.

11.3 WAIVERS OF SUBROGATION

Add Subparagraphs 11.3.3 to 11.3.5:

11.3.3 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.3.4 The Owner and Contractor waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance provided under this paragraph, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee. The Contractor shall require similar waivers by Subcontractors and Sub-subcontractors.

ARTICLE 13 - MISCELLANEOUS PROVISIONS:

13.1 GOVERNING LAW:

13.1 Add the following:

“13.1.1 The Contractor and Subcontractors shall comply with all applicable provisions of the Florida Building Code 8th edition (2023) (with latest supplements), Florida Fire Prevention Code 8th edition (2023), applicable portions of the Florida Administrative Code, federal, state, and local law. All limits or standards set forth in this contract to be observed in the performance of the project are minimum requirements and shall not affect the application of more restrictive standards to the performance of the project.”

“13.1.2 The Contractor and Subcontractors shall comply with the Owner’s personnel background check and badging of all on-site personnel. Refer to Section 00 98 00, Background Check.”

ARTICLE 15 - CLAIMS AND DISPUTES:

15.2 INITIAL DECISION:

15.2 Delete Paragraphs in its’ entirety and substitute the following:

“15.2.1 “Any claim, dispute, or other matter in question between the Contractor, Subcontractor and the Owner, shall be referred to the Initial Decision Maker (the Architect will serve as the Initial Decision Maker unless otherwise indicated in the agreement), except those relating to artistic effect, and except those which have been waived by the Owner’s acceptance, shall be subject to litigation at instance of the aggrieved party. However, no litigation of any such claim, dispute or other matter may be commenced until the earlier of (1); the date on which the Initial Decision Maker had rendered a written decision, or (2); the tenth (10) day after the parties have presented their evidence to the Initial Decision Maker, or have been given a reasonable

opportunity to do so, if the Initial Decision Maker has not rendered his written decision by that date. When such a written decision of the Initial Decision Maker states (1); that the decision is final, but subject to appeal, and (2); that any litigation of a dispute or other matter covered by such decisions must be filed before Final Completion by the party making the demand and received the written decision. Failure to commence litigation within said period will result in the Initial Decision Maker's decision becoming final and binding upon the Contractor, Owner and the Subcontractor.”

ARTICLE 17 - EQUAL OPPORTUNITY:

ADD the following Article:

“17.1 The Contractor shall maintain policies of employment compliant with Executive Order #11246 as follows:

17.1.1 Neither the Contractor or any Subcontractors shall discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, or age. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment, or advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor and Subcontractors agree to post in conspicuous places, available to employees and applicants of employment, notices setting forth the policies of non-discrimination.

17.1.2 The Contractor and all Subcontractors shall, in all solicitations advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national, origin, or age”

END OF SECTION 00 07 01

**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 00 07 02 – SPECIAL CONDITIONS

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Attachment: Certificate of Contract Completion Form
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PART I - GENERAL REQUIREMENTS:

These Special Conditions are hereby made a part of every Section of these Specifications and shall be binding upon each Contractor, Subcontractor, and Material Supplier.

ARTICLE 1: PERMITS AND FEES:

- A. Building Permit: A local building permit is required for this project. The Owner shall obtain and pay for all required approvals and inspections for the building. The Contractor, Subcontractors, and Suppliers shall cooperate with the Owner in obtaining required approvals and inspections.
- B. Utility service connection fees (if required) and required utility service fees, if any, will be coordinated by the Contractor and paid for by the Owner.
- C. Other Permits and Fees: Other than as noted above, the Contractor shall assist in obtaining and arranging for payment for all other permits, assessments, fees, bonds, and other charges as necessary to perform and complete the work of this contract,

including any related inspection fees, in accordance with the contract between the Owner and the Contractor.

- D. The Contractor and Subcontractors will be subject to all applicable County and local Municipal Occupational License Fees and Taxes.

ARTICLE 2: PROJECT SIGNS:

- A. The Contractor will provide the project sign(s) as designed by the Architect and approved by the Owner. The signs will be ONE (1) 5' x 8' professionally painted (or digital printed and mounted) plywood signs indicating the Architect, Contractor and the Owner. Location to be as directed by the Owner's Representative. No other signs or advertising shall be displayed on the premises without the approval of the Owner. This does not exclude the posting of required trade notices and cautionary signage by the Contractor or the Subcontractors. Directional signage indicating construction entrances, contractor parking, and other miscellaneous information shall be provided as required by the Contractor.
- B. See Division 01 Section, Temporary Facilities for additional requirements.

ARTICLE 3: LAYOUT OF WORK:

- A. All work, and in particular piping, ducts, conduit, and similar items, shall be neatly and carefully laid out to provide the most useful space utilization and the most orderly appearance. Except as otherwise indicated or directed, piping and similar work shall be installed as close to ceilings and walls as conditions reasonably permit, located to prevent interference with other work or with the use of the spaces in the manner required by the functions of the space as determined by the Construction Manager, Owner and Architect. Valves and clean-outs shall be located in inconspicuous but accessible locations and shall be field verified before proceeding with any work where exposed to view. The Contractor and Subcontractors shall carefully plan the layout and review any questionable installations with the Contractor and the Architect.
- B. Refer to Division 01 Section, Project Management and Coordination, for required Coordination Drawings.

ARTICLE 4: TEMPORARY FENCING AND SECURITY:

- A. A temporary fencing enclosure WILL BE required for the duration of the construction period. The temporary fencing may need to be modified by the Contractor for the various phases of construction.
- B. The services of a watchman will not be provided by the Owner or the Architect. The Contractor shall be responsible for, and make good, any loss due to theft or vandalism during construction for any claim not covered by Builder's Risk Insurance.
- C. Subcontractors shall advise the Contractor and the Architect of any theft or damage which might delay the execution of the Work.
- D. See Division 01 Section, Temporary Facilities for additional requirements.

ARTICLE 5: MATERIAL STORAGE:

- A. Each Subcontractor shall provide sufficient protection for his materials and equipment from damages by weather or construction work, or theft. Location shall be coordinated and approved by the Contractor. During progress of work, on a daily basis and upon completion of the work, remove all debris and leave the area in a clean and orderly

condition.

- B. See Division 01 Section, Temporary Facilities for additional requirements.

ARTICLE 6: TEMPORARY TOILET FACILITIES:

- A. The Contractor will obtain and maintain sanitary temporary toilet facilities acceptable to the local Health Department for use by all crew and workmen.
- B. Contractor and Subcontractors will not have access to existing toilet facilities within this facility or the adjacent buildings for the use of his crew and workmen.
- C. See Division 01 Section, Temporary Facilities for additional requirements.

ARTICLE 7: USE OF PREMISES, BARRICADES AND PROTECTION:

- A. Subcontractors shall be subject to such rules and regulations for the conduct of the Work as the Contractor, Owner or Architect may establish.
- B. Before entering upon the Work, ascertain from the Contractor, as approved by the Owner and Architect, what entrances, routes, or roadways shall be used for access to the work, and use only the entrance, routes, and roadways designed for movement of personnel, materials, and vehicles to and from the work.
- C. Contractor shall provide and maintain in good repair barricades, fences, overhead protection, guard railings, etc., as required by law or necessary for the protection of the public and personnel engaged in the Work from hazards incidental to this contract. Take reasonable precautions necessary to protect Owner's employees, the public, and workmen from injury or damage to vehicles or other property.
- D. Whenever the Contractor intends to depart from the normal work hours, he shall notify the Owner and the Architect at least twenty (20) hours in advance. Failure of the Contractor to give such timely notice may be cause for the Architect to require the removal or uncovering of the Work performed during such time without the knowledge of the Architect but is subject to the approval of the Owner.
- E. Protect pavement, curbs, and all existing construction and improvements during the course of the Work and repair all parts of same which become damaged. Contractor and each Subcontractor shall be responsible for the necessary cleaning and repairing of adjacent streets and other improvements resulting from his operations.
- F. Each Contractor and Subcontractor shall be responsible for all damage to the Owner's property and this project due to his operations. Repair or replacement of damaged items shall be to the satisfaction of the Owner and the Architect.
- G. Provide and maintain proper shoring and bracing for existing underground utilities, sewers, and building foundations, encountered during excavation work to protect them from collapse or movement, or other type of damage until such time as they are removed or repaired, incorporated into the new work, or can be properly backfilled upon completion of new work.
- H. Maintain clearances adjacent to and in connection with the work performed.
- I. The Contractor and each Subcontractor shall effectively confine dust, dirt, and noise to the actual construction areas.
- J. All employees and people on-site shall maintain procedures as stated in the Contractor's safety program.
- K. Each Subcontractor shall assume full responsibility for the protection and safekeeping of products under his control which are stored on the site. Subcontractors must move any stored products, under Subcontractor's control, which interfere with operations of the Contractor, Owner or other Subcontractors as directed by the Contractor.
- L. Contractors and Subcontractors must also obtain and pay for use of additional storage

or work areas needed for his operations. The Contractor shall receive from each Subcontractor, a receipt of shipment for all materials and equipment stored on-site (or off-site if approved). No materials or equipment shall be removed from the site without the permission of the Contractor and the Owner. No materials may be stored off-site unless approved in writing by the Contractor, Architect and Owner.

- M. Contractor and each Subcontractor shall not load or permit any part of a structure to be loaded with a weight that will endanger its safety, or the safety of persons or property.
- N. All employees of the Contractor and Subcontractors shall conduct themselves in a proper manner. Any disruptive behavior by any employee will cause that employee to be barred from the construction site and the Owner's property. The use of AM/FM radios is prohibited. Animals are not allowed on the property.
- O. All pumping, bailing, or well point equipment necessary to keep excavations and trenches free from the accumulation of water during the entire progress of this work shall be the responsibility of the Contractor performing said excavations and trenches due to their scope of work. Dispose of water in such a manner as will not endanger public health or cause damage or expense to public or private property. Abide by the requirements of any public agencies having jurisdiction.
- P. Contractor shall prepare a Safety Plan which clearly delineates areas for construction, safety barriers, exits, construction traffic during the various phases of the project prior to initiating construction. Contractor to submit the Plan to the Architect and Owner.

ARTICLE 8: TEMPORARY FIELD OFFICES FACILITIES AND PARKING:

- A. The Contractor, Owner and the Architect will designate an area for construction trailers (if required), equipment and parking for all construction workers. Placement and schedule shall be coordinated with the Contractor.
- B. Contractor shall provide a temporary field office with a meeting room of adequate size, and other temporary buildings as may be necessary for his operations as approved by the Owner. Storage and maintenance facilities shall be as required in accordance with the local Fire Marshall having jurisdiction. The Contractor shall arrange for the temporary electrical service and other utilities in his area for their use.
- C. The Contractor and/or Subcontractors shall maintain his designated space for office and sheds if provided. This includes removal of weeds, debris, and trash. Clean and restore space at completion of the work.
- D. Field offices and sheds shall not be used for living quarters.
- E. Offices and sheds, when provided, shall be of suitable and safe design, maintenance, and appearance. Temporary facilities shall be securely anchored to the ground to resist wind speed at the specific site of construction.

ARTICLE 9: COOPERATION - DISPUTES:

- A. The completion of the Project within the described time is dependent upon the close and active cooperation at all those engaged therein. Therefore, it is expressly understood and agreed that the Contractor and Subcontractors shall lay out and install his work at such time, and in such manner as not to delay or interfere with the carrying forward of the work of others, and as directed by the Contractor.
- B. In the event of any dispute arising as to possible or alleged interference between the various Subcontractors, which may retard the progress of the Work, the same shall be adjusted by the Contractor.

ARTICLE 10: CLEANUP:

- A. Contractor and Subcontractors shall be responsible for clean-up. Each Contractor shall clean their respective work areas on a daily basis, as a minimum.

ARTICLE 11: QUALITY CONTROL:

- A. It is the Contractor's and the Subcontractor's responsibility to familiarize himself with all required tolerances and quality assurance clauses, which are a part of the Contract Documents. It is also the Contractor's and the Subcontractor's responsibility to reject or condemn work performed by his forces or the Sub-Subcontractor's forces which does not comply with the requirements set forth in the Contract Documents, or as required by law, codes, etc. NOTE: If a conflict appears between the tolerances and quality assurance of published industry standards and the requirements of the Contract Documents, the Contract Document requirements will govern.
- B. The Owner, Engineer and Architect will conduct periodic observations of the Work as it progresses. Should the Owner, Engineer or the Architect reject any portion of the Work, he will promptly notify the Contractor with a Notice of Non-Conformance/Rejected Work. The Contractor will immediately provide the responsible Subcontractors with a Notice of Non-Conformance/Rejected Work and upon receipt of such notification shall, within 48 hours, inform the Contractor, Owner and Architect of his intended plan of action.
- C. The Contractor and Subcontractors should be aware that no monies will be awarded against defective work until such work is completed in a manner satisfactory to the Owner and Architect. In addition, the A/E, depending on the extent of the rejected work, may decide to withhold additional monies to compensate for the projected cost of repairs.
- D. In the event a Subcontractor fails to cooperate in the coordination program, he will be held responsible for all costs incurred for adjustments to the work of others made necessary to accommodate the uncooperative Contractor's installations.
- E. When a change order request is issued, the affected Subcontractors shall review the Coordination Drawings and bring to the attention of the Contractor any revisions necessary to the work of others not directly affected by the change order.

ARTICLE 12: CHANGES TO THE WORK:

- A. During the course of the Contractor's and Subcontractor's performance of the work necessary to complete the subject Project, certain events may occur which have the effect of changing the conditions under which the work is to be performed as specified and described in the Bidding Documents and/or the nature and extent of the work as specified and described in the Contract Documents.
- B. The occurrence of such events may cause the Contractor and Subcontractors to incur greater or less cost and expense to perform the work required to complete the subject Project. The Contractor, Subcontractor(s) or the Owner shall respectively be entitled to either an increase or decrease in the Contract Sum, whichever is the case. The changes shall be made as documented in Division 00 Sections, General Conditions and Supplementary General Conditions.

ARTICLE 13: PRIORITY:

- A. In case of close quarters for installation of mechanical and electrical systems, and in the absence of instructions to the contrary, the following order or precedence shall be

followed:

1. Special Equipment - Electric Devices
 2. Light Fixtures
 3. Sheet Metal Duct Work
 4. Plumbing Work, including fire protection piping
 5. Mechanical Work, including electrical and A/C pipes
 6. Electrical Work
 7. Control System
- B. After award of contracts and prior to start of construction the Contractor will schedule a meeting with the Contractors responsible for the work items listed above. The purpose of the meeting will be to introduce the coordination program and to determine its implementation in relation to the progress schedule.
- C. At the initial coordination meeting, the Contractor will provide to the HVAC and Electrical Contractors the drawings for the building on ELECTRONIC MEDIA in Autodesk ACAD Architectural Desktop (2019 Version). The Architect will provide the Contractor with the digital files of the building for the Contractor's and Subcontractor's use to prepare Shop Drawings, Coordination Drawings, and As-Built Drawings upon receipt of accepted AIA Documents E203-2013 and G201-2013 Digital Protocol Agreements and the Architect's Digital File Release Forms from all users. The HVAC and Electrical Contractors, with reference and consideration to the structural, mechanical, electrical, fire protection, plumbing, and reflected ceiling plans, shall draw to scale, his proposed installation showing duct sizes, equipment layouts, and dimensions from column lines and from finished floors to bottom of ducts. Ductwork shall be maintained as tight as possible to the underside of floor slabs and/or beams. In congested areas, the HVAC Contractor shall, in addition, prepare drawings in section view. During this phase of the program, it shall be the Electrical Contractor's and the Fire Protection System Contractor's responsibility to furnish the HVAC Contractor with recessed lighting and sprinkler installation and clearance requirements. This information shall be outlined on the drawings by the HVAC Contractor. Also refer to Division 01 Section, Project Management and Coordination for the required Coordination Drawings.
- D. In the event a Subcontractor fails to cooperate in the coordination program, he will be held responsible for all costs incurred for adjustments to the work of others made necessary to accommodate the uncooperative Contractor's installations.
- E. When a change order request is issued, the affected Subcontractors shall review the Coordination Drawings and bring to the attention of the Contractor any revisions necessary to the work of others not directly affected by the change order.

ARTICLE 14: COOPERATION WITH PUBLIC SERVICE COMPANIES:

- A. Contractors shall notify the appropriate persons within local utilities 48 hours before commencement of any work, to verify location of existing below grade pipes, cables, poles, towers, and right-of-ways that could be hazardous to life, limb, health or property. The Contractors will be held solely responsible for any injury, damage to existing utilities, or damaged property.

ARTICLE 15: SUBSTITUTION OF MATERIALS AND EQUIPMENT:

- A. All bids submitted shall be based on materials, equipment, and apparatus of the quality and make specified. The Architect will include at least three (3) approved

manufacturers, as reasonably possible, but the manufacturers shall comply with the basis-of-design specifications. The Bidder's attention is directed to Section 255.04, Florida Statutes, which requires that on public building contracts, Florida products and labor shall be used wherever price and quality are equal. However, Bidders wishing to obtain approval of an article, device, product, material, fixture, form, or type of construction other than specified or shown by name, make, or catalog number, shall make written request to the Architect timed so as to reach the Architect at least seven (7) working days prior to the date of receipt of bids. Such requests shall be accompanied by data supporting the claim to equality or equivalence.

- B. "Or Equal": The Contractor and Subcontractors shall not decide that another product is equal or equivalent to the brand, or model specified. The Architect is solely charged with this responsibility and judgment. Where "or equal" is stated in the Specifications, it is the Architect/Engineer's and not the Contractor's or Subcontractor's decision as to what brands or suppliers qualify as equal, or equivalent, or do not qualify as equal or equivalent.
- C. The Bidder shall submit drawings and other descriptive data of any modification, or items of assemblies, necessary to provide approved compliance with requirements and compatibility with adjacent components.
- D. Approval by the Architect, if given, will be made by Addendum. Said approval will indicate that the additional article, device, product material, fixture, form, or type of construction is approved for use insofar as the requirements of this Project are concerned. However, it is the responsibility of the Contractor to ensure that the approved item meets all requirements of the Contract. Bids shall not be based on assumed acceptance of any item which has not been approved by Addendum or specified herein. If a substitute item is bid without prior written approval, the Architect holds the option to void that bid, or require that the work be incorporated as specified at no additional cost to the Owner or Architect.
- E. Under no circumstance will the Architect/Engineer be required to prove that a product proposed for substitution is, or is not, equal or equivalent quality to the product specified. It is mandatory that the Bidder submit a complete description of the proposed substitute, the name of the material or equipment for which it is to be substituted, drawings, cuts, performance and test data, and any other data, samples or information necessary for a complete evaluation. Insufficient data will not be considered.
- F. Where more than one (1) manufacturer's product is listed, the listing is not necessarily in order of preference, and all will be considered as equally acceptable as long as they meet the design requirements of the Contract Documents and as determined by the Architect/Engineer.
- G. The Contractor shall provide the same guarantee for an approved substitution, if approved, that is originally required for the originally specified product.

ARTICLE 16: FASTENING DEVICES:

- A. All exposed screw and bolt heads in secure spaces throughout the interior of the Project (this specifically excludes mechanical and electrical rooms) shall comply with the following:
 - 1. Any item which requires periodic access for maintenance shall have "spanner-head" fastening devices, or approved equal, which enables removal of the fastener with appropriate special tools.
 - 2. All exposed fastening devices shall be of tamper-proof design, where ever possible, as approved by the Architect/Engineer.

3. All exterior fasteners shall be stainless steel unless otherwise specified by individual Sections.

ARTICLE 17: PROJECT CLOSE-OUT/DOCUMENTS:

- A. The Contractor and each Subcontractor shall be responsible for collecting, identifying, and collating the following materials, as applicable to his portion of the Work, and shall submit the same (in duplicate) to the A/E. The Contractor shall properly organize the materials from himself and the various Contractors and Subcontractors into hard cover, 3-ring binders, and shall deliver copies of the finished books to the A/E for verification. The Architect/Engineer will deliver the approved copies to the Owner for approval. This process, together with the As-Built Drawing requirements, must be completed before the Final Certificate for Payment will be issued by the Architect.
- B. INDEXING: All information shall be organized with categories indexed as per the project close-out index. The individual categories shall also be organized and indexed as per Section of the Specifications.
- C. LISTING OF CONTRACTOR AND SUB-CONTRACTORS: The Contractor shall provide a listing of all Sub-Contractors performing work on the site. Required information shall be as follows:
 - (Example)
 - Division 1
 - CM / Contractor Representative's Name
 - Company Name
 - Title
 - Address
 - Phone Number
 - Facsimile Number

 - Division 2
 - Earth Moving and Site Grading
 - Representative's Name
 - Title
 - Company Name
 - Phone Number
 - Address
 - Facsimile Number
- D. CERTIFICATE OF SUBSTANTIAL COMPLETION: The Contractor shall insert, at this point, a copy of the fully executed Certificate of Substantial Completion on the form incorporated in the project documents, as future reference for the Owner.
- E. CERTIFICATE OF STRUCTURES LOCATIONS: The Contractor shall have a state registered surveyor certify, in writing, with seal affixed, that the location of all new structure(s) is in compliance with the Contract Documents.
- F. TESTING, INSPECTIONS AND CERTIFICATE OF OCCUPANCY: The Contractor shall provide copies of all test and balance reports from his Subcontractors as required. (See Division 21 thru 28.) Provide copies of all Certificates of Inspection from controlling authorities for each trade, division, or section of work, as required. Provide a copy of final executed Certificate of Occupancy.

G. CONSENT OF SURETY: The Contractor and Contractors shall provide a Consent of Surety on A.I.A. Document G707, Latest Edition.

H. WARRANTY, GUARANTEE AND BONDS:

1. The Contractor and Subcontractors shall, and hereby does guarantee all Work and materials called for in the Contract Documents, including all work performed by the Contractor and his Subcontractors, for a minimum period of one (1) year from the date of Substantial Completion of the building, unless a longer Warranty/Guarantee time is specified by individual Sections.

The Contractor shall provide a listing of all Sub-Contractors performing work on the site. Required information shall be as follows:

(Example)

Division 1

CM / Contractor Representative's Name

Company Name

Title

Address

Phone Number

Facsimile Number

Start and End of Warranty

Division 2

Earth Moving and Site Grading

Representative's Name

Title

Company Name

Phone Number

Address

Facsimile Number

Start and End of Warranty

2. Warranty guarantee and bonds will be as stated in the Contractor's contract.

I. INSTRUCTION/OPERATION MANUALS AND KEYS:

1. Contractor shall provide all equipment diagrams, instruction/operation manuals, wiring diagrams, and pneumatic and/or electrical control diagrams as applicable for each working characteristic of mechanical, electrical, and special equipment furnished under this Contract, and submitted at Substantial Completion.
2. The Contractor and Subcontractors shall provide a competent and experienced person(s) thoroughly familiar with the work, for a reasonable period of time to instruct the Owner's personnel in operation and maintenance of equipment, materials, and control systems. This instruction shall include normal start-up, run, stop, and emergency operations, location and operation of all controls, alarms, and alarm systems.
3. Label turn-over all keys.

K. MAINTENANCE MANUALS AND SPARE PARTS:

(All items in this Section are required prior to issuance of Certificate of Substantial Completion.)

1. Contractor shall provide all instructions and maintenance manuals for products, mechanical, electrical, and special equipment. This instruction shall include tracing the system in the field and on the diagrams in the manuals so that maintenance personnel will be thoroughly familiar with both systems and the data supplied.
2. Contractor shall submit all parts lists, spare parts, tools, fuses, bulbs, and motor listing, containing locations, motor nameplate, rating, and size of overload relay installed.
3. Contractor shall also provide all maintenance letters as listed in the specifications for manufacturer's cleaning procedures, materials and equipment to be used, including instruction as listed above.

J. AS-BUILT DRAWINGS:

1. Final corrected "As-Built" or "Record" drawings shall be complete and accepted by the Architect/Engineer.
2. Refer to Article 3.11.1, Record Drawings, for specified process and requirements.

ARTICLE 18: HISTORICAL AND ARCHAEOLOGICAL DATA PRESERVATION:

- A. The Contractor agrees to facilitate the preservation and enhancement of structures and objects of historical, architectural, or archaeological significance and when such items are found and/or unearthed during the course of project construction. Any excavation by the Contractor that uncovers an historical or archaeological artifact shall be immediately reported to the Owner and a representative of the Architect. Construction within the immediate area shall be temporarily halted pending the notification process and further directions issued by the Architect after consultation with the State Historic Preservation Officer (SHPO) for recovery of the items. *See* the National Historic Preservation Act of 1966 (80 Stat 915, 16 U.S.C. § 470) and Executive Order No. 11593 of May 31, 1971.

ARTICLE 19 ENVIRONMENTAL REQUIREMENTS:

- A. Endangered Species. The Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of the Contractor, the Contractor will immediately report this evidence to the Owner and a representative of the Architect. Construction within the affected area shall be temporarily halted pending the notification process and further directions issued by the Architect after consultation with the Florida Fish and Wildlife Conservation Commission.

ARTICLE 20: INDEMNIFICATION:

- A. To be as stated in the Contract between Owner and Contractor.

END OF SECTION 00 07 02

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CERTIFICATE OF SUBSTANTIAL COMPLETION

Date: _____
Project No. _____

The work performed under the Contract dated _____
between _____ (the Owner)
and _____ (the Contractor),
for the construction of _____ (Building
Name)
was found to be Substantially Completed as of _____ (Date).

The term "Substantial Completion" shall mean that the construction is sufficiently completed in accordance with the Plans and Specifications, as modified in any Change Order agreed to by the parties, so that the Owner can occupy the building and/or utilize the facility/project for the use for which it was intended without hazard to the occupants or to the facility.

A list of items to be completed or corrected is appended hereto. This list may not be exhaustive and the failure to include an item on it does not alter the responsibility of the Contractor or the Contractor to complete all the work in accordance with the Contract Documents, including authorized changes thereto.

The Contractor will complete or correct the work on the list of items appended hereto within fifteen (15) consecutive calendar days from the Date of Substantial Completion.

Owner assumed full possession of the facility above described on _____.

The responsibility of the Contractor to provide utilities, under the Contract Documents shall cease that date and the one-year warranty period or other specified warranty/guarantees so specified shall begin. Insurance coverage shall continue in accordance with provisions as amended in the Contract Documents.

(Architect/Engineer) _____ (Authorized Representative)

(Contractor) _____ (Authorized Representative)

(Owner) _____ (Authorized representative)

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CERTIFICATE OF CONTRACT COMPLETION

AGENCY/OWNER: _____

PROJECT: _____

CONTRACTOR: _____

CONTRACT FOR: _____

CONTRACT DATE: _____

CONTRACT AMOUNT: _____

CONTRACTOR'S AFFIDAVIT: _____

I solemnly swear (or affirm): That the work under the above named Contract and all Amendments thereto have been satisfactorily completed; that all amounts payable for materials, labor and other charges against the project will be paid; that no liens have been attached against the project; that no suits are pending by reason of work on the project under the Contract; that all Workers' Compensation Claims are covered by Workers' Compensation Insurance as required by law; and that all public liability claims are covered by insurance.

CONTRACTOR: _____

Signature: _____

Date: _____

Title: _____

(SEAL)

STATE OF _____

COUNTY OF _____

Personally appeared before me this _____ day of _____, known (or made known) to me to be the (OWNER) OR (PARTNER) _____

of, _____

(Corporate Official Title) _____

Contractor(s), who, being by me duly sworn, subscribed to the foregoing affidavit in my presence. (Notary Public)

(Type Name): _____

My Commission Expires: _____

WARRANTY – GUARANTEE

Submit for each individual Warranty – Guarantee specified in each Section of the Specifications:

Division No.: _____

Section No.: _____

Title No.: _____

TO: (Owner)

RE: (Project Name)

(Contractor's Name): _____, does hereby certify to all guarantees and warranties taking effect on the date of Substantial Completion and shall remain in force as required by the Contract Documents for the Construction of ; and further certifies that all labor, materials, equipment or items necessary to execute said guarantees and warranties shall be furnished at no cost to the Owner for the duration of each guarantee or warranty period.

WARRANTY – GUARANTEE PERIOD:

(Contractor's Name) _____

(Address) _____

By: _____(type name of signee below)

Title: _____

Sworn to and subscribed before me this

(NOTARIAL SEAL)

_____ day of _____, _____.

Notary Public, State of Florida

My Commission Expires: _____

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**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 00 09 50 - DIRECT PURCHASES BY OWNER

1. The OWNER is tax exempt and may wish to exercise its right to purchase directly various construction materials, supplies and equipment that may be part of this Contract. The OWNER will, via its purchase orders, purchase the materials, and the CONTRACTOR shall assist the OWNER in the preparation of purchase orders. The OWNER may direct the CONTRACTOR to prepare the purchase order on the OWNER'S form and make ready for verification and execution by the OWNER. The materials may be purchased from the vendors/suppliers selected by the CONTRACTOR, for the price originally negotiated by the CONTRACTOR. The CONTRACTOR will prepare a list of materials, supplies and equipment and the OWNER will advise the CONTRACTOR which items from the list it wishes to purchase directly, with enough lead time to allow this request to be incorporated into the overall construction schedule.

2. The Contract amount shall be reduced by the net, undiscounted amount of the purchase order, plus all sales taxes. Issuance of the purchase orders by the Owner does not change any of the CONTRACTOR'S responsibilities regarding material purchases, or installations, with the exception of the payments for the materials so purchased. The CONTRACTOR remains responsible for coordination, correct quantities ordered, submittals, protection, storage, scheduling, shipping, security, expediting, receiving, checking shipping tickets, and invoices, installation, cleaning all applicable warranties, and that all materials purchased meet the requirements of the CONTRACT DOCUMENTS.

3. In the event that materials, supplies, or equipment purchased under this option, are defective or rejected for any reason whatsoever, and it becomes necessary in the opinion of the CONTRACTOR to initiate legal action against the responsible party, the OWNER agrees to assign and subordinate to the CONTRACTOR any claims the OWNER has against the responsible party resulting from the purchase order and to execute any legal documents necessary to accomplish the assignment, subordination or subrogation of such claims, and to cooperate with the CONTRACTOR in such legal action.

ATTEST

Secretary

(SEAL)

BY: _____

As its

OWNER: THE BAY DISTRICT SCHOOLS,
PANAMA CITY, FLORIDA

ATTEST

Secretary

BY: _____

Chairman

DATE: _____

CONTRACTOR: _____

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**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 00 09 51 - DIRECT MATERIAL PURCHASE PROCEDURE

PART 1 - MAJOR MATERIAL PURCHASE

1.01 GENERAL:

A. As a service to Contractors, and as a cost savings measure for the District, Bay County School Board may direct purchase major materials for construction project.

1.02 PROCEDURE

A. The School Board may issue purchase orders and process payment for invoices approved by the Contractor. The Construction Manager (C.M.) is responsible for all ordering of materials, delivery, installation and warrantee. This purchase process does not alter, modify or relieve the C.M. of any obligations specified in the Contract Documents.

1.03 COST OF MATERIALS AND EQUIPMENT

A. C.M. will include the cost of construction materials and equipment in the Guaranteed Maximum Price. The Guaranteed Maximum Price will also include all Florida State sales and other taxes normally applicable to such material and equipment. The Owner may, at its own discretion, purchase such materials and equipment directly from the supplier. The Owner may consider purchasing any item but does not expect to purchase items less than \$5,000.

1.04 SALES TAX

A. In the event the owner elects to make direct purchases, the C.M. will not be responsible for paying sales tax on such items. Such items are referred to in this Section as "Direct Purchase Material". The responsibilities of the Owner, Architect/Engineer (A/E) and C.M. relative to the Direct Material Purchase shall be governed by the terms and conditions of this Section. This Section shall take precedence over any conflicting conditions and terms of other Contract Documents. All clerical, administrative, management, supervisory, inspection, handling, storage and other costs necessary for the C.M. to comply with this Section are included in the C.M.'s Guaranteed Maximum Price.

1.05 COST OF BONDS

A. Cost of the bonds shall be included in the C.M.'s Guaranteed Maximum Price. The C.M. may select the supplier or suppliers from whom it wishes to purchase materials or equipment as long as the material or equipment meets the specification which relates to that material or equipment.

1.06 SUBCONTRACTORS COMPLIANCE

The C.M. shall furnish the Owner, through the A/E, with a Direct Material Purchase Form identifying each item or material or equipment to be purchased by the Contractor for the Project. The Direct Material Purchase Form shall include:

1. The name, address, telephone number and contact person for the supplier and the name and address of the project.
2. Manufacturer or brand, model or specification number of the item.
3. Quantity needed as estimated by the C.M. or subcontractor.
4. The price quoted by the supplier for the material or equipment in questions.
5. Any sales tax associated with such quote.
6. Shipping, handling and insurance costs.
7. Delivery dates as established by the C.M. or subcontractor.
8. Special terms and conditions which have been negotiated with the supplier relative to payment terms, discounts, rebates, warranty, credits or other terms and conditions which will revert to the Owner.
9. Statement with the submittal control number that material/equipment have been reviewed and approved by A/E during the shop drawing submittal process.

1.08 OWNER'S PURCHASE ORDER

A. Promptly upon receipt of a Direct Material Purchase Form, the Owner will initiate a purchase order for the material/equipment which the Owner chooses to purchase. The purchase order shall require that the supplier provide required shipping and handling insurance. The purchase order shall also require the delivery of the Direct Material Purchase items on the delivery dates provided by the C.M. in the Request Form. A copy of each purchase order will be furnished to the C.M. The C.M. shall promptly review the copy of the purchase order and verify that items ordered are in accordance with the Direct Materials Purchase Request Form, the terms of this contract, and with the C.M.'s requirements.

B. The invoice for the Direct Material Purchase items will be sent directly to the Owner with a courtesy copy sent to the C.M.

1.09 DEDUCTIVE CHANGE ORDERS

A. The C.M. shall prepare and execute, on a monthly basis, deductive Change Orders to reflect purchases made by the Owner. The amount of the deduction shall be based on the requisition amount plus sales tax. These Change Orders must be executed before the related purchase order will be paid.

B. Contractor's overhead and profit shall not be deducted on change orders for Direct Material Purchase items.

1.10 SHOP DRAWINGS

A. Nothing in this Section shall alter or modify the procedures for submission of shop drawings and other submittals by the C.M.

1.11 DELIVERY TO JOB SITE

A. When the Direct Material Purchase Items are delivered to the project, either by common carrier or manufacturer's/supplier's vehicle, the title to these items shall pass to the Owner. The Owner's Representative and C.M. shall jointly inspect each deliver for manufacturer/brand, quantity and condition. The C.M. and Owner's Representative shall both sign the invoice after the inspection; by this process the ownership will transfer from the Owner to the C.M.

B. There upon; the C.M. shall be fully responsible for all matters relating to the receipt, protection and risk loss of Direct Material Purchase Items the same as if such items were purchased by the C.M. or subcontractor until such items are incorporated and accepted by the Owner as a finished product.

C. At a minimum, the C.M. shall verify correct quantities, verify documentation, coordinate and expedite delivery, obtain and verify warranties required by contract documents, inspect and accept each item at the time of delivery, unload, handle and store the item.

D. Direct purchase of materials by the Owner in no way relieves the C.M. of any responsibilities regarding the compliance with specification requirements, coordination, protection, scheduling or warranty.

E. As Direct Material Purchase Items are delivered to the job-site, Contractor shall visually inspect all shipments, and approve the supplier's shipping documents and the courtesy invoice. The C.M. and Owner's Representative shall assure that each delivery is accomplished by documentation adequate to identify the purchase order against which the purchase is made.

F. After courtesy invoices have been signed by both the C.M. and Owner's Representative, the completed invoices will be processed for payment.

G. The C.M. shall inspect to determine that Direct Material Purchase Items conform to the purchase requisition form and determine prior to the incorporation into the project is such materials are defective. If the C.M. discovers defective or non-conforming items it shall not utilize such items in the project and shall promptly notify Owner of the defect or non-conformity and assist Owner in obtaining repair or replacement of item.

H. The C.M. shall be fully responsible and liable to the Owner if they fail to perform such inspection or otherwise permit defective or non-conforming material or equipment to be incorporated into the project. This requirement does not relieve the C.M. of its obligation to ensure that materials requested for purchase have been reviewed and approved by the A/E through shop drawing and submittal procedures.

1.12 WARRANTY

A. Contractor warrants Direct Material Purchase Items the same as all other materials and equipment furnished by the C.M. and nothing in this Section shall alter or modify the C.M.'s obligations under the Contract relative to warranties.

1.13 INSURANCE

A. The C.M. shall purchase the insurance for the benefit and protection of the Owner, A/E and C.M. sufficient to protect against any loss of or damage to Direct Materials Purchase Items. The Owner is paying for this insurance as part of the Contract Price.

B. Such insurance shall cover the full value of any Owner-Furnished Materials not yet incorporated into the project starting from the time of material acceptance. The C.M. shall be solely responsible for any loss or damage attributed to the C.M. to the extent that the Owner is not compensated by the insurance stated above.

1.14 DELAY OR INTERRUPTION

A. Owner shall not be liable for any interruption or delay damages in connection with Direct Material Purchase Items except where Owner fails within (30) days of receipt or a Purchasing Requisition Form to either cause the Owner to award a Purchase Order or notify the C.M. that the Owner elects not to purchase an item.

1.15 REPORTS

A. The C.M. shall on a bi-weekly basis provide Owner with documentation establishing the amount and nature of the material and equipment delivered by suppliers and accepted by the C.M. during the reporting period.

B. The C.M. shall correspond all material and equipment to purchase orders, courtesy invoices, delivery tickets, and inspection and acceptance reports.

C. The C.M. shall also obtain lien waivers and other releases from suppliers. Upon receipt of appropriate documentation from the C.M., payment will be made by owner directly to the appropriate supplier.

END OF SECTION 00 09 51

**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 01 02 00 – USE OF ASBESTOS CONTAINING MATERIAL

PART 1 - GENERAL:

1. WORK COVERED BY CONTRACT DOCUMENTS

- A. No asbestos containing building materials shall be used in the construction of the project.
- B. The Contractor, if aware, shall notify the Architect/Engineer of any asbestos containing building material which has been specified for this project. No asbestos containing building material shall be knowingly installed.
- C. The contractor shall notify the Owner and Architect immediately if any asbestos containing materials are uncovered or discovered during Demolition or Construction Activities in any existing building or structures.
- D. At substantial completion, the Contractor shall sign and turn over to the Owner the following certificate. Three (3) copies shall be provided and included in the closeout documents, see Division 01 Section “Closeout Procedures”.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01 02 00

CONTRACTOR'S CERTIFICATE OF ASBESTOS USE

I certify that no materials containing asbestos were used or installed in the renovation or construction of the **Tommy Smith Elementary School Playground Enclosure** located in Panama City, FL.

Contractor's Signature

Date

Contractor's Name (Typed)

Firm Name _____

Address _____

**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 01 02 10 – ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes;
 - 1. Schedule of allowances.
 - 2. Selection of products.
 - 3. Adjustment of costs.

1.2 ALLOWANCES FOR PRODUCTS

- A. The amount of each allowance shall include:
 - 1. The cost of the Product to the Contractor.
 - 2. Delivery to the site.
 - 3. Applicable taxes.
 - 4. Handling at the site.
 - 5. Protection.
 - 6. Labor.
 - 7. Contractor's and Subcontractor's overhead and profit.
 - 8. Other expenses required to complete the installation.

1.3 SELECTION OF PRODUCTS UNDER ALLOWANCES

- A. Contractor's Duties:
 - 1. Assist Owner in determining qualified suppliers or installers.
 - 2. Obtain proposals from suppliers and installers.
 - 3. Make appropriate recommendations.

1.4 ADJUSTMENT OF COSTS

- A. Should the net cost be more than the specified amount of the allowance, the Contract Sum will be adjusted accordingly by Change Order.
 - 1. The amount of the Change Order will recognize:
 - a. Any changes in handling costs at the site.
 - b. Labor.

- c. Installation costs.
 - d. Overhead and profit.
 - e. Other expenses caused by the selection under the allowance.
- B. Submit any claims for anticipated additional costs at the site.
- C. At contract close-out, reflect all approved changes in contract amounts in the final statement of accounting.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 SCHEDULE OF ALLOWANCES

- A. Hardware Allowance – Purchase and install door hardware - \$3,000.00

END OF SECTION 01 02 10

**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 01 04 00 - COORDINATION

PART 1 - GENERAL

1. WORK INCLUDED

- A. Contractor shall supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills as may be necessary to perform the work in accordance with the Contract Documents.
- B. Contractor shall be solely responsible for all means, methods, techniques, sequences and procedures of construction, and for providing adequate safety precautions and coordinating all portions of the work under the Contract Documents.
- C. Contractor shall be responsible to see that the finished work complies accurately with the Contract Documents.

2. DESCRIPTION

- A. Coordinate scheduling, submittals, and work of the various sections of specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
 - 1. Maintain reports and records at job site:
 - a. Daily log of progress of work and other pertinent data. Maintain log accessible to Owner, Architect, and his representatives.
 - b. Assemble documentation for handling of any claims or disputes which may arise.
 - 2. Inspections and Testing:
 - a. Inspect the work to assure that it is performed in accordance with the requirements of the Contract Documents.
 - b. Arrange for special inspections and testing required by Sections of the specifications.
 - c. Reject work which does not conform to requirements of the Contract Documents.
- B. Coordinate sequence of work to ensure proposed completion dates are met.
 - 1. Construction Schedule:
 - a. Prepare detailed schedule of Contractor's operations and for all subcontractors on the project.

- b. Monitor schedules as work progresses.
 - 1. Identify potential variances between scheduled and probable completion date.
 - 2. Recommend, to Architect, any adjustments in schedule to meet required completion date.
 - 3. Provide monthly summary reports of each monitoring.
- c. Observe work to monitor compliance with schedule.
 - 1. Verify that labor and equipment are adequate to meet and maintain the schedule for the work.
 - 2. Verify that product deliveries are adequate to meet and maintain the schedule for the work.
 - 3. Report any non-compliance to Architect, with recommendations for remedy.
 - 4. Verify that adequate services are provided to comply with requirements for work and climatic conditions.
 - 5. Verify proper maintenance and operation of temporary facilities.
 - 6. Administer traffic and parking controls for construction workers. Construction traffic shall not interfere with surrounding traffic movement or the schedule of the Bay County Courthouse.

2. Coordination of Subcontractors:

- a. Coordinate work of all subcontractors and relationship between them.
- b. Establish on-site lines of authority and communication. Schedule and conduct progress meetings among Owner and Architect representatives and subcontractors.
- c. Ensure that specified cleaning is done during progress of the work and at completion of contract.

3. MEETINGS

In addition to progress meeting specified in Section 01 20 00, hold coordination meetings and preinstallation conferences with personnel and subcontractors to assure coordination of work.

4. COORDINATION OF SUBMITTALS

- A. Schedule and coordinate submittals.
 - 1. Administer processing of shop drawings, product data, and samples.
- B. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

1. Coordinate Testing Laboratory Services:
 - a. Notify laboratory of test schedule.
 - b. Verify that required personnel are present.
 - c. Verify that specified tests are made as scheduled.
 - d. Verify compliance of the test results with specified criteria. Determine need for retesting and submit recommendations to Architect. Administer and pay for required retesting.

2. Coordinate with Sub-contractors as required:
 - a. Provide temporary utilities (electric, water) required by the Subcontractors in the performance of their work.
 - b. Provide designated location where the Subcontractors may place construction debris for removal by the Contractor.

- C. Coordinate requests for changes to assure compatibility of space, of operating elements, and effect on work of other sections.
 1. Recommend necessary of desirable changes to Architect.
 2. Review subcontractor's requests for changes and substitutions. Submit recommendations to Architect.
 3. Process Change Orders in accord with General Conditions and Change Order Procedures.

5. COORDINATION OF SPACE
 - A. Coordinate use of Project space and sequence of installation of subcontractor work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - B. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.

6. INTERPRETATION OF CONTRACT DOCUMENTS
 - A. Consult with Architect to obtain interpretation or clarifications for any portions of the contract documents which are unclear or ambiguous. Transmit all requests for interpretation in writing.
 - B. Assist in the answering of any questions which may arise.
 - C. Transmit written interpretations to Sub Contractors, Suppliers and Others whose work may be affected by the clarification.
 - D. Interpretations shall be based on the Architect review of the Contract Documents. In case of conflicting data, assumption shall be made that the item of greater quality, cost of quantity was bid.

7. START-UP

- A. Direct the check-out of utilities, operational systems, and equipment.
- B. Assist in initial start-up and testing.
- C. Record dates of the start of the operations of systems and equipment.

8. COORDINATION OF CONTRACT CLOSEOUT

A. Substantial Completion:

- 1. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion.
- 2. When Work is ready for Substantially Complete, prepare for the Architect a list of incomplete or unsatisfactory items. See Prerequisites to Substantial Completion.
- 3. Secure and transmit to Architect required Substantial Completion submittals.

B. Final Completion:

- 1. When Work is ready for Final Completion:
 - a. Submit written notice to Architect that the work is ready for final inspection. See Prerequisites to Final Completion.
 - b. Secure and transmit to Architect required closeout submittals.

C. After Owner occupancy of premises, coordinate access to site by various sections for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

D. Assemble and coordinate closeout submittals specified.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01 04 00

**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
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SECTION 01 10 00 - SUMMARY OF WORK

PART 1 - GENERAL

1.2 PROJECT DESCRIPTION

- A. The TOMMY SMITH ELEMENTARY PLAYGROUND ENCLOSURE project consists of new modular safe room and new emergency generator.
1. Project Location: Panama City, FL
 2. Owner: Bay District Schools
- B. The work consists of:
1. Enclosing of a 62'-0" pre-engineered pavilion structure.
 2. HVAC and Electrical work.
- C. Work Sequence: The work will be conducted in such a sequence to minimize interference to Owner's normal activities.
- D. Applicable Codes: See drawing index sheet.
- E. Product Approval: The Contractor shall, for each product installed in the building envelope, either; provide the applicable Product Approval Numbers OR provide certification (for alternate means of Building code approval) that products installed conform to the Florida Building Code 2023. Walls, roof, exterior doors and windows/glazing to meet missile impact per ICC500/P-361. The list of products is as follows:
1. Exterior doors.
 2. Windows.
 3. Roofing products.
 4. Structural components.
 5. Other products as applicable.
- Note: The list shown above is not comprehensive. No effort was made to list each and every possible aperture in the building envelope. The Contractor shall determine what products apply and furnish the applicable Product Approval Numbers, or the required testing and subsequent certifications to meet the Florida Building Code. The Product Approval List can be found within the Florida Building Code website.
- F. Contractor: Construction Manager has been engaged for this project to serve as Contractor who in turn Subcontracts all or portions of the work. In Divisions 01 through 33, the terms "Construction Manager" and "Contractor" are synonymous.

1.3 CONTRACTOR USE OF PREMISES

- A. General: During the construction period, the contractor shall have use of the premises for construction activities in areas indicated or agreed upon by the Owner.
 - 1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
 - 2. Contractor to note/delineate any wetlands and protect them during construction. BDS to be held harmless if subcontractors invade this area.
 - 3. Keep surrounding driveways, sidewalks, and entrances serving the site clear and available to the Owner and Visitors at all times. Do not use these areas for parking or storage of materials.

 - B. Construction Safeguards: The contractor shall construct safeguards to protect personnel and visitors from the construction areas and areas where materials are stored. Limits of the construction safeguards shall be determined by the Owner.
1. DRESS CODE AND CONDUCT: All workmen on the construction site shall always wear a shirt. No workmen shall engage in any verbal expressions or physical gestures directed towards any visitors, employees of Owner, or any other person at this construction site which may be considered sexual harassment. All workers are always to be badged. There is no smoking on any part of the property. Any person not meeting these standards will be banned from this construction site.

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION

- 3.1 LAYOUT OF THE WORK: Dimensions and elevations indicated on the drawings shall be verified by the Contractor prior to commencement of work. Discrepancies between drawings, specifications, and existing conditions shall be referred to the Architect for adjustment before affected work is performed. Failure to make such notification shall place responsibility upon the Contractor to carry out the work in a satisfactory and workmanlike manner at no additional cost to the Owner.
- 3.2 RESTORATION
- A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work and do not disturb any plumbing, steam, gas or electric work without approval.

 - B. Existing work (mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to Architect before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.

- C. Upon completion of contract, deliver work complete and undamaged. Damage that may be caused by Contractor or his workmen to existing structures, grounds, and utilities or work done by others shall be repaired by him at no additional cost to the Owner and left in as good condition as existed prior to damaging.
- D. At his own expense, Contractor shall immediately restore to service and repair any damage he may cause to existing piping and conduits, wires, cables, fiber, etc., of utility services or of fire protection systems and communications systems which are not scheduled for discontinuance or abandonment. Contractor shall employ appropriate parties for repair work.

3.3 CLEANING UP

- A. At completion of the work, the Contractor shall remove from the building and site all tools, appliances, surplus materials, debris, temporary structures and facilities, scaffolding, and equipment; sweep clean the building thoroughly and remove all marks, stains, fingerprints, dust, dirt, paint drippings, and the like from all surfaces; clean tile work, windows, plumbing, and other fixtures and surfaces.
- B. All hardware and other unpainted metals shall be cleaned and polished, and all equipment and paint or decorated work shall be cleaned and touched up, if necessary. Surfaces that are waxed shall be polished. Remove all temporary labels, tags, and paper covering throughout the building.
- C. The exterior of the buildings, the grounds, approaches, equipment, pavement, sidewalks, etc., shall be cleaned similar to interior of buildings and left in good order at the time of final acceptance, with paint surfaces clean and unbroken, hardware clean and polished, all repair work accomplished, and dirt areas scraped and cleared of weed growth.
- D. Cleaning, polishing, sealing, waxing, and all other finish operations indicated on the drawings, or required in the specifications, shall mean that this is the required condition at the time of acceptance of all work under the contract.

END OF SECTION 01 10 00

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SECTION 01 25 00 – SUBSTITUTION PROCEDURES

PART 1 - GENERAL

- 1.01 **SUBSTITUTIONS:** Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:
- A. Substitutions requested during the bidding period and accepted prior to award of Contract.
 - B. Revisions to Contract Documents requested by the Owner or Architect.
 - C. Specified options of products and construction methods included in Contract Documents.
 - D. Compliance with governing regulations and orders issued by governing authorities.
- 1.02 **SUBMITTAL:** Requests for substitution will be considered if received within 30 days after commencement of the Work. Requests received may be considered or rejected at the discretion of the Architect after review. See mechanical and electrical "General Provisions" section for special substitution requirements.
- A. Submit 3 copies of each request for substitution in the form and in accordance with procedures for Change Order proposals.
 - B. Identify the product, or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Document compliance with requirements for substitutions, and the following information, as appropriate:
 - 1. Product Data, including Drawings and descriptions of products, fabrication, and installation procedures.
 - 2. Samples, where applicable or requested.
 - 3. A comparison of significant qualities of the proposed substitution with those specified.
 - 4. A list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will be necessary to accommodate the proposed substitution.
 - 5. A statement indicating the substitution's effect on the Construction Schedule compared to the Schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - 6. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - 7. Certification that the substitution is equal-to or better in every respect to that required by Contract Documents, and that it will perform adequately in

application indicated. Include Contractor's waiver of rights to additional payment or time that may be necessary because of the substitution's failure to perform adequately.

- C. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information necessary for evaluation. Within 2 weeks of receipt of the request, or one week of receipt of additional information, whichever is later, the Architect will notify the Contractor of acceptance or rejection. If a decision on use of a substitute cannot be made within the time allocated, use the product specified. Acceptance will be in the form of a Change Order.

1.03 SUBSTITUTIONS: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise, requests will be returned without action except to record noncompliance with these requirements.

- A. The request is directly related to an "or approved equal" clause or similar language in the Contract Documents.
- B. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
- C. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
- D. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate contractors, and similar considerations.
- E. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
- F. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
- G. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

1.04 The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

END OF SECTION 01 25 00

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SECTION 01 29 00 – PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SCHEDULE OF VALUES: Coordinate preparation of the Schedule of Values with the Contractor's Construction Schedule. Correlate line items in the Schedule of Values for each phase with other schedules and forms, including:

Contractor's Construction Schedule.
Application for Payment form.
List of subcontractors.
List of products.
Schedule of submittals.

A. Submit the Schedule of Values to the Architect and Owner at the earliest date, but no later than 7 days before the date scheduled for submittal of the initial Application for Payment.

B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format.

Identification: Include the following identification:

Project name and location.
Name of the Architect.
Project number.
Contractor's name and address.
Date of submittal.

Format: Use AIA Document G703 Continuation Sheet.

Break down each Division that is listed in enough detail to facilitate evaluation of Application for Payments. Round amounts off to the nearest dollar; the total shall equal the Contract Sum.

Each item in the Applications for Payment and Continuation Sheet shall be complete including total cost and share of overhead and profit. Temporary facilities and items that are not direct cost of Work-in-place may be shown as separate line items or distributed as general overhead expense.

Update and resubmit the schedule when Change Orders change the Contract Sum.

C. Change Management: Any change in the project's 'schedule of values' line items shall be noted to the architect and owner monthly prior to changing the owner schedule of values via a submitted pay application.

- a. EXAMPLE:
 - i. Month 1 - site line item = 1000.00.
 - ii. Month 2 – site line item = 1500.00, a 500.00 change has been listed in the schedule of values.
 - iii. What is the audit path for the change in scheduled value under the sit line item?
 - 1. Did the owner receive a copy of the paperwork documentation back-up requiring this change (RFI, ASI, RFP)?
 - 2. Did the owner receive a proposal for the change in scope prior to proceeding?
 - 3. Did the owner receive a copy of any subcontractor change issued?
 - 4. Did the owner receive a copy of the change management document indicating the proposed change was accepted by the architect and approved by the owner?
 - 5. What GMP line item did the funding added to site line item come from?
- b. All these noted audit path requirements may be accomplished in different ways but shall be required (at a minimum) regardless of amount or scope of the change. It shall be agreed upon at the outset of each project how change management will be implemented for each of the various types of changes that may occur. It will be noted in project meeting minutes as to the agreed upon method for change management. Subsequent to those agreements change management shall be implemented in strict compliance with the agreed upon methodology.

1.02 APPLICATIONS FOR PAYMENT: Applications for Payment shall be submitted by the 25th of the month and will be paid by the 10th of the following month. Applications for Payment not received by the 25th of the month will be paid not later than 15 days after the date received. The period covered by each Application for Payment is one month. A retainage of 10% of the amount earned and stored will be withheld from each payment.

- A. Payment Application Times: Payment dates are indicated in the Agreement. The period covered by each application is the period indicated.
- B. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703, 1992 edition, as the form for the application.
- C. Application Preparation: Complete every entry, including notarization and execution by person authorized to sign on behalf of the Contractor. Incomplete applications will be returned without action. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made. Include amounts of Change Orders issued prior to the last day of the period covered by the application.
 - a. The first pay application must mimic the approved GMP for the project, or mimic the project bid for the work.
 - b. Per change management section listed in 1.01C, subsequent pay applications may include changes to various line items within the schedule of values.

Changes shall be tracked monthly, and documentation provided to ensure a clear auditable trail for the project accounting starting with the GMP and ending with the final pay application on the project.

- c. Each successive pay application must be accompanied by change management paperwork sufficiently detailed to ensure all parties are clear regarding changes or adjustments to the schedule of values.
- d. It is the sole discretion of the owner to determine what documentation is adequate. However, the minimum required documentation is listed in the change management section herein.

D. Transmittal: Submit 4 executed copies of each application to the Architect within 24 hours; two copies shall be complete, including waivers of lien where required and similar attachments. Transmit each copy with a transmittal listing attachments, and recording information related to the application.

E. Waivers of Lien: With final application, submit waivers of lien from every entity who has performed work, provided labor or supplied materials. Waivers of Lien are to be provided by, but not limited to the following material suppliers and subcontractors. This list is for illustration only, not necessarily complete.

| | | |
|------------------|---------------------------|------------------|
| Concrete | Masonry | Paving |
| Steel | Site Work | Landscaping |
| Finish Carpentry | Roofing | Doors |
| Windows | Finish Hardware | Gypsum Wallboard |
| Flooring | Painting | Ceilings |
| Signage | Toilet & Bath Accessories | Electrical |
| Mechanical | Plumbing | |

F. Waiver Forms: Submit waivers of lien on AIA Document G706A, "Contractor's Affidavit of Release of Liens".

1.03 INITIAL APPLICATION FOR PAYMENT: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include:

- Fully executed Contract.
- List of subcontractors.
- List of suppliers and fabricators.
- Schedule of Values.
- Contractor's Construction Schedule (preliminary if not final).
- Submittal Schedule (preliminary if not final).
- List of Contractor's staff assignments.
- Copies of building permits (if required).
- Copies of licenses from governing authorities.
- Certificates of insurance and insurance policies.
- Performance and payment bonds.

1.04 PARTIAL RETAINAGE RELEASE

A. FORMS: Use AIA Document G707A, "Consent of Surety to Reduction in Or Partial

Release of Retainage".

- B. Retainage may only be reduced to 5% with owner approval and in no case will final retainage be released until all items required for final completion are completed and accepted by the architect and the owner.

1.05 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION: Following issuance of the Certificate of Substantial Completion, submit an "Application for Payment"; reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions. Administrative actions and submittals that precede or coincide with this application include:

- Occupancy permits.
- Test/adjust/balance records (Final).
- Operation and Maintenance instructions.
- Meter readings.
- Change-over information related to Owner's occupancy.
- Training as Specified
- Final Cleaning
- As-builts

1.06 BUYOUT SAVINGS AND CONTINGENCY USAGE: Buy out savings, contingency, and any other project funds are the property of the owner under the control of the Contractor or CM. ALL buy out savings and contingency funds used shall be reported to the owner and may not be used without notification to the owner. See Change management section 1.01C.

1.07 FINAL PAYMENT APPLICATION: Administrative actions and submittals which must precede or coincide with submittal of the final payment application include:

- Completion of Project closeout requirements. 100% complete to the satisfaction of the Owner and Architect. Refer to Division 01 Section - Project Closeout.
- Warranties and maintenance agreements.
- Completion of all items specified for completion after Substantial Completion.
- Transmittal of required Project construction records to Architect.
- AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims".
- Change of door locks to Owner's access.
- AIA Document G707, "Consent of Surety To Final Payment".

END OF SECTION 01 29 00

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SECTION 01 31 00 - PROJECT COORDINATION

PART 1 - GENERAL

1.01 THIS SECTION specifies requirements for project coordination including:

Coordination with other Contractors. General installation provisions.
Administrative and supervisory personnel. Cleaning and protection.

1.02 COORDINATION: Coordinate activities included in various Sections to assure efficient and orderly installation of each component. Coordinate operations included under different Sections that are dependent on each other for proper installation and operation.

Where installation of one component depends on installation of other components before or after its own installation, schedule activities in the sequence required to obtain the best results.

Where space is limited, coordinate installation of different components to assure maximum accessibility for maintenance, service and repair.

Make provisions to accommodate items scheduled for later installation.

Coordinate installations such that items requiring maintenance are readily accessible. Do not block maintenance access to these components with follow on installation. Anything blocked will be corrected by the sub-contractor.

Prepare memoranda for distribution to each party involved outlining required coordination procedures. Include required notices, reports, and attendance at meetings.

Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

1.03 ADMINISTRATIVE PROCEDURES: Coordinate scheduling and timing of administrative procedures with other activities to avoid conflicts and ensure orderly progress. Such activities include:

Preparation of schedules. Delivery and processing of submittals.
Power and utility shutdowns. Progress meetings.
Installation and removal of temporary facilities. Project closeout activities.

1.04 COORDINATION DRAWINGS: Prepare Coordination Drawings where close coordination is required for installation of products and materials fabricated off-site by

separate entities, and where limited space necessitates maximum utilization of space for efficient installation of different components.

Show relationship of components shown on separate Shop Drawings.
Indicate required installation sequences.

- 1.05 STAFF NAMES: Within 10 days of Notice to Proceed, submit a list of Contractor's staff assignments, including Superintendent and personnel at the site; identify individuals, their duties and responsibilities, addresses and telephone numbers. Staff substitutions must be approved by owner in advance.

Post copies in the Project meeting room, the field office, and at each temporary telephone.

- 1.06 INSPECTION OF CONDITIONS: The Installer of each component shall inspect the substrate and all other conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected and as follows:

- a. MVER/RH/BNLT moisture readings for slabs on grade or walls must pass manufacturer requirements.
- b. Humidity and temperature control ranges for installation must meet manufacturer requirements.
- c. Other items must meet the listed, installation requirements set forth by the manufacturer.

- 1.07 MANUFACTURER'S INSTRUCTIONS: Comply with manufacturer's installation instructions and recommendations, to the extent that they are more stringent than requirements in Contract Documents.

- 1.08 INSPECT material immediately upon delivery and again prior to installation. Reject damaged and defective items.

- 1.09 PROVIDE ATTACHMENT and connection devices and methods necessary for securing each construction element. Secure each construction element true to line and level. Allow for expansion and building movement.

- 1.10 VISUAL EFFECTS: Provide uniform joint widths in exposed Work. Arrange joints to obtain the best effect. Refer questionable choices to the Architect for decision.

- 1.11 RECHECK MEASUREMENTS and dimensions, including elevations, before starting installation.

- 1.12 INSTALL EACH COMPONENT during weather conditions and project status that will ensure the best results. Isolate each part from incompatible material as necessary to prevent deterioration.

- 1.13 COORDINATE TEMPORARY ENCLOSURES with inspections and tests, to minimize uncovering completed construction for that purpose.

- 1.14 MOUNTING HEIGHTS: Where mounting heights are not indicated, install components

at standard heights for the application indicated or refer to the Architect.

- 1.15 **CLEANING AND PROTECTION:** During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

Clean and maintain completed construction as often as necessary through the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

Limiting Exposures: Supervise operations to ensure that no part of construction, completed or in progress, is subject to harmful or deleterious exposure. Such exposures include, but are not limited to the following:

- Excessive static or dynamic loading.
- Excessive internal or external pressures.
- Excessive weathering.
- Excessively high or low temperatures or humidity.
- Air contamination or pollution.
- Water or ice.
- Chemicals or solvents.
- Heavy traffic, soiling, staining and corrosion.
- Rodent and insect infestation.
- Unusual wear or other misuse.
- Contact between incompatible materials.
- Theft or vandalism.

END OF SECTION 01 31 00

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SECTION 01 32 00 - PROJECT MEETINGS

PART 1 - GENERAL

1.01 SUMMARY: This Section specifies requirements for Project meetings including:

Pre-Construction Conference.
Progress Meetings.

1.02 PRE-CONSTRUCTION CONFERENCE: Architect shall conduct a pre-construction conference after execution of the Agreement and prior to commencement of construction activities. Review responsibilities and personnel assignments.

Attendees: The Owner, Architect and their consultants, the Contractor and its superintendent, subcontractors, suppliers, manufacturers, and other concerned parties shall be represented by persons authorized to conclude matters relating to the Work.

Agenda: Discuss significant items that could affect progress, including the tentative construction schedule, critical sequencing, use of the premises, procedures for processing Change Orders and equipment deliveries.

Review progress of other activities and preparations for the activity under consideration at each conference, including time schedules, manufacturer's recommendations, weather limitations, substrate acceptability, compatibility problems and inspection and testing requirements.

Record significant discussions, agreements and disagreements of each conference, along with the approved schedule. Distribute the meeting record to everyone concerned, promptly, including the Owner and Architect.

Do not proceed if the conference cannot be successfully concluded. Initiate necessary actions to resolve impediments and reconvene the conference at the earliest feasible date.

1.03 PROGRESS MEETINGS: Conduct progress meetings at regular monthly intervals. Notify the Owner and Architect of scheduled dates. Coordinate meeting dates with preparation of the payment request.

Attendees: The Owner and Architect, each subcontractor, supplier or other entity concerned with progress or involved in planning, coordination or performance of future activities shall be represented by persons familiar with the Project and authorized to conclude matters relating to progress.

Agenda: Review minutes of the previous progress meeting. Review significant items that could affect progress. Include topics appropriate to the current status of the Project including:

RFIs
Scheduling

Change Orders
Submittals

Reporting: Distribute copies of the minutes of the meeting to each party present and to parties who should have been present.

- 1.04 **CONTRACTOR'S CONSTRUCTION SCHEDULE:** Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

Review the present and future needs of each entity present, including such items as:

Time.
Sequences.
Deliveries.
Off-site fabrication problems.
Site utilization.
Temporary facilities and services.
Hazards and risks.
Quality and Work standards.
Change Orders.
Documentation of information for payment requests.

- 1.05 **PROJECT CLOSE OUT MEETING:** Once the contractor has gathered a complete project close out deliverable including both hard copies and electronic copies, warranties, extra parts and any other close out required items, they are to notify the architect that they are ready to schedule the project close out meeting.

END OF SECTION 01 32 00

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PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 01 33 00 - SUBMITTALS

PART 1 - GENERAL

1.01 GENERAL PROCEDURES

- A. Coordinate submittal preparation with performance of construction activities, and with purchasing or fabrication, delivery, other submittals and related activities. Transmit in advance of performance of related activities to avoid delay.
- B. Coordinate transmittal of different submittals for related elements so processing will not be delayed by the need to review concurrently for coordination. The Architect reserves the right to withhold action on a submittal requiring coordination until related submittals are received.
- C. As required by Florida Statute 553.842 and Florida Administrative Code 9B-72, provide the information and approval numbers on the building components listed on the Florida Product Approval Specification Sheet (form is attached at the end of this section) if they will be utilized on this construction project. Statewide approved products are listed online at www.floridabuilding.org.

1.02 PROCESSING

- A. Allow two weeks for initial review. Allow more time if processing must be delayed for coordination with other submittals. The Architect will notify the Contractor when a submittal must be delayed for coordination. Allow two weeks for reprocessing each submittal.
- B. No extension of time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.

1.03 SUBMITTAL PREPARATION

- A. Place a label or title block on each submittal for identification. Provide two 4" x 5" spaces on the label or beside the title block on Shop Drawings to record Contractor's review and approval markings and action taken. Include the following information on the label for processing and recording action taken. Submittals received without a signed Contractor's Approval Stamp will be returned for resubmittal with no action taken.
 - 1. Project name.
 - 2. Date.
 - 3. Name, address and contact info of Contractor.
 - 4. Name, address and contact info of supplier.
 - 5. Name and contact info of manufacturer.

6. Number and title of appropriate Specification Section.
7. Drawing sheet number and detail references, as required.

1.04 SUBMITTAL TRANSMITTAL

- A. Package submittals appropriately for transmittal and handling. Transmit with a transmittal form. Submittals received from other than the Contractor will be returned without action.
- B. Transmittal Form: Use AIA Document G 810 or other form acceptable to Architect. On the form record requests for data, and deviations from Contract Documents. Include Contractor's certification that information complies with Contract Documents.

1.05 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Submit a fully developed, CPM type construction schedule with Gantt chart showing critical path and interrelated installations, within 14 days after the date of the Owner's issuance of a Notice to Proceed. Use the categories of work in the schedule to establish the categories in the "Schedule of Values".

As work progresses, mark the schedule to indicate Actual Completion.

Provide notations on the Schedule depicting the consequences on the Work from construction phasing.

Prepare the schedule on sheets of sufficient width to show data for the entire construction period.

Secure commitments for performing critical construction operations from parties involved. Coordinate each activity with other activities and show in proper sequence; include minor elements involved in the construction sequence. Indicate sequences necessary for completion of related portions.

Coordinate the Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests and other schedules.

Schedule completion in advance of the date established for Substantial Completion. Schedule Substantial Completion to allow time for the Architect's procedures necessary for certification of Substantial Completion.

Print and distribute schedule following initial approval to the Architect, Owner, subcontractors and other parties required to comply with scheduled dates. Redistribute after any approved revisions. Post copies in the temporary field office. Submit update schedule with each Pay Application.

- 1.06 DAILY CONSTRUCTION REPORTS: Prepare a daily construction report, recording information concerning events at the site. Submit duplicate copies to the Architect at weekly intervals. Include the following information:

List of subcontractors at the site.

Work Activities.
High and low temperatures, general weather conditions.
Accidents, stoppages, delays, shortages, losses.
Emergency procedures.
Change Orders received, implemented.
Partial Completions, occupancies.
Substantial Completions authorized.
Other relevant dates.

- 1.07 SUBMITTALS: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 4 sets plus the number of sets required by the Contractor; maximum eight (8) sets. The Architect will retain four sets and return the others marked with the action taken. (Note: Architect will mark only one (1) set for return to the Contractor with action taken and/or modifications required.) Maintain Sample sets at the Project site, for quality comparisons throughout construction phase.

Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

- 1.08 ARCHITECT'S ACTION: Except for submittals for record, information or similar purposes, where action and return are required, the Architect will review each submittal, mark to indicate action taken, and return. Compliance with specified characteristics is the Contractor's responsibility.

Action Stamp: The Architect will stamp each submittal with a self-explanatory action stamp. The stamp will be appropriately marked to indicate action taken.

- 1.09 DISTRIBUTION: Furnish copies of final submittal to installers, and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until an applicable copy of Product Data is in the installer's possession. Do not permit use of unmarked copies of Product Data in connection with construction.

- 1.10 SHOP DRAWINGS: Submit information, drawn to accurate scale. Submittals shall indicate deviations from Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Include the following information:

Project Name.
Location.
Suppliers Name.
Date.
Drawing No.
Specification Section Reference.
Dimensions.
Identification of products and materials included.
Compliance with specific standards.

Notation of coordination requirements.
Notation of dimensions established by field measurement.

Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 24" x 36".

Initial Submittal: Submit one correctable translucent print and two blue-line print for review; the reproducible print will be returned.

Final Submittal: Submit four (4) blue or black line prints of the original submittal for use by the Architect/Engineer, Owner and Contractor.

Do not use Shop Drawings without an Architect's stamp indicating action taken in connection with construction.

The Contractor shall schedule all shop drawing submittals to allow sufficient time for one initial review and two resubmittal reviews.

- 1.11 COORDINATION DRAWINGS are a special type of shop drawing depicting relationship and integration of different construction elements requiring coordination during fabrication or installation to fit and function as intended.

Preparation of coordination drawings is described in these Specifications under "Project Coordination" and may include components previously shown on shop drawings or product data.

Submit for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

- 1.12 PRODUCT DATA: Collect Product Data into a single submittal for each element or system. Mark each copy to show applicable choices and options. Where Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

Manufacturer's printed recommendations.
Compliance with recognized trade association standards.
Compliance with recognized testing agency standards.
Application of testing agency labels and seals.
Notation of dimensions verified by field measurement.
Notation of coordination requirements.

- A. Submittals: Submit 3 copies. The Architect will retain two and will return the others. Note: The Architect will mark only one set for return to the Contractor with action taken and/or modifications required. The Contractor will be responsible to see that any notes made by the Architect are made on all copies.

Unless noncompliance with Contract Documents, the submittal may serve as the final submittal.

B. Distribution: Furnish copies of final submittal to installers and others required for performance of construction activities. Show distribution on transmittal forms. Do not proceed with installation until an applicable copy of Product Data is in the installer's possession.

1.13 SAMPLES: Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics, and a comparison of these characteristics between the final submittal and the component as delivered and installed. Where variations are inherent in the product, submit multiple units that show limits of the variations.

Refer to other Sections for Samples that illustrate details of assembly, fabrication techniques, workmanship, connections, operation, and similar characteristics.

Refer to other Sections for Samples to be returned for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

Sample sets may be used to obtain final acceptance of the construction associated with each set.

Preliminary submittals: Where Samples are for selection of characteristics from a range of choices, submit a full set of choices for the product. Preliminary submittals will be reviewed and returned indicating selection and other action.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

PART 4 - SCHEDULES

4.01 The following Submittal Schedule is for *REFERENCE ONLY*. Items listed may or may not be required for this project and should not be taken as a complete list. It is the Contractor's responsibility to review the specifications in their entirety and determine what is required for submission.

| SUBMITTAL SCHEDULE | | |
|--|--|---|
| SECTION | TYPE OF SUBMITTAL | DESCRIPTION |
| Division 00 - Performance Bond and Labor and Material Bond | Bonds | Performance Bond, Labor and Material Bond |
| Division 00 - List of Subcontractors | List | Subcontractors, Suppliers, Principal Manufactures |
| Division 01 - Application for Payment | Schedule of Values Application for Payment | Initial and Subsequent Initial and Subsequent |
| Division 01 - Project Coordination | List | Staff Names |

| | | |
|---|---|---|
| Division 01 - Submittals | Construction Schedule Submittal Schedule Daily Construction Reports | |
| Division 01 - Project Closeout | Documents Certificate | Record Drawings, Specifications, Submittals, As-Builts, Maintenance Manuals, O & M Instructions OEF Final & Occupancy Inspection |
| Division 02 - Selective Demolition | Schedule | Demolition Schedule |
| Division 31 - Termite Control | Warranty | Soil Treatment Solution |
| Division 02 - Concrete Paving | Shop Drawings | Walkways/Curb Layout |
| Division 03 - Concrete | Shop Drawings | Formwork Reinforce Placement/Schedule |
| Division 04 - Unit Masonry | Product Data Field Mock-Up | Grout/Mortar, Joint Reinforcement Masonry Wall |
| Division 04 - Brick Masonry | Product Data Samples Field Mock-Up | Grout/Mortar, Joint Reinforcement Brick, Mortar Brick Wall |
| Division 05 - Metal Fabrication | Product Data Shop Drawings Certification | Assembly and Installation Instructions Metal Fabrication Metal and Steel Test Results |
| Division 05 – Metal Building | Shop Drawings | Sizes, Design Information |
| Division 06 - Finish Carpentry | Product Data Samples | |
| Division 06 - Interior Architectural Woodwork | Shop Drawings Samples | Casework Plastic Laminate, Hardware |
| Division 07 - Sheet Membrane Waterproofing | Product Data | Technical Data and Recommendations |

| | | |
|---|--|---|
| Division 07 - Building Insulation | Product Data | Each Type of Insulation Required |
| Division 07 - Flashing and Sheet Metal | Product Data Guarantee | Roofing and Flashing Materials Maintenance Guarantee |
| Division 07 – Preformed wall and roof panels | Product Data Samples | Manufacturer’s Information |
| Division 07 - Joint Sealers | Product Data Samples Certification | Each Type Sealants Product Test Reports |
| Division 08 – Hollow Metal Doors and Frames | Shop Drawings Schedules | Frames |
| Division 08 - Flush Wood Doors | Product Data Shop Drawings Schedule | Wood Doors |
| Division 08 - Access Doors | Product Data | Doors |
| Division 08 - Finish Hardware | Schedule Product Hardware | Hardware |
| Division 08 - Glass and Glazing | Product Data Samples | Glass/Glazing Materials Glass |
| Division 09 - Tile | Product Data Samples | Tile and Grout Tile |
| Division 09 - Acoustical Ceilings | Product Data Samples | Panel/Suspension System |
| Division 09 - Resilient Flooring | Product Data Sample Maintenance Instructions Replacement Material | Tile and Base |
| Division 09 - Painting | Product Data Samples Mock-Up | Paint Paint Field Application |
| Division 10 - Markerboards, Chalkboards, Tackboards | Product Data Samples | Each Type of Visual Board Tackboard Fabric |
| Division 10 - Toilet Partitions | Product Data Shop Drawings Samples | Toilet Partitions Fabrication of Partitions Color and Solid Plastic Selection |
| Division 10 - Signage | Product Data Schedule Shop Drawings | Signage Sign Layout |

| | | |
|--|-------------------------------|---|
| Division 10 - Toilet and Bath Accessories | Product Data | Accessories |
| Division 10 - Miscellaneous Specialties | Product Data Shop Drawings | Each Item Installation Instructions Fabrication Details (where required) |
| Division 11 - Project Screens and T.V. Mounting Brackets | Product Data Shop Drawings | Screens and Monitor Mounts Installation Details |
| Division 23 - Mechanical General Provisions | | |
| Division 22 - Plumbing | | |
| Division 26 - Electrical General Provisions | | |

NOTE: Additional Submittals may be requested by the Architect/Engineer.

END OF SECTION 01 33 00

PRODUCT APPROVAL SPECIFICATION SHEET

Location: _____ Project Name: _____

As required by Florida Statute 553.842 and Florida Administrative Code 9N-3.006, please provide the information and the product approval number(s) on the building components listed below if they will be utilized on a construction project for which you are applying for a building permit. We recommend you contact your local product supplier should you not know the product approval number for any of the applicable listed products. More information about statewide product approval can be obtained at www.floridabuilding.org.

| Category/Subcategory | Manufacturer | Product Description | Approval Number(s) |
|-------------------------------------|--------------|---------------------|--------------------|
| A. EXTERIOR DOORS | | | |
| 1. Swinging | | | |
| 2. Sliding | | | |
| 3. Sectional | | | |
| 4. Roll Up | | | |
| 5. Automatic | | | |
| 6. Other | | | |
| B. WINDOWS | | | |
| 1. Single Hung | | | |
| 2. Horizontal Slider | | | |
| 3. Casement | | | |
| 4. Double Hung | | | |
| 5. Fixed | | | |
| 6. Awning | | | |
| 7. Pass-through | | | |
| 8. Projected | | | |
| 9. Mullion | | | |
| 10. Wind Breaker | | | |
| 11. Dual Action | | | |
| 12. Other | | | |
| C. PANEL WALL | | | |
| 1. Siding | | | |
| 2. Soffits | | | |
| 3. EIFS | | | |
| 4. Storefronts | | | |
| 5. Curtain Walls | | | |
| 6. Wall Louver | | | |
| 7. Glass Block | | | |
| 8. Membrane | | | |
| 9. Greenhouse | | | |
| 10. Other | | | |
| D. ROOFING PRODUCTS | | | |
| 1. Asphalt Shingles | | | |
| 2. Underlayments | | | |
| 3. Roofing Fasteners | | | |
| 4. Non-structural Metal Roof | | | |
| 5. Built-up Roofing | | | |
| 6. Modified Bitumen | | | |
| 7. Single Ply Roofing System | | | |
| 8. Roofing Tiles | | | |
| 9. Roofing Insulation | | | |
| 10. Waterproofing | | | |
| 11. Wood Shingles/Shakes | | | |
| 12. Roofing Slate | | | |
| 13. Liquid Applied Roof System | | | |
| 15. Roof Tile Adhesive | | | |
| 16. Spray Applied Polyurethane Roof | | | |
| 17. Other | | | |

| Category/Subcategory | Manufacturer | Product Description | Approval Number(s) |
|--|--------------|---------------------|--------------------|
| E. SHUTTERS | | | |
| 1. Accordion | | | |
| 2. Bahama | | | |
| 3. Storm Panels | | | |
| 4. Colonial | | | |
| 5. Roll-up | | | |
| 6. Equipment | | | |
| 7. Other | | | |
| F. SKYLIGHTS | | | |
| 1. Skylight | | | |
| 2. Other | | | |
| G. STRUCTURAL COMPONENTS | | | |
| 1. Wood Connector/Anchor | | | |
| 2. Truss Plates | | | |
| 3. Engineered Lumber | | | |
| 4. Railing | | | |
| 5. Coolers – Freezers | | | |
| 6. Concrete Admixtures | | | |
| 7. Material | | | |
| 8. Insulation Forms | | | |
| 9. Plastics | | | |
| 10. Deck – Roof | | | |
| 11. Wall | | | |
| 12. Sheds | | | |
| 13. Other | | | |
| H. NEW EXTERIOR ENVELOPE PRODUCTS | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |

The products listed below did not demonstrate product approval at plan review. I understand that at the time of inspection of these products, the following information must be available to the inspector on the job site: 1) copy of the product approval; 2) the performance characteristics which the product was tested and certified to comply with; and 3) copy of the applicable manufacturer’s installation requirements.

I understand these products may have to be removed if approval cannot be demonstrated during inspection.

Contractor or Contractor’s Authorized Agent Signature

Print Name

Date

Location

Permit # (FOR STAFF USE ONLY)



CAD/Electronic File Transfer to Architect/Owner/Contractor

Project Name: BDS Tommy Smith Elementary Playground Enclosure

At your request, JRA Architects (JRA) will provide electronic files for your convenience and use subject to the following terms and conditions:

JRA electronic files are compatible with AutoCAD. JRA makes no representation as to the compatibility of these files with your hardware or your software beyond the specified release of the referenced specifications.

Data contained on these electronic files are part of JRA's instruments of service and shall not be used by you or anyone else receiving this data through or from you for any purpose other than as a convenience in the preparation for construction or as a reference for the referenced project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to JRA. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against us, our officers, directors, employees, agents, or sub consultants that may arise out of or in connection with your use of the electronic files.

Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold JRA harmless against all damages, liabilities, or costs, including reasonable attorney's fees and defense costs, arising out of, or resulting from your use of these electronic files.

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. JRA makes no representation regarding the accuracy or completeness of the electronic files you receive. If a conflict arises between the signed or sealed construction documents and the electronic files, the signed or sealed construction documents shall govern. You are responsible for determining if any conflict exists. The use of these electronic files by any contractor having received them does not relieve them of the duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate the work with that of other contractors for the project.

Because information presented on the electronic files can be modified, unintentionally or otherwise, JRA reserves the right to remove all indicia of ownership and/or involvement from each electronic display.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by JRA, and JRA makes no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event, shall JRA be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

Re-use of these electronic files in part or whole on a project other than that listed above is strictly forbidden and shall be considered theft unless approval has been granted in writing.

Signature (sign) Date

Name of Company

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TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

- 1.01 **GENERAL:** This Section specifies requirements for quality control services. Quality control services include inspections and tests performed by independent agencies, governing authorities, as well as the Contractor.
- 1.02 **CONTRACTOR RESPONSIBILITIES:** Provide inspections and tests specified or required by governing authorities, except where they are the Owner's responsibility, or are provided by another entity; services include those specified to be performed by an independent agency not by the Contractor. Costs are included in the Contract.

The Contractor shall engage and pay for services of an independent agency, acceptable to the Architect/Engineer to perform inspections and tests specified as Quality Control services.

Retesting: The Contractor is responsible for retesting where results prove unsatisfactory and do not indicate compliance with Contract Documents, regardless of whether the original test was the Contractor's responsibility.

Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.

Associated Services: The Contractor shall cooperate with agencies performing inspections or tests and provide auxiliary services as requested. Notify the agency in advance of operations to permit assignment of personnel. Auxiliary services include but are not limited to:

Provide access to the Work and furnish incidental labor and facilities necessary to facilitate inspections and tests.

Take representative samples of materials that require testing or assist the agency in taking samples.

Provide facilities for storage and curing of samples and deliver samples to testing laboratories.

Provide a preliminary design mix proposed for use for material mixes that require control by the testing agency.

Provide security and protection of samples and test equipment at the Project site.

- 1.03 DUTIES OF THE TESTING AGENCY: The agency engaged to perform inspections and testing of materials and construction shall cooperate with the Architect and Contractor in performance of its duties and provide qualified personnel to perform inspections and tests.

The agency shall notify the Architect and Contractor promptly of deficiencies observed during performance of its services.

The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

- 1.04 COORDINATION: The Contractor and each agency engaged to perform inspections and tests shall coordinate the sequence of activities to accommodate services with a minimum of delay. The Contractor and each agency shall coordinate activities to avoid removing and replacing construction to accommodate inspections and tests.

The Contractor is responsible for scheduling inspections, tests, taking samples and similar activities.

- 1.05 SUBMITTALS: The testing agency shall submit a certified written report of each inspection and test to the Architect, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible, submit a certified written report of each inspection and test through the Contractor, in triplicate, who shall send two (2) copies to the Architect.

Submit additional copies of each report to the governing authority, when the authority so directs.

Report Data: Written reports of each inspection or test shall include, but not be limited to:

Date of issue.

Project title and number.

Name, address and telephone number of testing agency.

Testing agency qualifications.

Dates and locations of samples and tests or inspections.

Names of individuals making the inspection or test.

Designation of the Work and test method including applicable industry standards and/or codes.

Identification of product and Specification Section.

Complete inspection or test data.

Test results and an interpretations of test results.

Ambient conditions at the time of sample-taking and testing.

Comments or professional opinion as to whether inspected or tested Work complies with

Contract Document requirements.

Name and signature of laboratory inspector or person reviewing results.

Recommendations on retesting.

- 1.06 QUALIFICATION FOR SERVICE AGENCIES: Engage inspection and testing agencies which are prequalified as complying with "Recommended Requirements for Independent

Laboratory Qualification" by the American Council of Independent Laboratories and specialize in the types of inspections and tests to be performed.

Each inspection and testing agency engaged shall be authorized to operate in the State in which the Project is located.

- 1.07 REPAIR AND PROTECTION: Upon completion of inspection and testing repair damaged construction and restore substrates and finishes to eliminate deficiencies. Comply with requirements for "Cutting and Patching."

Protect construction exposed by or for quality control service activities and protect repaired construction.

The Contractor is responsible for repair and protection regardless of the assignment of responsibility for inspection and testing.

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CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 01 42 00 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.01 DEFINITIONS: Basic Contract definitions are included in the General Conditions.6

- A. Indicated refers to graphic representations, notes or schedules on Drawings, or Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help locate the reference.
- B. Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Architect", "requested by the Architect", and similar phrases. No implied meaning shall be interpreted to extend the Architect's responsibility into the Contractor's supervision of construction.
- C. Approve, used in conjunction with action on submittals, applications, and requests, is limited to the Architect's duties and responsibilities stated in General and Supplementary Conditions. Approval shall not release the Contractor from responsibility to fulfill Contract requirements.
- D. Regulation includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, and rules, conventions and agreements within the construction industry that control performance of the Work, whether lawfully imposed by authorities having jurisdiction or not.
- E. Furnish means "supply and deliver, ready for unloading, unpacking, assembly, installation, and similar operations."
- F. Install describes operations at the site including "unloading, unpacking, assembly, erection, anchoring, applying, working to dimension, protecting, cleaning and similar operations."
- G. Provide means "furnish and install, complete and ready for use."
- H. Installer: "Installer" is the Contractor, or an entity engaged by the Contractor, as an employee, subcontractor or sub- subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform. The term "experienced," when used with "Installer" means having a minimum of 5 previous Projects similar in size to this Project, and familiar with the precautions required, and with requirements of the authority having

jurisdiction.

- I. Project Site is the space available for construction activities, either exclusively or with others performing other construction on the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.
 - J. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.
- 1.02 SPECIFICATION FORMAT: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 48-Division format and MASTERFORMAT 2004 numbering system. Language used in the Specifications is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the context so indicates. Imperative language is used generally. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.
- 1.03 ASSIGNMENT OF SPECIALISTS: Certain construction activities shall be performed by specialists, recognized experts in the operations to be performed. Specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
- 1.04 DRAWING SYMBOLS: Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., eighth edition.
- 1.05 MECHANICAL/ELECTRICAL DRAWINGS: Graphic symbols for mechanical and electrical Drawings are defined in a graphic symbol legend on the Construction Documents and are aligned with symbols recommended by ASHRAE. Where appropriate, they are supplemented by symbols recommended by technical associations. Refer instances of uncertainty to the Architect for clarification before proceeding.
- 1.06 APPLICABILITY OF STANDARDS: Except where the Contract Documents include more stringent requirements, applicable industry standards have the same force and effect as if bound or copied into Contract Documents. Such standards are part of the Contract Documents by reference. Individual Sections indicate standards the Contractor must keep available at the Project Site.
- 1.07 PUBLICATION DATES: Where the date of issue of a referenced standard is not specified, comply with the standard in effect as of date of Contract Documents.

Updated Standards: Submit a Change Order proposal where an applicable standard has been revised and reissued after the date of the Contract Documents and before

performance of Work. The Architect will decide whether to issue a Change Order to proceed with the updated standard.

- 1.08 **CONFLICTING REQUIREMENTS:** Where compliance with two or more standards that establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced. Refer uncertainties as to which quality level is more stringent to the Architect for a decision before proceeding.

Minimum Quantities or Quality Levels: The quantity or quality shown or specified is the minimum to be provided or performed. Indicated values are minimum or maximum values, as appropriate for the requirements. Refer instances of uncertainty to the Architect for decision before proceeding.

- 1.09 **COPIES OF STANDARDS:** Each entity engaged on the Project shall be familiar with standards applicable to that activity. Copies of applicable standards are not bound with the Contract Documents.

Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

Although copies of standards needed for enforcement of requirements may be part of submittals, the Architect reserves the right to require submittal of additional copies for enforcement of requirements.

- 1.10 **ABBREVIATIONS AND NAMES:** Where acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

- 1.11 **PERMITS, LICENSES, AND CERTIFICATES:** For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

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CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 01 55 00 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
- B. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- C. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature that is current as of the date of the Contract Documents.
- D. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
- E. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.02 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturers or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.
- D. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

- E. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

Name of product and manufacturer.
Model and serial number.
Capacity.
Speed.
Ratings.

- F. Field marking for electrical, mechanical, plumbing and telecom locations:

1. All above ceiling electrical, mechanical, and plumbing shall have below ceiling labeling provided for some specific items IFF located above ceiling.
 - a. Electrical – any electrically powered motor or device other than junction boxes located in a concealed location above ceiling shall be labeled below ceiling. See labeling requirements in a separate section “Labeling”.
 - b. HVAC – HVAC equipment located above ceiling including but not limited to VAV, VRF, AHU, EF units, and valves shall be baled below ceiling so as to make them easily locatable from below ceiling. Identification should match plan call outs for the items such that plans may be utilized in conjunction with labeling to locate and maintain each item.
 - c. Plumbing – all valves located above ceiling shall be labeled below ceiling. Above ceiling valve shall be marked with permanently affixed TAG indicating what areas or items are served by the valve.
 - d. Telecomm – see above ceiling labeling requirements per specification section on telecom devices. Any signal repeaters, or other data / telecom equipment located above ceiling shall be labeled on the ceiling below for easy identification in the future.
2. Labels shall be 1” x 4” in size and permanently attached to underside of drywall or permanently affixed to the acoustic ceiling grid within 2 feet of the above ceiling item being labeled.
3. Labels shall be hard plastic.
4. Lettering shall be minimum 12 font engraved into labels.
5. Color coding of labels shall be as follows:
 - a. Red = Electrical & Fire
 - b. Yellow = Gas
 - c. Blue = Water & Sewer
 - d. Green = HVAC
 - e. Orange = Telecom
 - f. Other colors as mutually agreed by owner and architect to be added

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
- B. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses; and to prevent overcrowding of construction spaces.
- C. Deliver products to the site in undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- D. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- E. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
- F. All new installed materials shall be sealed from moisture penetration at the end of each day.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation. Discontinued items will not be accepted.
 - 1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
 - 1. Semi proprietary Specification Requirements: Where Specifications name two or more products or manufacturers, provide one of the products indicated.

Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal", comply with

the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

2. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
3. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.

Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.

4. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
5. Visual Matching: Where Specifications require matching an established Sample (match existing), the Architect's decision will be final on whether a proposed product matches satisfactorily.

Where no product is available within the specified category, matches satisfactorily and complies with other specified requirements; comply with provisions of the Contract Documents concerning "substitutions" (Section 01631 - Product Substitutions) for selection of a matching product in another product category.

6. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with specified requirements. The Architect will select the color, pattern, and texture from the product line selected. Any selections within the product line which are unavailable, no longer make or superseded by another should be so marked.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
- B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01 55 00

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**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
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SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

- 1.01 **SUBSTANTIAL COMPLETION:** (See Division 00 Section - General Conditions, Section 9.8). Before requesting inspection for certification of Substantial Completion, complete the following:
- A. Change-over permanent locks and transmit keys to the Owner.
 - B. Complete start-up testing of systems, and instruction of the Owner's personnel. Remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
 - C. Complete final clean up. Touch-up and repair and restore marred exposed finishes.
 - D. Submit record drawings (As-builts), maintenance manuals, damage or settlement survey, and similar record information.
 - E. Attain Occupancy permits.
- 1.02 **INSPECTION PROCEDURES:** When the Contractor considers the work substantially complete, he shall prepare and submit a comprehensive list of items to be completed and/or corrected to the Architect. The Contractor shall proceed to promptly complete and/or correct all items on the list.
- A. Upon receipt of Contractor's list and assurance by the Contractor that the list has been addressed/ completed, the Architect will make an inspection for final verification that the list provided is comprehensive and includes all remaining work items to be completed or corrections required OR inform the Contractor of work to be completed before an inspection will be conducted.
 - B. After receipt of the completion/punch list and prior to the architect issuing substantial completion, the architect shall require that every consultant who provided documents for the project (i.e.: electrical, HVAC, Plumbing, Architectural, Roof, telecom, etc.) shall perform an onsite inspection of work completed under the scope of their responsibilities and provide a detailed final completion list of incomplete work or work requiring corrections.
 - C. This process will be the responsibility of the Architect to ensure this occurs and that the information gathered from those site visits is to be coordinated through the contractor, added to the contractor's final completion/punch list, and issued to the

owner. This will ensure that all required corrections are included in the final punch list prior to substantial completion being awarded.

- D. When the work is substantially complete, the Architect will prepare the Certificate of Substantial Completion which shall establish the date of Substantial Completion.
- E. Results of the completed inspection will form the basis of requirements for final acceptance, including any items discovered at a later date considered necessary to be completed for final.

1.03 FINAL ACCEPTANCE: (See Division 00 Section - General Conditions, Section 9.10). Before requesting inspection for certification of final acceptance and final payment, complete the following:

- A. Submit a copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance.
- B. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
- C. Refer to Division 01 Section – Payment Procedures - Final Payment Application.
- D. Provide the Architect with ‘Final Statement of Compliance’, for the Owner.

1.04 REINSPECTION PROCEDURE (if required): The Architect will reinspect the Work upon receipt of notice that the Work has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

- A. Prior to Final completion, A Final walk through/verification of completion/correction by the various design consultants shall occur. Final payment to the contractor shall not be released until the final completion /punch list is complete 100%.
- B. Upon completion of reinspection, the Architect will then prepare a certificate of final acceptance or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance. If necessary, reinspection will be repeated.

1.05 RECORD DRAWINGS: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark-up these drawings to show the actual installation where installation varies from that shown originally. Mark whichever drawing is most capable of showing conditions accurately. Give particular attention to concealed elements that would be difficult to measure and recorded at a later date. Maintain and review monthly with the Owner and Architect.

- A. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates, and other identification on the cover.
- B. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and lost. Provide access to Project Record Documents for Architect's reference during normal working hours.
- C. Upon completion of the Work, submit Record Drawings (red-line field as-builts) to the Architect for Owner's records.
- D. As-built documents are a requirement of final close out for the project. As built documents shall include all design revisions issued during the course of the project. Those revisions shall be marked on the documents in a way that provides clarity for the noted changes. It is at the sole discretion of the architect to determine what is and what is not adequate for as built documentation.
- E. The contractor is expected to maintain as-built documents throughout the course of the project work. Monthly review of the as built documents wherein the contractor shall show the architect what changes were accepted and have been noted as revisions to the project ON the as built documents each month.
- F. Failure to maintain as-built documentation during the course of the project may be grounds to hold progress payment.
- G. Failure to provide adequate as built documentation shall be grounds to hold final payment pending receipt of acceptable as-built documentation.

1.06 PROJECT RECORD SPECIFICATIONS: Maintain one copy of the Project Manual, including addenda. Mark-up to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot be readily discerned later by direct observation. Note related record drawing information and Product Data.

- A. Maintain on site, in a 3-ring binder or other organized method, executed RFI's, ASI's, RFP's, CO's and other project record items.
- B. All record of revisions is to be incorporated into the Project As-Built drawings
- C. Upon completion of the Work, submit record Drawings and Specifications to the Architect for the Owner's records.

1.07 PROJECT AS-BUILT DRAWINGS: The Contractor shall, at his own expense, hire the Architect of Record to prepare as-built drawings. The Contractor shall provide to the Architect record drawings and record specifications. The Contractor is solely responsible for the content of the record drawings and the as-built documents.

- A. Site As-built drawings shall comply with the following:
 - 1. Show the actual locations of all components, including depth below grade, along with any changes and/or modifications to the Contract Drawings. Provide GPS coordinates for all below grade installations.
 - a. During the course of the project various utilities are buried on site. The project as-built documentation for utilities shall include a layout for as-

built conditions of all buried underground utility runs to within 3 feet of actual.

- b. All above ground access points shall be detailed on site as built to within 1 foot of actual with GPS coordinates provided for each item.
- c. Items to be recorded include but are not limited to water Valves, sewer manholes, storm water manholes, and sewer and storm water cleanouts, electronic junction boxes buried on site, electrical junction boxes buried on site, site transformers, and any other items as indicated on the project design documents.
- d. All stub outs for utility tie ins shall be indicated on the as built plan.
- e. All utilities shall be labeled every 50 feet on the as built so as to allow easy identification in the field while using electronic as built plans. All utility items listed in item 3 above shall also be labeled on the as built plans.
- f. All dimensions and elevations, including invert elevations, shall be verified by field measurements.

2. The Contractor is cautioned to make all necessary measurements and elevations during installation to accurately locate all concealed items.

B. As-Built Survey: Contractor shall provide signed and sealed As-Built Survey of existing grades and structures as required by authorities having jurisdictions.

1.08 MAINTENANCE MANUALS: Organize maintenance data into sets of manageable size. Bind in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark identification on front and spine of each binder. Include the following information:

| | |
|-----------------------------------|---------------------------|
| Emergency instructions. | Spare parts list. |
| Copies of warranties. | Wiring diagrams. |
| Recommended "turn around" cycles. | Inspection procedures. |
| Shop Drawings and Product Data. | Fixture lamping schedule. |

1.09 OPERATING AND MAINTENANCE INSTRUCTIONS: Arrange for the installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Acceptance of the owner training provided is at the sole discretion of the owner. Training provided must be comprehensive in nature and include all pertinent aspects of use and maintenance for the item(s) requiring training. Include a detailed review of the following:

| | |
|-----------------------|--|
| Maintenance manuals. | Spare parts and materials. |
| Tools. | Lubricants. |
| Control sequences. | Hazards. |
| Warranties and bonds. | Maintenance agreements and similar continuing commitments. |

As part of instruction for operating equipment, demonstrate the following procedures:

| | |
|------------------------|-----------------------|
| Start-up and shutdown. | Emergency operations. |
|------------------------|-----------------------|

Noise and vibration adjustments.

Safety procedures.

All operation and training sessions shall be recorded and provided to the Owner. The contractor may use their own personnel to film the training provided. Verify with Owner the appropriate format of recording that should be used.

- 1.10 FINAL CLEANING: Employ experienced workers for final cleaning. Clean each surface to the condition expected in a commercial building cleaning and maintenance program. Complete the following, as a minimum before requesting inspection for certification of Substantial Completion:
- A. Remove labels that are not permanent labels.
 - B. Clean transparent materials. Remove glazing compound. Replace chipped or broken glass.
 - C. Clean exposed hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean.
 - D. Vacuum carpeted surfaces.
 - E. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - F. Clean the site of rubbish, litter, and other foreign substances. Sweep paved areas; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth even-textured surface.
- 1.11 REMOVAL OF PROTECTION: Remove temporary protection and facilities.
- 1.12 CLOSE OUT DOCUMENTATION:
- A. All close out documents shall be provided in hard copy and identical electronic copy.
 - B. Contractor shall provide (2) hard copies for all documents and as built plans.
 - C. Contractor shall provide (4) electronic copies identical to hard copies as listed above.
 - a. Contractor shall utilize “thumb drive” media of sufficient size to accommodate entire close out package including all as built documents being saved onto (1) thumb drive encompassing (1) full copy of all documentation on that (1) drive.
 - b. Each successive copy of electronic documents shall be identical and complete.
 - D. In addition to close out documentation, all spare parts or extra parts required by specification shall be provided at final close out. The method for this to occur is negotiable but final verification including transmittal and owner/architect verification of receipt is a close out requirement.
 - E. Contractor MAY NOT deliver close out documents in multiple phases or at multiple times or to multiple parties.
 - a. Initial submittal of Close out documents shall be to the architect for review and comment.

- b. Upon architect acceptance, the contractor shall gather all hard copies and electronic copies for a full and complete documentation deliverable for the project close out documentation.
 - c. In addition to items listed in various parts of the specifications, THE CONTRACTOR SHALL ALSO PROVIDE A COMPREHENSIVE SPREADSHEET THAT LISTS THE NAME AND CONTACT PERSON WITH PHONE NUMBER AND EMAIL FOR EACH SUBCONTRACTOR THAT PERFORMED WORK ON THE PROJECT.
 - d. The spreadsheet shall also include the term of any warranty provided by the subcontractor, the date the warranty started, and the end date the warranty will be completed on.
 - e. The spreadsheet shall also list any manufacturers extended warranties that may exist for any item under a particular subcontractor's scope. Include the same information listed in item d. above for manufacturer's warranties.
- F. Once the contractor has gathered a complete project close out deliverable including both hard copies and electronic copies, warranties, extra parts and any other close out required items, they are to notify the architect that they are ready to schedule the project close out meeting.
- a. A list of the attendees with signatures and contact numbers shall be created and all attendees shall be noted and shall sign in.
 - b. The project closeout meeting shall consist of a meeting with all stakeholders including but not limited to:
 - i. BDS Facilities.
 - ii. BDS Maintenance.
 - iii. BDS administration for subject project facility.
 - iv. Architect, other design consultants as directed by the architect.
 - v. Contractor project management team and project executive.
 - c. The project close out meeting agenda shall include a recap of the project scope, presentation of a completed and architect approved final punch list.
 - d. Contractor shall deliver close out documents with transmittal to architect and owner.
 - e. Architect is to accept close out documents and certify they are complete per previous reviews.
 - f. Architect shall sign transmittal accepting final close out documentation and attesting it is complete.
 - g. Question and answers will be called for all participants. Any necessary follow up meetings for any lingering items associated with the project will be scheduled and coordination responsibility for each item will be assigned.
 - h. Contractor will provide meeting minutes for the meeting including action items list and schedule for completion of any action items noted during the project close out meeting

1.13 COMPLIANCE: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Remove waste materials from the site and dispose of in a lawful manner.

END OF SECTION 01 77 00

**BAY DISTRICT SCHOOLS
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SECTION 01 78 00 - WARRANTIES AND BONDS

PART 1 - GENERAL

- 1.01 STANDARD PRODUCT WARRANTIES are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner. Note: All Standard Product Warranties are to be provided.
- 1.02 SPECIAL WARRANTIES are written warranties required by or incorporated in Contract Documents, to extend time limits provided by standard warranties or to provide greater rights for the Owner. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
- A. Requirements for warranties for products and installations that are specified to be warranted, are included in the individual Sections of Divisions 02 through 33.
- 1.03 DISCLAIMERS AND LIMITATIONS: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and Subcontractors required to countersign special warranties with the Contractor.
- 1.04 RELATED DAMAGES AND LOSSES: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- 1.05 REINSTATEMENT OF WARRANTY: When Work covered by a warranty has failed and been corrected, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- 1.06 REPLACEMENT COST: On determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through part of its useful service life.
- 1.07 OWNER'S RECOURSE: Written warranties made to the Owner are in addition to implied warranties, and shall not limit duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
- A. Rejection of Warranties: The Owner reserves the right to reject warranties and limit selections to products with warranties not in conflict with requirements of the Contract Documents. The Owner reserves the right to refuse to accept Work where

a special warranty, or similar commitment is required, until evidence is presented that entities required to countersign commitments are willing to do so.

- 1.08 SUBMIT WRITTEN WARRANTIES to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties on the Architect's request.
- A. When a designated portion of the Work is completed and occupied or used, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen days of completion of that designated portion of the Work.
 - B. When a special warranty is to be executed by the Contractor, or the Contractor and a subcontractor, supplier, or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.
 - C. Refer to individual Sections of Divisions 02 through 33 for specific content, and particular requirements for submittal of special warranties.
 - D. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
 - E. Provide heavy paper dividers with celluloid covered tabs for each warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the installer.
 - F. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor.
 - G. When operating and maintenance manuals are required for warranted construction, provide additional copies of each warranty, as necessary, for inclusion in each required manual.

END OF SECTION 01 78 00

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SECTION 01 79 00 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 2. Demonstration and training video recordings.

1.2 CLOSEOUT SUBMITTALS

- A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of videographer.
 - c. Name of Architect.
 - d. Name of Construction Manager.
 - e. Name of Contractor.
 - f. Date of video recording.
 - 2. At completion of training, submit complete training manual(s) for Owner's use prepared in same paper and PDF file format required for operation and maintenance manuals.

1.3 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.

1.4 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.5 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Systems and equipment operation manuals.
 - c. Systems and equipment maintenance manuals.
 - d. Product maintenance manuals.
 - e. Project Record Documents.
 - f. Identification systems.
 - g. Warranties and bonds.
 - h. Maintenance service agreements and similar continuing commitments.
 - 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.

- f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
- a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.

1.6 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual Operation and Maintenance Data.
- B. Set up instructional equipment at instruction location.

1.7 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner with at least seven days' advance notice.
- C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of an oral performance-based test.
- E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.8 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera.
 - 1. Submit video recordings on thumb drive in quantities as required by the Owner.
 - 2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
 - 3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
 - 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:
 - a. Name of Contractor/Installer.
 - b. Business address.
 - c. Business phone number.
 - d. Point of contact.

- e. Email address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
- 1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
 - c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.
- D. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 79 00

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SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse or store as directed by Owner.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.4 INFORMATIONAL SUBMITTALS

- A. Engineering Survey: Submit engineering survey of condition of building.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and for noise control. Indicate proposed locations and construction of barriers.

- C. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
- D. Pre-demolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations.
- E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- F. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.5 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.6 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.

- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.7 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
- B. Remove temporary barricades and protections where hazards no longer exist.

3.5 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. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain fire watch during and after flame-cutting operations.
 - 6. Maintain adequate ventilation when using cutting torches.
 - 7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 10. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed

to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.7 CLEANING

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

END OF SECTION 02 41 19

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05 40 10 – ENGINEERED COLD FORMED METAL FRAMING

PART 1 -- GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Load-bearing steel-stud walls.

B. What is not included in this Section: The following Sections contain requirements not included in this Section:

1. Division 9 Section "Gypsum Board" for gypsum board and non-load-bearing metal-stud framing and ceiling-suspension assemblies.

2. Division 9 Section "Gypsum Board Shaft-Wall Assemblies" for gypsum board and non-

1.2 PERFORMANCE REQUIREMENTS

A. AISI "Specifications": Calculate structural characteristics of cold-formed metal framing according to AISI's "Specification for the Design of Cold-Formed Steel Structural Members" and the following:

B. AISI "Specifications": Calculate structural characteristics of cold-formed metal framing according to AISI's "Load and Resistance Factor Design Specification for Cold-Formed Steel Structural Members" and the following:

C. Structural Performance: Engineer, fabricate, and erect cold-formed metal framing to withstand design loads within limits and under conditions required.

1. Design framing systems to withstand design loads without deflections greater than the following:
 - a. Load-Bearing Walls: Lateral deflection of 1/360 of the wall height.
2. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change (range) of 120 deg F (67 deg C).
3. Design framing system to accommodate deflection of primary building structure and- construction tolerances, and to maintain clearances at openings.

D. Design exterior non-load-bearing curtainwall framing to accommodate lateral deflection without regard to contribution of sheathing materials.

E. Engineering Responsibility: Engage a fabricator who assumes undivided responsibility for engineering cold-formed metal framing by employing a qualified professional engineer to prepare design calculations, shop drawings, and other structural data.

1.3 SUBMITTALS

- A. Product data for each type of cold-formed metal framing, accessory, and product Specified.
- B. Shop drawings showing layout, spacings, sizes, thicknesses, and types of cold-formed metal framing, fabrication, fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachments to other units of Work.
 - 1. For cold-formed metal framing indicated to comply with certain design loadings, include structural analysis data sealed and signed by the qualified professional engineer who was responsible for its preparation.
- C. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction that evidence cold-formed metal framing's compliance with building code in effect for Project.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed cold-formed metal framing similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code- Steel" and AWS D1.3 "Structural Welding Code-Sheet Steel."
- C. Fire-Test-Response Characteristics: Where fire-resistance-rated assemblies are indicated, provide cold-formed metal framing identical to that tested as part of an assembly for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: As indicated by design designations listed in UL "Fire Resistance Directory," or by Warnock Hersey or another testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Professional Engineer Qualifications: A professional engineer legally authorized to practice in the jurisdiction where Project is located and experienced in providing engineering services of the kind indicated that have resulted in the installation of cold-formed metal framing similar to this Project in material, design, and extent and that have a record of successful in-service performance.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

- B. Store cold-formed metal framing, protect with a waterproof covering , and ventilate to avoid condensation.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Steel Sheet: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:

1. Grade: As required by structural performance.
2. Coating Designation: G 90 (Z 275).

2.2 WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs of web depths indicated, with lipped flanges, and complying with the following:

1. Design Uncoated-Steel Thickness as required to comply with Performance Requirements.

- B. Steel Track: Manufacturer's standard U-shaped steel track, unpunched, of web depths indicated, with straight flanges, and complying with the following:

1. Design Uncoated-Steel Thickness: Matching steel studs.
2. Flange Width: Manufacturers standard deep flange where indicated, standard flange elsewhere.

2.3 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories of the same material and finish used for framing members, with a minimum yield strength of 33,000 psi (230 MPa).

- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Gusset plates.
5. Deflection track and vertical slide clips.
6. Stud kickers and girts.
7. Joist hangers and end closures.
8. Reinforcement plates.

2.4 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 36 (ASTM A 36M), zinc coated by the hot-dip process according to ASTM A 123.

- B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon- steel nuts: and flat, hardened-steel washers; zinc coated by hot-dip process

according to ASTM A 153/A 153M, Class C.

- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times the design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- D. Powder-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times the design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: Corrosion-resistant coated, self-drilling, self-threading steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

2.5 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.
- B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and a 30- minute working time.

PART 3 EXECUTION:

3.1 NOT USED

END OF SECTION 05 40 10

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SECTION 07 21 19 - FOAMED-IN-PLACE INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Open-cell spray polyurethane foam.
 - 2. Ignition barrier coating for spray polyurethane foam.

1.3 ACTION SUBMITTALS

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

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Evaluation Reports: For spray-applied polyurethane foam-plastic insulation, from ICC-ES.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 OPEN-CELL SPRAY FOAM INSULATION

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Icynene..

- b. Johns Manville.
- c. BASF.

B. Open Cell Spray Foam Insulation: Two-component, polyurethane cellular foam with a nominal density of 0.5 pcf, foam shall have the following minimum physical properties when cured:

1. Apparent Density: 0.5 pcf when tested in accordance with ASTM D 1622.
2. R-Value (aged) when tested in accordance with ASTM C 518: 3.9 at 1 inch, 13 at 3.5 inches, 19 at 5.5 inches.
3. Oxygen Index: 25 when tested in accordance with ASTM D 2863.
4. Compressive Strength: 0.5 psi when tested in accordance with ASTM D 1621.
5. Fungi Resistance: Zero Rating when tested in accordance with ASTM G 21.
6. Air Leakage: Less than 0.02 (L/s)/m² when tested in accordance with ASTM E 283.
7. Sound Transmission Coefficient: 51 (STC) when tested in accordance with ASTM E 90.
8. Noise Reduction Coefficient: 0.7 (NRC) when tested in accordance with ASTM C 423.
9. Open Cell Content: Greater than 90 percent when tested in accordance with ASTM D 2846.
10. Tensile Strength: Less than 5 psi when tested in accordance with ASTM D 1623.
11. Shear Strength: 1.4 psi when tested in accordance with ASTM C 273.
12. Permeability: 21 perm-inch when tested in accordance with ASTM E 96.
13. Dimensional Stability: Less than 15 percent change in volume when tested in accordance with ASTM D 2126.
14. Surface Burning Characteristics:
 - a. Flame Spread/Smoke Developed: At maximum 4 inch (102 mm) thickness, flame spread index of less than 25 and a smoke developed index of less than 450 when tested in accordance with ASTM E 84.
 - b. Corner Test: Thickness up to 12 inches (305 mm) for wall cavities and 16 inches for ceiling cavities meets NFPA 286 when covered with 1/2 inch (13 mm) gypsum board or equivalent thermal barrier.

2.2 IGNITION BARRIER COATING FOR SPRAY POLYURETHANE FOAM

- A. Single-component, water-based, liquid-applied intumescent coating intended for application over the surface of spray-applied foam plastic insulation complying with ICC-ES Acceptance Criteria for Spray-applied Foam Plastic Insulation (AC377).
 1. Flame Spread Index: 25 or less
 2. Smoke-Developed Index: 450 or less
 3. Color: Black
- B. Product: International Fireproof Technology, Inc., DC315 Intumescent Coating or approved equal.
- C. Manufacturer's published application instructions and ICC-ES Evaluation Report ESR-3702 must be available on-site at all times.

- D. Coated surfaces must be inspected in accordance with the manufacturer's published installation instructions and must be dry, clean, and free of dirt, loose debris and other substances that could interfere with the adhesion of the coating. The coating must not be applied when the ambient temperature is below 50 degrees F or above 90 degrees F and relative humidity of more than 85%.

2.3 MISCELLANEOUS MATERIALS

- A. Foam Insulation Primer: Material recommended by insulation manufacturer where required for adhesion of insulation to substrates.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that substrates are clean, dry, and free of substances that are harmful to insulation.
- B. Priming: Prime substrates where recommended by insulation manufacturer. Apply primer to comply with insulation manufacturer's written instructions. Confine primers to areas to be insulated; do not allow spillage or migration onto adjoining surfaces.

3.2 INSTALLATION

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Spray insulation to envelop entire area to be insulated and fill voids.
- C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.
- D. Framed Construction: Install into cavities formed by framing members to achieve thickness indicated on Drawings.
- E. Cavity Walls: Install into cavities to fully fill void.
- F. Miscellaneous Voids: Apply according to manufacturer's written instructions.

3.3 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

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SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:
1. Exterior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Control and expansion joints in unit masonry.
 - b. Perimeter joints between materials listed above and frames of doors, windows and louvers.
 - c. Control and expansion joints in ceilings and other overhead surfaces.
 - d. Other joints as needed.
 2. Interior joints in the following vertical surfaces and horizontal nontraffic surfaces:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints. (mildew resistant)
 - d. Vertical joints on exposed surfaces of interior unit masonry or concrete walls and partitions.
 - e. Perimeter joints between interior wall surfaces and frames of interior doors or windows.
 - f. Joints between plumbing fixtures and adjoining walls, floors, and counters. (mildew resistant)
 - g. Other joints as needed.
 - h. Control and expansion joints in tile flooring.
 - i. Control and expansion joints in ceilings and other overhead surfaces.

1.2 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- D. SWRI Validation Certificate: For each elastomeric sealant specified to be validated by SWRI's Sealant Validation Program.
- E. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

1.5 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 WARRANTY

- 1. Standard Manufacturers 1 year warranty

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

- B. Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- C. Suitability for Immersion in Liquids. Where elastomeric sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247 and qualify for the length of exposure indicated by reference to ASTM C 920 for Class 1 or 2. Liquid used for testing sealants is deionized water, unless otherwise indicated.
- D. Single-Component Neutral-Curing Silicone Sealant (Exterior and Interior)
 - 1. Products: (But not limited to)
 - a. Dow Corning Corporation; 790.
 - b. GE Silicones; SilPruf LM SCS2700.
 - c. Tremco; Spectrem 1 (Basic).
 - d. GE Silicones; SilPruf SCS2000.
 - e. Pecora Corporation; 864.
 - f. Pecora Corporation; 890.
 - g. Polymeric Systems Inc.; PSI-641.
 - h. Sonneborn, Division of ChemRex Inc.; Omniseal.
 - i. Tremco; Spectrem 3.

2.3 PREFORMED JOINT SEALANTS (Where needed)

- A. Preformed Silicone-Sealant System: Manufacturer's standard system consisting of precured low-modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral-curing silicone sealant for bonding extrusions to substrates.
 - 1. Products: (but not limited to)
 - a. Dow Corning Corporation; 123 Silicone Seal.
 - b. GE Silicones; UltraSpan US1100.
 - c. Pecora Corporation; Sil-Span.
 - d. Tremco; Spectrem Ez Seal.

2.4 PREFORMED TAPE SEALANTS (Where needed)

- A. Back-Bedding Mastic Tape Sealant: Preformed, butyl-based elastomeric tape sealant with a solids content of 100 percent; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape manufacturers for application indicated; packaged on rolls with a release paper backing; and complying with ASTM C 1281 and AAMA 800 for products indicated below:
 - 1. AAMA 804.3 tape, where indicated.
 - 2. AAMA 806.3 tape, for applications in which tape is subject to continuous pressure.
 - 3. AAMA 807.3 tape, for applications in which tape is not subject to continuous pressure.
- B. Expanded Cellular Tape Sealant: Closed-cell, PVC foam tape sealant; factory coated with adhesive on both surfaces; packaged on rolls with release liner protecting adhesive; and complying with AAMA 800 for the following types:
 - 1. Type 1, for applications in which tape acts as the primary sealant.
 - 2. Type 2, for applications in which tape is used in combination with a full bead of liquid sealant.

2.5 JOINT-SEALANT BACKING (Where needed)

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS (As needed)

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

- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.

- b. Glass.
 - c. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Acoustical Sealant Application Standard: Comply with recommendations in ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
- D. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- E. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- F. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

- G. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
 4. Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
 5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.
 - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.
- H. Installation of Preformed Tapes: Install according to manufacturer's written instructions.
- I. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
 2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch (10 mm). Hold edge of sealant bead 1/4 inch (6 mm) inside masking tape.
 3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
 4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.
- J. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

1. Inspect joints for complete fill, for absence of voids, and for joint configuration complying with specified requirements. Record results in a field-adhesion-test log.
2. Inspect tested joints and report on the following:

- a. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
 - b. Whether sealants filled joint cavities and are free of voids.
 - c. Whether sealant dimensions and configurations comply with specified requirements.
3. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
 4. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
- B. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07 92 00

**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 09 91 13 - EXTERIOR PAINTING (FOR PATCHING AND TOUCH-UP OF EXISTING BUILDINGS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following exterior substrates:

- 1. Concrete.
- 2. Galvanized metal (Hollow Metal).
- 3. Trim fabrications.

- B. Related Sections include the following:

- 1. Division 5 Sections for shop priming of metal substrates with primers specified in this Section.
- 2. Division 9 Section "Interior Painting" for surface preparation and the application of paint systems on interior substrates.
- 3. Division 9 Painting Sections for special use coatings

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.

- 1. Submit Samples on rigid backing, 8 inches (200 mm) square.
- 2. Step coats on Samples to show each coat required for system.
- 3. Label each coat of each Sample.
- 4. Label each Sample for location and application area.

- D. Product List: For each product indicated, include the following:

- 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 QUALITY ASSURANCE

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - b. Other Items: Architect will designate items or areas required.
2. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

- ##### A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

- ##### A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- ##### B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

- ##### A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional [5] percent, but not less than [1 gal. (3.8 L)] of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Benjamin Moore & Co.
2. Benjamin Moore & Co., Limited (Canada).
3. California Paints.
4. Duron, Inc.
5. ICI Paints.
6. Porter Paints.
7. PPG Architectural Finishes, Inc.
8. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

- A. 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.

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

2.3 PRIMERS/SEALERS

- A. Alkali-Resistant Primer: MPI #3.

1. VOC Content: E Range of E1, E2, or E3.

- B. Bonding Primer (Water Based): MPI #17.

1. VOC Content: E Range of E1, E2, or E3.

- C. Bonding Primer (Solvent Based): MPI #69.

1. VOC Content: E Range of E1, E2, or E3.

2.4 METAL PRIMERS

- A. Alkyd Anticorrosive Metal Primer: MPI #79.

1. VOC Content: E Range of E1 or E2.

B. Quick-Drying Alkyd Metal Primer: MPI #76.

1. VOC Content: E Range of E1 or E2.

2.5 EXTERIOR LATEX PAINTS

A. Exterior Latex (Flat): MPI #10 (Gloss Level 1).

1. VOC Content: E Range of E1, E2, or E3.

B. Exterior Latex (Semigloss): MPI #11 (Gloss Level 5).

1. VOC Content: E Range of E1, E2, or E3.

2.6 EXTERIOR ALKYD PAINTS

A. Exterior Alkyd Enamel (Semigloss): MPI #94 (Gloss Level 5).

1. VOC Content: E Range of E1 or E2.

2. VOC Content: E Range of E1 or E2.

2.7 QUICK-DRYING ENAMELS

A. Quick-Drying Enamel (Semigloss): MPI #81 (Gloss Level 5).

1. VOC Content: E Range of E1, E2, or E3.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

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

1. Concrete: 12 percent.

2. Wood: 15 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove plates, machined surfaces, and similar items already in place that 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 if any.
 - 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers 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. Galvanized-Metal Substrates: Hollow metal remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 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.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but 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.

3.4 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:
 - 1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will perform tests for compliance of paint materials with product requirements.
 - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 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.

3.6 EXTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Nontraffic Surfaces:
 - 1. Latex System: MPI EXT 3.1A (Concrete Vertical Surfaces).
 - a. Prime Coat: Alkali-Resistant Primer, W.B. (MPI #3).
 - b. Intermediate Coat: Exterior latex matching topcoat (MPI #10).
 - c. Topcoat: Exterior latex (flat) (MPI #10).
- B. Galvanized-Metal Substrates: (Hollow Metal)
 - 1. Latex System: MPI EXT 5.3A.
 - a. Prime Coat: W.B. Galvanized Primer (MPI #134).
 - b. Intermediate Coat: Exterior latex matching topcoat (MPI #11).
 - c. Topcoat: Exterior latex (semigloss) (MPI #11)

C. Exterior trim.

1. Latex System: MPI EXT 6.4K.
 - a. Prime Coat: Exterior latex wood primer (MPI #6).
 - b. Intermediate Coat: Exterior latex matching topcoat (MPI #11).
 - c. Topcoat: Exterior latex (semigloss) (MPI #11).
2. Latex Over Alkyd Primer System: MPI EXT 6.4G.
 - a. Prime Coat: Exterior alkyd wood primer (MPI #5).
 - b. Intermediate Coat: Exterior latex matching topcoat (MPI #11).
 - c. Topcoat: Exterior latex (semigloss) (MPI #11).

D. Plastic Trim Fabrication Substrates:

1. Latex System: MPI EXT 6.8AA.
 - a. Prime Coat: Bonding primer (solvent based) (MPI #69).
 - b. Intermediate Coat: Exterior latex matching topcoat (MPI #11).
 - c. Topcoat: Exterior latex (semigloss) (MPI #11).

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**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 09 91 23 - INTERIOR PAINTING (FOR PATCHING AND TOUCH-UP OF EXISTING BUILDINGS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following interior substrates:
 - 1. Concrete (where shown).
 - 2. Concrete masonry units (CMU) (Where shown).
 - 3. Steel.
 - 4. Galvanized metal.
 - 5. Wood.
 - 6. Gypsum board.
- B. Related Sections include the following:
 - 1. Division 5 Sections for shop priming of metal substrates with primers specified in this Section.
 - 2. Division 9 painting Sections for special-use coatings.
 - 3. Division 9 painting Sections for Exteriors

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

1.4 QUALITY ASSURANCE

- A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
 2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.
- B. Mockups: Apply benchmark samples of each paint system indicated and each color and finish selected to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - a. Wall Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - b. Other Items: Architect will designate items or areas required.
 2. Apply benchmark samples after permanent lighting and other environmental services have been activated.
 3. Final approval of color selections will be based on benchmark samples.
 - a. If preliminary color selections are not approved, apply additional benchmark samples of additional colors selected by Architect at no added cost to Owner.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Benjamin Moore & Co.
 2. Columbia Paint & Coatings.
 3. Coronado Paint.
 4. Frazee Paint.
 5. General Paint.

6. Griggs Paint.
7. Kryton Canada Corporation.
8. Porter Paints.
9. PPG Architectural Finishes, Inc.
10. Sherwin-Williams Company (The).

2.2 PAINT, GENERAL

A. 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.

B. Chemical Components of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions; these requirements do not apply to primers or finishes that are applied in a fabrication or finishing shop:

1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
2. Nonflat Paints and Coatings: VOC content of not more than 150 g/L.
3. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
4. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.
 - j. 1,2-dichlorobenzene.
 - k. Diethyl phthalate.
 - l. Dimethyl phthalate.
 - m. Ethylbenzene.
 - n. Formaldehyde.
 - o. Hexavalent chromium.
 - p. Isophorone.
 - q. Lead.
 - r. Mercury.
 - s. Methyl ethyl ketone.
 - t. Methyl isobutyl ketone.

- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.

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

2.3 BLOCK FILLERS

A. Interior/Exterior Latex Block Filler: MPI #4.

1. VOC Content: E Range of E2 or E3.

2.4 PRIMERS/SEALERS

A. Interior Latex Primer/Sealer: MPI #50.

1. VOC Content: E Range of E2 or E3.
2. Environmental Performance Rating: EPR 1.

2.5 METAL PRIMERS

A. Quick-Drying Alkyd Metal Primer: MPI #76.

1. VOC Content: E Range of E2 or E3.

B. Waterborne Galvanized-Metal Primer: MPI #134.

1. VOC Content: E Range of E2 or E3.
2. Environmental Performance Rating: EPR 1.

2.6 LATEX PAINTS

A. Interior Latex (Eggshell): MPI #52 (Gloss Level 3).

1. VOC Content: E Range of E2 or E3.
2. Environmental Performance Rating: EPR 1

2.7 ALKYD PAINTS

A. Interior Alkyd (Semigloss): MPI #47 (Gloss Level 5).

1. VOC Content: E Range of E1 or E2.
2. Environmental Performance Rating: EPR 1

2.8 QUICK-DRYING ENAMELS

A. Quick-Drying Enamel (High Gloss): MPI #96 (Gloss Level 7).

1. VOC Content: E Range of E2 or E3.

2.9 FLOOR COATINGS

- A. Interior/Exterior Clear Concrete Floor Sealer (Water Based): MPI #99.
 - 1. VOC Content: E Range of E2 or E3.

2.10 STAINED WOOD

- A. Water-Based Varnish over Stain System MPI INT 6.3W:
 - 1. Stain Coat: Stain, semitransparent, for interior wood MPI #90.
 - a. First Intermediate Coat: Water-based varnish matching topcoat.
 - b. Second Intermediate Coat: Water-based varnish matching topcoat.
 - c. Topcoat: Varnish, water based, clear, satin (MPI Gloss Level 4), MPI #128.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Wood: 15 percent.
 - 3. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove plates, machined surfaces, and similar items already in place that 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 if any.

2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers 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. Concrete Masonry Substrates: Remove 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.
- F. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
- G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- H. Wood Substrates:
 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 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.
- I. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but 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. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
 - 1. Mechanical Work:
 - a. Uninsulated metal piping.
 - b. Uninsulated plastic piping.
 - c. Pipe hangers and supports.
 - d. Tanks that do not have factory-applied final finishes.
 - e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 - f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.
 - 2. Electrical Work:
 - a. Switchgear.
 - b. Panelboards.
 - c. Electrical equipment that is indicated to have a factory-primed finish for field painting.

3.4 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:
 - 1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will perform tests for compliance with product requirements.
 - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

3.5 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.

3.6 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:

- 1. Latex System: MPI INT 3.1E.
 - a. Prime Coat: Interior latex matching topcoat (MPI #53).
 - b. Intermediate Coat: Interior latex matching topcoat (MPI #53).
 - c. Topcoat: Interior latex (flat) (MPI #53).

B. CMU Substrates:

- 1. Latex System: MPI INT 4.2A.
 - a. Prime Coat: Interior/exterior latex block filler (MPI #4).
 - b. Intermediate Coat: Interior latex matching topcoat (MPI #52).
 - c. Topcoat: Interior latex (eggshell) (MPI #52)

C. Steel Substrates:

- 1. Quick-Drying Enamel System: MPI INT 5.1A.
 - a. Prime Coat: Quick-drying alkyd metal primer (MPI #76).
 - b. Intermediate Coat: Quick-drying enamel matching topcoat (MPI #81).
 - c. Topcoat: Quick-drying enamel (semigloss) (MPI #81)

D. Galvanized-Metal Substrates:

- 1. Latex Over Waterborne Primer System: MPI INT 5.3J.
 - a. Prime Coat: Waterborne galvanized-metal primer (MPI #134).
 - b. Intermediate Coat: Interior latex matching topcoat (MPI #54).
 - c. Topcoat: Interior latex (semigloss) (MPI #54).

E. Gypsum Board Substrates:

- 1. Latex System: MPI INT 9.2A.
 - a. Prime Coat: Interior latex primer/sealer (MPI #50).
 - b. Intermediate Coat: Interior latex matching topcoat (MPI #52).
 - c. Topcoat: Interior latex (eggshell) (MPI #52).

F. Cotton or Canvas Insulation-Covering Substrates: Including pipe and duct coverings

1. Latex System: MPI INT 10.1A.

- a. Prime Coat: Interior latex primer/sealer (MPI #50).
- b. Intermediate Coat: Interior latex matching topcoat (MPI #53).
- c. Topcoat: Interior latex (flat) (MPI #53).

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**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 13 34 19 - METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Metal wall panels.
 - 2. Personnel doors and frames.
 - 3. Accessories.

1.2 DEFINITIONS

- A. Terminology Standard: See MBMA's "Metal Building Systems Manual" for definitions of terms for metal building system construction not otherwise defined in this Section or in standards referenced by this Section.

1.3 COORDINATION

- A. Coordinate sizes and locations of concrete foundations and casting of anchor-rod inserts into foundation walls and footings. Anchor rod installation, concrete, reinforcement, and formwork requirements are specified in Section 033000 "Cast-in-Place Concrete."
- B. Coordinate metal panel assemblies with rain drainage work, flashing, trim, and construction of supports and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to metal wall panel assemblies including, but not limited to, the following:
 - a. Compliance with requirements for support conditions, including alignment between and attachment to structural members.
 - b. Flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
 - c. Temporary protection requirements for metal wall panel assembly during and after installation.
 - d. Wall observation and repair after metal wall panel installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of metal building system component.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Metal wall panels.
 - b. Personnel doors and frames.
- B. Sustainable Design Submittals:
- C. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and the following:
 1. Metal [**Wall**] Panel Layout Drawings: Show layouts of panels including methods of support. Include details of edge conditions, joints, panel profiles, corners, anchorages, clip spacing, trim, flashings, closures, and special details. Distinguish between factory- and field-assembled work; show locations of exposed fasteners.
 - a. Show wall-mounted items including personnel doors, vehicular doors, windows, louvers, and lighting fixtures.
 2. Accessory Drawings: Include details of the following items, at a scale of not less than [**1-1/2 inches per 12 inches**]:
 - a. Flashing and trim.
 - b. Gutters.
 - c. Downspouts.
- D. Samples for Initial Selection: For units with factory-applied finishes.
- E. Samples for Verification: For the following products:
 1. Panels: Nominal 12 inches long by actual panel width. Include fasteners, closures, and other exposed panel accessories.
 2. Flashing and Trim: Nominal 12 inches long. Include fasteners and other exposed accessories.
 3. Vapor-Retarder Facings: Nominal 6-inch- square Samples.
 4. Accessories: Nominal 12-inch- long Samples for each type of accessory.
- F. Door Schedule: For doors and frames. Use same designations indicated on Drawings. Include details of reinforcement.
 1. Door Hardware Schedule: Include details of fabrication and assembly of door hardware. Organize schedule into door hardware sets indicating complete designations of every item required for each door or opening.
 2. Keying Schedule: Detail Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.
- G. Delegated Design Submittals: For metal building systems.
 1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For erector, manufacturer.
- B. Welding certificates.
- C. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
 - 1. Name and location of Project.
 - 2. Order number.
 - 3. Name of manufacturer.
 - 4. Name of Contractor.
 - 5. Building dimensions including width, length, height, and roof slope.
 - 6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
 - 7. Governing building code and year of edition.
 - 8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
 - 9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
 - 10. Building-Use Category: Indicate category of building use and its effect on load importance factors.
- D. Erector Certificates: For qualified erector, from manufacturer.
- E. Material Test Reports: For each of the following products:
 - 1. Structural steel including chemical and physical properties.
 - 2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 3. Tension-control, high-strength, bolt-nut-washer assemblies.
 - 4. Shop primers.
 - 5. Nonshrink grout.
- F. Source quality-control reports.
- G. Field quality-control reports.
- H. Sample Warranties: For special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panel finishes and door hardware to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer.
 - 1. Accreditation: Manufacturer's facility accredited according to IAS AC472,

"Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."

2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.

B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

1.10 FIELD CONDITIONS

A. Weather Limitations: Proceed with panel installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.

1.11 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

- a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
- b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
- c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Provide an integrated set of mutually dependent existing and new components and assemblies that form a metal building system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure or infiltration of water into building interior.
- B. Primary-Frame Type:
 - 1. Existing structural frame to remain.
- C. Secondary-Frame Type: Existing purlins and girts to remain.
- D. Eave Height: Existing as indicated on Drawings.
- E. Bay Spacing: Existing as indicated on Drawings.
- F. Exterior Wall System: Manufacturer's standard exposed-fastener, tapered-rib, metal wall panels.
 - 1. Liner Panels: [**Tapered rib**][**Flush profile**].

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer to design metal building system.
- B. Structural Performance: Metal building systems to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."
 - 1. Design Loads: As indicated on Drawings.
 - 2. Deflection and Drift Limits:
 - a. Design metal building system assemblies to withstand serviceability design loads without exceeding deflections and drift limits recommended in AISC Steel Design Guide No. 3 "Serviceability Design Considerations for Steel Buildings."
 - b. No greater than the following:
 - 1) Metal Wall Panels: Horizontal deflection of 1/180 of the span.
 - 2) Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
 - 3) Lateral Drift: Maximum of 1/60 of the building height.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat

gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- D. Structural Performance for Metal Wall Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
1. Wind Loads: As indicated on Drawings.
- E. Air Infiltration for Metal Wall Panels: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:
1. Test-Pressure Difference: 1.57 lbf/sq. ft..
- F. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:
- G. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E331 at the following test-pressure difference:
1. Test-Pressure Difference: 2.86 lbf/sq. ft..
- H. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
1. Uplift Rating: UL 60.
- I. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
1. Fire/Windstorm Classification: Class 1A-105.
 2. Hail Resistance: MH.
- J. Thermal Performance for Opaque Elements: Provide the following maximum U-factors and minimum R-values when tested according to ASTM C1363 or ASTM C518:
1. Walls:
 - a. R-Value: 19.

2.3 STRUCTURAL-STEEL FRAMING

- A. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:
1. Framing for Openings: Channel shapes; fabricated from cold-formed, structural-

- steel sheet or structural-steel shapes. Frame head and jamb of door openings and head, jamb, and sill of other openings.
2. Miscellaneous Structural Members: Manufacturer's standard sections fabricated from cold-formed, structural-steel sheet; built-up steel plates; or zinc-coated (galvanized) steel sheet; designed to withstand required loads.
- B. Bracing: Provide adjustable wind bracing using any method as follows:
1. Rods: ASTM A36/A36M; ASTM A572/A572M, Grade 50; or ASTM A529/A529M, Grade 50; minimum 1/2-inch- diameter steel; threaded full length or threaded a minimum of 6 inches at each end.
 2. Cable: ASTM A475, minimum 1/4-inch- diameter, extra-high-strength grade, Class B,
- C. Materials:
1. Channels, Angles, M-Shapes, and S-Shapes: ASTM A36/A36M; ASTM A572/A572M, Grade 50 or 55; or ASTM A529/A529M, Grade 50 or 55.
 2. Cold-Formed Hollow Structural Sections: ASTM A500, Grade B or C, structural tubing.
 3. Metallic-Coated Steel Sheet: ASTM A653/A653M, SS, Grades 33 through 80, or HSLAS or HSLAS-F, Grades 50 through 80; with G60 coating designation; mill phosphatized.
 4. Non-High-Strength Bolts, Nuts, and Washers: ASTM A307, Grade A, carbon-steel, hex-head bolts; ASTM A563 carbon-steel hex nuts; and ASTM F844 plain (flat) steel washers.
 - a. Finish: Plain.
 5. High-Strength Bolts, Nuts, and Washers, Grade A325: ASTM F3125/F3125M, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.
 - a. Finish: Plain.
 6. High-Strength Bolts, Nuts, and Washers, Grade A490: ASTM F3125/F3125M, Type 1, heavy-hex steel structural bolts or Grade F2280 tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.
 7. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, round head assemblies consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1 hardened carbon-steel washers.
 - a. Finish: Plain.
- D. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.
1. Clean and prepare in accordance with SSPC-SP2.

2. Coat with manufacturer's standard primer. Apply primer to primary and secondary framing to a minimum dry film thickness of 1 mil.
 - a. Prime secondary framing formed from uncoated steel sheet to a minimum dry film thickness of 0.5 mil on each side.

2.4 METAL WALL PANELS

- A. Exposed-Fastener, Tapered-Rib, Metal Wall Panels: Formed with raised, trapezoidal major ribs and intermediate stiffening ribs symmetrically spaced between major ribs; designed to be installed by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps.
 1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Exterior Finish: Two-coat fluoropolymer.
 - b. Color: To match existing building
 2. Major-Rib Spacing: 6 inches o.c.
 3. Panel Coverage: [**36 inches**].
 4. Panel Height: 0.75 inch.
- B. Exposed-Fastener, Reverse-Rib, Metal Wall Panels: Formed with recessed, trapezoidal major valleys and intermediate stiffening valleys symmetrically spaced between major valleys; designed to be installed by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps.
 1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Exterior Finish: Fluoropolymer.
 - b. Color: As selected by Architect from manufacturer's full range.
 2. Major-Rib Spacing: [**12 inches**] o.c.
 3. Panel Coverage: [**36 inches**].
 4. Panel Height: [**1.188 inches**].
- C. Finishes:
 1. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.5 PERSONNEL DOORS AND FRAMES

- A. Swinging Personnel Doors and Frames:

1. Metal building system manufacturer's standard doors and frames; prepared and reinforced at strike and at hinges to receive factory- and field-applied hardware according to BHMA A156 Series.
 - a. Steel Doors: 1-3/4 inches thick; fabricated from metallic-coated steel face sheets, 0.036-inch nominal uncoated steel thickness, of seamless, hollow-metal construction; with 0.060-inch nominal uncoated steel thickness, inverted metallic-coated steel channels welded to face sheets at top and bottom of door.
 - 1) Design: Flush panel.
 - 2) Core:
 - a) Kraft honeycomb with U-factor rating of at least 0.47 Btu/sq. ft. x h x deg F.
 - b. Steel Frames: Fabricate 2-inch- wide face frames from zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.060-inch nominal uncoated steel thickness.
 - 1) Type: Knocked down for field assembly.
 - c. Fabricate concealed stiffeners, reinforcement, edge channels, and moldings from either cold- or hot-rolled steel sheet.
 - d. Hardware:
 - 1) Provide a \$2,000 allowance for each door.
 - 2) Provide each pair of double doors with the following hardware in addition to that specified for each leaf:
 - a) Astragal: Removable type.
 - b) Surface Bolts: Top and bottom of inactive door.
 - e. Anchors and Accessories: Manufacturer's standard units, galvanized according to ASTM A123/A123M.
 - f. Fabrication: Fabricate doors and frames to be rigid; neat in appearance; and free from defects, warp, or buckle. Provide continuous welds on exposed joints; grind, dress, and make welds smooth, flush, and invisible.

B. Materials:

1. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
2. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, CS, Type B; free of scale, pitting, or surface defects; pickled and oiled.
3. Metallic-Coated Steel Sheet: ASTM A653/A653M, CS, Type B; with G60 zinc (galvanized) or A60 zinc-iron-alloy (galvannealed) coating designation.

C. Finishes for Personnel Doors and Frames:

1. Prime Finish: Factory-apply manufacturer's standard primer immediately after cleaning and pretreating.

- a. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
2. Factory-Applied Paint Finish: Manufacturer's standard, complying with SDI A250.3 for performance and acceptance criteria.
 - a. Color and Gloss: To match existing.

2.6 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
 1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
- B. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.
 1. Closures: Provide closures at eaves and rakes, fabricated of same material as metal wall panels.
 2. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- thick, flexible closure strips; cut or premolded to match metal wall panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.
 1. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers.
 2. Opening Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating. Trim head and jamb of door openings, and head, jamb, and sill of other openings.
- D. Gutters: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."
 1. Gutter Supports: Fabricated from same material and finish as gutters.

2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.
- E. Downspouts: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- long sections, complete with formed elbows and offsets.
1. Mounting Straps: Fabricated from same material and finish as gutters.
- F. Materials:
1. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide fasteners with heads matching color of materials being fastened by means of plastic caps or factory-applied coating.
 2. Fasteners for Metal Roof Panels:
 - a. Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with a stainless steel cap or zinc-aluminum-alloy head and EPDM sealing washer.
 - b. Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless steel or zinc-alloy-steel hex washer head, with EPDM washer under heads of fasteners bearing on weather side of metal panels.
 3. Fasteners for Metal Wall Panels:
 - a. Self-drilling or self-tapping, zinc-plated, hex-head carbon-steel screws, with EPDM sealing washers bearing on weather side of metal panels.
 - b. Self-drilling, Type 410 stainless steel or self-tapping, Type 304 stainless steel or zinc-alloy-steel hex washer head, with EPDM sealing washers bearing on weather side of metal panels.
 4. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws with hex washer head.
 5. Blind Fasteners: High-strength aluminum or stainless steel rivets.
 6. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
 7. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
 8. Metal Panel Sealants:
 - a. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene-compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape of manufacturer's standard size.
 - b. Joint Sealant: ASTM C920; one part elastomeric polyurethane or polysulfide; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended by metal building system manufacturer.

2.7 FABRICATION

- A. General: Design components and field connections required for erection to permit easy assembly.
 - 1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
 - 2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members to be free of cracks, tears, and ruptures.
- B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.
- C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
 - 1. Make shop connections by welding or by using high-strength bolts.
 - 2. Join flanges to webs of built-up members by a continuous, submerged arc-welding process.
 - 3. Brace compression flange of primary framing with steel angles or cold-formed structural tubing between frame web and purlin web or girt web, so flange compressive strength is within allowable limits for any combination of loadings.
 - 4. Weld clips to frames for attaching secondary framing if applicable, or punch for bolts.
 - 5. Shop Priming: Prepare surfaces for shop priming according to SSPC-SP 2. Shop prime primary framing with specified primer after fabrication.
- D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
 - 1. Make shop connections by welding or by using non-high-strength bolts.
 - 2. Shop Priming: Prepare uncoated surfaces for shop priming according to SSPC-SP 2. Shop prime uncoated secondary framing with specified primer after fabrication.
- E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
 - 1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.8 SOURCE QUALITY CONTROL

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with erector present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with erection only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition.
- B. Provide temporary shores, guys, braces, and other supports during erection to keep structural framing secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural framing, connections, and bracing are in place unless otherwise indicated.

3.3 ERECTION OF STRUCTURAL FRAMING

- A. Erect metal building system according to manufacturer's written instructions and drawings.
- B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.
- D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- E. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.
 - 1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.

2. Locate and space wall girts to suit openings such as doors and windows.
 3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.
- F. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.
- G. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.4 METAL PANEL INSTALLATION, GENERAL

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Examination: Examine primary and secondary framing to verify that structural-panel support members and anchorages have been installed within alignment tolerances required by manufacturer.
1. Examine roughing-in for components and systems penetrating metal panels, to verify actual locations of penetrations relative to seams before metal panel installation.
- C. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
 - a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
 2. Install metal panels perpendicular to structural supports unless otherwise indicated.
 3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 5. Locate metal panel splices over structural supports with end laps in alignment.
 6. Lap metal flashing over metal panels to allow moisture to run over and off the material.
- D. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.
1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and

associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.

- E. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
- F. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.
 - 1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
 - 2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.5 METAL WALL PANEL INSTALLATION

- A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
 - 2. Shim or otherwise plumb substrates receiving metal wall panels.
 - 3. When two rows of metal panels are required, lap panels 4 inches minimum.
 - 4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
 - 5. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Pre-drill panels.
 - 6. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
 - 7. Install screw fasteners in predrilled holes.
 - 8. Install flashing and trim as metal wall panel work proceeds.
 - 9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
 - 10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
 - 11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.
- C. Insulated Metal Wall Panels: Install insulated metal wall panels on exterior side of girts. Attach panels to supports at each panel joint using concealed clip and fasteners at maximum 42 inches o.c., spaced not more than manufacturer's recommendation. Fully

engage tongue and groove of adjacent insulated metal wall panels.

1. Install clips to supports with self-tapping fasteners.
 2. Apply continuous ribbon of sealant to panel joint on concealed side of insulated metal wall panels as vapor seal; apply sealant to panel joint on exposed side of panels as weather seal.
- D. Installation Tolerances: Shim and align metal wall panels within installed tolerance of 1/4 inch in 20 feet, noncumulative; level, plumb, and on location lines; and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 DOOR AND FRAME INSTALLATION

- A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturers' written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.
- B. Personnel Doors and Frames: Install doors and frames according to NAAMM-HMMA 840. Fit non-fire-rated doors accurately in their respective frames, with the following clearances:
1. Between Doors and Frames at Jambs and Head: 1/8 inch.
 2. Between Edges of Pairs of Doors: 1/8 inch.
 3. At Door Sills with Threshold: 3/8 inch.
 4. At Door Sills without Threshold: 3/4 inch.
- C. Door Hardware:
1. Install surface-mounted items after finishes have been completed at heights indicated in DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
 4. Set thresholds for exterior doors in full bed of sealant complying with requirements for concealed mastics specified in Section 079200 "Joint Sealants."

3.7 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
 1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
 - C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
 - D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
 1. Provide elbows at base of downspouts to direct water away from building.

3.8 ADJUSTING

- A. Doors: After completing installation, test and adjust doors to operate easily, free of warp, twist, or distortion.
- B. Door Hardware: Adjust and check each operating item of door hardware and each door to ensure proper operation and function of every unit. Replace units that cannot be adjusted to operate as intended.

3.9 CLEANING AND PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.
- B. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- C. Touchup Painting:

1. After erection, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted structural framing, bearing plates, and accessories.
 - a. Clean and prepare surfaces by SSPC-SP 2, "Hand Tool Cleaning," or by SSPC-SP 3, "Power Tool Cleaning."
 - b. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

- D. Metal Panels: Remove temporary protective coverings and strippable films, if any, as metal panels are installed. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
 1. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

- E. Doors and Frames: Immediately after installation, sand rusted or damaged areas of prime coat until smooth and apply touchup of compatible air-drying primer.
 1. Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION 13 34 19

**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 22 01 00 - PLUMBING GENERAL

1 GENERAL

1.1 The work covered by this division consists of providing all labor, equipment and materials and performing all operations necessary for the installation of the plumbing work as herein called for and shown on the drawings.

1.2 Related Documents:

1.2.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2.2 This is a Basic Plumbing Requirements Section. Provisions of this section apply to work of all Division-22 sections. Provisions of Division-23 Basic Mechanical Requirements Sections apply to work of all Division-22 sections.

1.2.3 Review all other contract documents to be aware of conditions affecting work herein.

1.2.4 Definitions:

1.2.4.1 Provide: Furnish and install, complete and ready for intended use.

1.2.4.2 Furnish: Supply and deliver to project site, ready for subsequent requirements.

1.2.4.3 Install: Operations at project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar requirements.

1.3 Permits and Fees: Contractor shall obtain all necessary permits, meters, and inspections required for his work and pay all fees and charges incidental thereto.

1.4 Verification of Owner's Data: Prior to commencing any work the Contractor shall satisfy himself as to the accuracy of all data as indicated in these plans and specifications and/or as provided by the Owner. Should the Contractor discover any inaccuracies, errors, or omissions in the data, he shall immediately notify the Architect/Engineer in order that proper adjustments can be anticipated and ordered. Commencement by the Contractor of any work shall be held as an acceptance of the data by him after which time the Contractor has no claim against the Owner resulting from alleged errors, omissions or inaccuracies of the said data.

- 1.5 Delivery and Storage of Materials: Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. All material shall be stored to provide protection from the weather and accidental damage.
- 1.6 Extent of work is indicated by the drawings, schedules, and the requirements of the specifications. Singular references shall not be constructed as requiring only one device if multiple devices are shown on the drawings or are required for proper system operation.
- 1.7 Field Measurements and Coordination:
- 1.7.1 The intent of the drawings and specifications is to obtain a complete and satisfactory installation. Separate divisional drawings and specifications shall not relieve the Contractor or subcontractors from full compliance of work of his trade indicated on any of the drawings or in any section of the specifications.
- 1.7.2 Verify all field dimensions and locations of equipment to insure close, neat fit with other trades' work. Make use of all contract documents and approved shop drawings to verify exact dimension and locations.
- 1.7.3 Coordinate work in this division with all other trades in proper sequence to insure that the total work is completed within contract time schedule and with a minimum cutting and patching.
- 1.7.4 Locate all apparatus symmetrical with architectural elements. Install to exact height and locations when shown on architectural drawings. When locations are shown only on plumbing drawings, be guided by architectural details and conditions existing at job and correlate this work with that of others.
- 1.7.5 Install work as required to fit structure, avoid obstructions, and retain clearance, headroom, openings and passageways. Cut no structural members without written approval.
- 1.7.6 Carefully examine any existing conditions, piping, and premises. Compare drawings with existing conditions. Report any observed discrepancies. It shall be the Contractor's responsibility to properly coordinate the work and to identify problems in a timely manner. Written instructions will be issued to resolve discrepancies.
- 1.7.7 Because of the small scale of the drawings, it is not possible to indicate all offsets and fittings or to locate every accessory. Drawings are essentially diagrammatic. Study carefully the sizes and locations of structural members, wall and partition locations, trusses, and room dimensions and take actual measurements on the job. Locate piping, ductwork, equipment and accessories with sufficient space for installing and servicing. Contractor is responsible for accuracy of his measurements and for coordination with all trades. Contractor shall not order materials or perform work without such verification. No extra compensation will be allowed because field measurements vary from the dimensions on the drawings. If field measurements show that equipment or piping cannot be fitted, the Architect/Engineer shall be consulted. Remove and

relocate, without additional compensation, any item that is installed and is later found to encroach on space assigned to another use.

1.8 Guarantee:

1.8.1 The Contractor shall guarantee labor, materials and equipment for a period of one (1) year from Final Completion, or from Owner's occupancy, whichever is earlier. Contractor shall make good any defects and shall include all necessary adjustments to and replacement of defective items without expense to the Owner.

1.8.2 Owner reserves right to make emergency repairs as required to keep equipment in operation without voiding Contractor's Guarantee Bond nor relieving Contractor of his responsibilities during guarantee period.

1.9 Approval Submittals:

1.9.1 When approved, the submittal control log and submittals shall be an addition to the specifications herewith, and shall be of equal force in that no deviation will be permitted except with the approval of the Architect/Engineer.

1.9.1.1 Shop drawings, product literature, and other approval submittals will only be reviewed if they are submitted in full accordance with the General and Supplementary Conditions and Division 1 Specification sections and the following.

1.9.1.1.1 Submittals shall be properly organized in accordance with the approved submittal control log.

1.9.1.1.2 Submittals shall not include items from more than one specification section in the same submittal package unless approved in the submittal control log.

1.9.1.1.3 Submittals shall be properly identified by a cover sheet showing the project name, Architect and Engineer names, submittal control number, specification section, a list of products or item names with model numbers in the order they appear in the package, and spaces for approval stamps. A sample cover sheet is included at the end of this section.

1.9.1.1.4 Submittals shall have been reviewed and approved by the General Contractor (or Prime Contractor). Evidence of this review and approval shall be an "Approved" stamp with a signature and date on the cover sheet.

1.9.1.1.5 Submittals that include a series of fixtures or devices (such as plumbing fixtures or valves) shall be organized by the fixture number or valve type and be marked accordingly. Each fixture must include all items associated with that fixture regardless of whether or not those items are used on other fixtures.

1.9.1.1.6 The electrical design shown on the drawings supports the plumbing equipment basis of design specifications at the time of design. If plumbing equipment is submitted with different electrical requirements, it is the responsibility of the plumbing contractor to resolve all required electrical design changes (wire and conduit size, type of disconnect

or overload protection, point(s) of connection, etc.) and clearly show the new electrical design on the plumbing submittal with a written statement that this change will be provided at no additional cost. Plumbing submittals made with no written reference to the electrical design will be presumed to work with the electrical design. Any corrections required will be at no additional cost.

- 1.9.2 If the shop drawings show variation from the requirements of contract because of standard shop practice or other reasons, the Contractor shall make specific mention of such variation in writing in his letter of transmittal and on the submittal cover sheet in order that, if acceptable, Contractor will not be relieved of the responsibility for executing the work in accordance with the contract.
- 1.9.3 Review of shop drawings, product literature, catalog data, or schedules shall not relieve the Contractor from responsibility for deviations from contract drawings or specifications, unless he has in writing called to the attention of the Architect/Engineer each such deviation in writing at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings, product literature, catalog data, or schedules. Any feature or function specified but not mentioned in the submittal shall be assumed to be included per the specification.
- 1.9.4 Submit shop drawings as called for in other sections after award of the contract and before any material is ordered or fabricated. Shop drawings shall consist of plans, sections, elevations and details to scale (not smaller than 1/4" per foot), with dimensions clearly showing the installation. Direct copies of small scale project drawings issued to the Contractor are not acceptable. Drawings shall take into account equipment furnished under other sections and shall show space allotted for it. Include construction details and materials.
- 1.10 Test Reports and Verification Submittals: Submit test reports, certifications and verification letters as called for in other sections. Contractor shall coordinate the required testing and documentation of system performance such that sufficient time exists to prepare the reports, submit the reports, review the reports and take corrective action within the scheduled contract time.
- 1.11 O&M Data Submittals: Submit Operation and Maintenance data as called for in other sections. When a copy of approval submittals is included in the O&M Manual, only the final "Approved" or "Approved as Noted" copy shall be used. Contractor shall organize these data in the O&M Manuals tabbed by specification number. Prepare O&M Manuals as required by Division 1 and as described herein. Submit manuals at the Substantial Completion inspection.

2 PRODUCTS

- 2.1 All materials shall be new or Owner-supplied reused as shown on the drawings, the best of their respective kinds, suitable for the conditions and duties imposed on them at the building and shall be of reputable manufacturers. The description, characteristics, and requirements of materials to be used shall be in accordance with qualifying conditions established in the following sections.

2.2 Equipment and Materials:

- 2.2.1 Shall be new and the most suitable grade for the purpose intended. Equipment furnished under this division shall be the product of a manufacturer regularly engaged in the manufacture of such items for a period of three years. Where practical, all of the components shall be products of a single manufacturer in order to provide proper coordination and responsibility. Where required, Contractor shall furnish proof of installation of similar units or equipment.
- 2.2.2 Each item of equipment shall bear a name plate showing the manufacturer's name, trade name, model number, serial number, ratings and other information necessary to fully identify it. This plate shall be permanently mounted in a prominent location and shall not be concealed, insulated or painted.
- 2.2.3 The label of the approving agency, such as UL, IBR, ASME, ARI, AMCA, by which a standard has been established for the particular item shall be in full view.
- 2.2.4 The equipment shall be essentially the standard product of a manufacturer regularly engaged in the production of such equipment and shall be a product of the manufacturer's latest design.
- 2.2.5 A service organization with personnel and spare parts shall be available within two hours for each type of equipment furnished.
- 2.2.6 Install in accordance with manufacturer's recommendations. Place in service by a factory trained representative where required.
- 2.2.7 Materials and equipment are specified herein by a single or by multiple manufacturers to indicate quality, material and type of construction desired. Manufacturer's products shown on the drawings have been used as basis for design; it shall be the Contractor's responsibility to ascertain that alternate manufacturer's products, or the particular products of named manufacturers, meet the detailed specifications and that size and arrangement of equipment are suitable for installation.
- 2.2.8 Model Numbers: Catalog numbers and model numbers indicated in the drawings and specifications are used as a guide in the selection of the equipment and are only listed for the contractor's convenience. The contractor shall determine the actual model numbers for ordering materials in accordance with the written description of each item and with the intent of the drawings and specifications.

2.3 Requests for Substitution:

- 2.3.1 Where a particular system, product or material is specified by name, consider it as standard basis for bidding, and base proposal on the particular system, product or material specified.
- 2.3.2 Requests by Contractor for substitution will be considered only when reasonable, timely, fully documented, and qualifying under one or more of the following circumstances.

- 2.3.2.1 Required product cannot be supplied in time for compliance with Contract time requirements.
- 2.3.2.2 Required product is not acceptable to governing authority, or determined to be non-compatible, or cannot be properly coordinated, warranted or insured, or has other recognized disability as certified by Contractor.
- 2.3.2.3 Substantial cost advantage is offered Owner after deducting offsetting disadvantages including delays, additional compensation for redesign, investigation, evaluation and other necessary services and similar considerations.
- 2.3.3 All requests for substitution shall contain a "Comparison Schedule" and clearly and specifically indicate any and all differences or omissions between the product specified as the basis of design and the product proposed for substitution. Differences shall include but shall not be limited to data as follows for both the specified and substituted products:

Principal of operation.

Materials of construction or finishes.

Thickness of gauge of materials.

Weight of item.

Deleted features or items.

Added features or items.

Changes in other work caused by the substitution.

Performance curves.

If the approved substitution contains differences or omissions not specifically called to the attention of the Architect/Engineer, the Owner reserves the right to require equal or similar features to be added to the substituted products (or to have the substituted products replaced) at the Contractor's expense.

3 EXECUTION

3.1 Workmanship: All materials and equipment shall be installed and completed in a first-class workmanlike manner and in accordance with the best modern methods and practice. Any materials installed which do not present an orderly and reasonably neat and/or workmanlike appearance, or do not allow adequate space for maintenance, shall be removed and replaced when so directed by the Architect/Engineer.

3.2 Coordination:

3.2.1 The Contractor shall be responsible for full coordination of the plumbing systems with shop drawings of the building construction so the proper openings and sleeves or supports are provided for piping, ductwork, or other equipment passing through slabs or walls.

- 3.2.2 Any additional steel supports required for the installation of any plumbing equipment, piping, or ductwork shall be furnished and installed under the section of the specifications requiring the additional supports.
- 3.2.3 It shall be the Contractor's responsibility to see that all equipment such as valves, dampers, filters and such other apparatus or equipment that may require maintenance and operation are made easily accessible, regardless of the diagrammatic location shown on the drawings.
- 3.2.4 All connections to fixtures and equipment shown on the drawings shall be considered diagrammatic unless otherwise indicated by detail. The actual connections shall be made to fully suit the requirements of each case and adequately provide for expansion and servicing.
- 3.2.5 The contractor shall protect equipment, material, and fixtures at all times. He shall replace all equipment, material, and fixtures which are damaged as a result of inadequate protection.
- 3.2.6 Prior to starting and during progress of work, examine work and materials installed by others as they apply to work in this division. Report conditions which will prevent satisfactory installation.
- 3.2.7 Start of work will be construed as acceptance of suitability of work of others.
- 3.3 Interruption of Service: Before any equipment is shut down for disconnecting or tie-ins, arrangements shall be made with the Architect/Engineer and this work shall be done at the time best suited to the Owner. This will typically be on weekends and/or holidays and/or after normal working hours. Services shall be restored the same day unless prior arrangements are made. All overtime or premium costs associated with this work shall be included in the base bid.
- 3.4 Phasing: Provide all required temporary valves, piping, ductwork, equipment and devices as required. Maintain temporary services to areas as required. Remove all temporary material and equipment on completion of work unless Engineer concurs that such material and equipment would be beneficial to the Owner on a permanent basis.
- 3.5 Cutting and Patching: Notify General Contractor to do all cutting and patching of all holes, chases, sleeves, and other openings required for installation of equipment furnished and installed under this section. Utilize experienced trades for cutting and patching. Obtain permission from Architect/Engineer before cutting any structural items.
- 3.6 Equipment Setting: Bolt equipment directly to concrete pads or vibration isolators as required, using hot-dipped galvanized anchor bolts, nuts and washers. Level equipment.
- 3.7 Painting: Touch-up factory finishes on equipment located inside and outside shall be done under Division 22. Obtain matched color coatings from the manufacturer and

apply as directed. If corrosion is found during inspection on the surface of any equipment, clean, prime, and paint, as required.

3.8 Clean-up: Thoroughly clean all exposed parts of apparatus and equipment of cement, plaster, and other materials and remove all oil and grease spots. Repaint or touch up as required to look like new. During progress of work, contractor is to carefully clean up and leave premises and all portions of building free from debris and in a clean and safe condition.

3.9 Start-up and Operational Test: Start each item of equipment in strict accordance with the manufacturer's instructions; or where noted under equipment specification, start-up shall be done by a qualified representative of the manufacturer. Alignment, lubrication, safety, and operating control shall be included in start-up check.

3.10 Record Drawings:

3.10.1 During the progress of the work the Contractor shall record on their field set of drawings the exact location, as installed, of all piping, ductwork, equipment, and other systems which are not installed exactly as shown on the contract drawings.

3.10.2 Upon completion of the work, record drawings shall be prepared as described in the General Conditions, Supplementary Conditions, and Division 1 sections.

3.11 Acceptance:

3.11.1 Punch List: Submit written confirmation that all punch lists have been checked and the required work completed.

3.11.2 Instructions: At completion of the work, provide a competent and experienced person who is thoroughly familiar with project, for one day to instruct permanent operating personnel in operation of equipment and control systems. This is in addition to any specific equipment operation and maintenance training.

3.11.3 Operation and Maintenance Manuals: Furnish four complete manuals bound in ring binders with Table of Contents, organized, and tabbed by specification section. Manuals shall contain:

Detailed operating instructions and instructions for making minor adjustments.

Complete wiring and control diagrams.

Routine maintenance operations.

Manufacturer's catalog data, service instructions, and parts lists for each piece of operating equipment.

Copies of approved submittals.

Copies of all manufacturer's warranties.

Copies of test reports and verification submittals.

3.11.4 Record Drawings: Submit record drawings.

END OF SECTION 22 01 00

**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
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MARCH 6, 2026**

SECTION 22 11 13 - POTABLE WATER SYSTEM

1 GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 Division-22 Basic Plumbing Requirements and Basic Plumbing Materials and Methods sections apply to work of this section.
- 1.3 Division-23 Basic Mechanical Materials and Methods Sections apply to work of this section.
- 1.4 Extent of potable water systems work, is indicated on drawings and schedules, and by requirements of this section.
- 1.5 Excavation and backfill required in conjunction with water piping is specified in other Division-23 sections, and is included as work of this section.
- 1.6 Code Compliance: Comply with applicable portions of Florida Building Code-Plumbing pertaining to selection and installation of plumbing materials and products. Comply with local utility requirements.
- 1.7 Approval Submittals:
- 1.7.1 Product Data: Submit manufacturer's technical product data and installation instructions for:
- Valves
Water hammer arresters
- 1.8 Test Reports and Verification Submittals:
- 1.8.1 Disinfection: Submit report by Health Department.
- 1.9 O&M Data Submittals: Submit a copy of all approval submittals. Submit maintenance data and parts lists for valves. Include these data in O&M manual.

2 PRODUCTS

- 2.1 General: Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by Installer to comply with installation requirements. Provide materials and products complying with Florida Building Code-Plumbing where applicable. Provide sizes and types matching pipe materials used in potable water systems. Where more than one type of materials or products is indicated, selection is Installer's option.
- 2.2 Acceptable Manufacturers: Subject to compliance with requirements, provide products of one of the following listed for each item.
- 2.3 Identification: Provide identification complying with Division-23 Basic Mechanical Materials and Methods section "Mechanical Identification". Provide manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct burial service; not less than 6" wide x 4 mils thick. Provide blue tape with black printing reading "CAUTION WATER LINE BURIED BELOW".
- 2.4 Pipes and Fittings: Provide pipes and pipe fittings complying with Division-23 Basic Mechanical Materials and Methods section "Pipes and Pipe Fittings", in accordance with the following listing:
 - 2.4.1 Interior Water Piping:
 - 2.4.1.1 Above Grade: Copper tube; Type L, hard-drawn temper; wrought-copper fittings, solder-joints.
 - 2.4.1.2 Below Grade: Copper tube; Type L, soft-annealed temper; no joints below floor.
 - 2.4.2 Exterior Water Piping:
 - 2.4.2.1 Copper tube; Type L, hard-drawn temper; wrought-copper fittings, solder-joints.
 - 2.4.3 Solder joints shall be made with 95-5 solder.
- 2.5 Piping Specialties: Provide piping specialties complying with Division-23 Basic Mechanical Materials and Methods section "Piping Specialties".
- 2.6 Supports and Anchors: Provide supports and anchors complying with Division-23 Basic Mechanical Materials and Methods section "Supports and Anchors".
- 2.7 Interior Valves: Provide valves complying with Division-23 Basic Mechanical Materials and Methods section "Valves", in accordance with the following listing:
 - 2.7.1 Sectional and Shutoff Valves: GA1, GA2, GA3, BA1, BA2.
 - 2.7.2 Drain Valves: GA1, GA2, BA1, BA2.
 - 2.7.3 Throttling Valves: BA1, BA2.

- 2.8 Water Hammer Arresters: Provide bellows type water hammer arresters, stainless steel casing and bellows, pressure rated for 250 psi, tested and certified in accordance with PDI Standard WH-201. Precision Plumbing Products, Josam, Zurn, Amtrol, Wade, Jay R. Smith, or approved equal.

3 EXECUTION

- 3.1 General: Examine areas and conditions under which potable water systems are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.
- 3.2 Install plumbing identification in accordance with Division-23 Basic Mechanical Materials and Methods section "Mechanical Identification". Install underground plastic pipe markers during backfill, 6"-8" below grade.
- 3.3 Install water distribution piping in accordance with Division-23 Basic Mechanical Materials and Methods section "Pipes and Pipe Fittings".
- 3.3.1 Install piping with 1/32" per foot (1/4%) downward slope towards drain point.
- 3.3.2 Locate groups of pipes parallel to each other, spaced to permit applying full insulation and servicing of valves.
- 3.4 Install exterior water piping in compliance with local governing regulations. Water piping shall be installed with a minimum of 30 inches of cover unless otherwise indicated.
- 3.5 Install piping specialties in accordance with Division-23 Basic Mechanical Materials and Methods section "Piping Specialties".
- 3.6 Install supports and anchors in accordance with Division-23 Basic Mechanical Materials and Methods section "Supports and Anchors".
- 3.7 Install valves in accordance with Division-23 Basic Mechanical Materials and Methods section "Valves".
- 3.7.1 Sectional Valves: Install on each branch and riser, close to main, where branch or riser serves two or more plumbing fixtures or equipment connections, and elsewhere as indicated.
- 3.7.2 Shutoff Valves: Install on inlet of each plumbing equipment item, and on inlet of each plumbing fixture, and elsewhere as indicated.
- 3.7.3 Drain Valves: Install on each plumbing equipment item located to completely drain equipment for service or repair. Install at base of each riser, at base of each rise or drop in piping system, and elsewhere where indicated or required to completely drain

potable water system.

- 3.8 Piping Runouts to Fixtures: Provide hot and cold water piping runouts to fixtures of sizes indicated, but in no case smaller than required by Florida Building Code-Plumbing.
- 3.9 Plumbing Equipment Connections: Connect hot and cold water piping system to plumbing equipment as indicated, and comply with equipment manufacturer's installation instructions. Provide shutoff valve and union for each connection, provide drain valve on drain connection.
- 3.10 Install water hammer arresters in upright position, in locations and of sizes indicated in accordance with PDI Standard WH-201.
- 3.11 Piping Tests: Test, clean, and sterilize potable water piping in accordance with testing requirements of Division-23 Basic Mechanical Materials and Methods section "Testing, Cleaning, and Sterilization of Piping Systems".

END OF SECTION 22 11 13

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SECTION 22 13 16 - SOIL, WASTE AND VENT SYSTEM

1 GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 Division-22 Basic Plumbing Requirements and Basic Plumbing Materials and Methods sections apply to work of this section.
- 1.3 Division-23 Basic Mechanical Materials and Methods Sections apply to work of this section.
- 1.4 Extent of soil waste and vent systems work is indicated on drawings and schedules, and by requirements of this section.
- 1.5 Refer to appropriate Division-2 sections for exterior sanitary sewer system required in conjunction with soil and waste systems; not work of this section.
- 1.6 Excavation and backfill required in conjunction with soil, waste and vent piping is specified in other Division-23 sections and is included as work of this section.
- 1.7 Refer to Division-7 section "Flashing and Sheet Metal" for flashings required in conjunction with soil and waste systems; not work of this section.
- 1.8 Code Compliance: Comply with applicable portions of Florida Building Code-Plumbing pertaining to plumbing materials, construction and installation of products. Comply with local utility requirements.
- 1.9 Approval Submittals:
 - 1.9.1 Product Data: Submit manufacturer's technical product data for:

Cleanouts

2 PRODUCTS

- 2.1 General: Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, and capacities as indicated. Where not indicated, provide proper selection as determined by Installer to comply with installation requirements. Provide sizes and types matching piping and equipment connections; provide fittings of materials

which match pipe materials used in soil and waste systems. Where more than one type of materials or products is indicated, selection is Installer's option.

Underground-Type Plastic Line Marker: Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide x 4 mils thick. Provide green tape with black printing reading "CAUTION SEWER LINE BURIED BELOW".

2.2 Acceptable Manufacturers: Subject to compliance with requirements, provide products of one of the following listed for each item.

2.3 Pipes and Fittings: Provide pipes and pipe fittings complying with Division-23 Basic Mechanical Materials and Methods section "Pipes and Pipe Fittings", in accordance with the following listing:

2.3.1 Above Ground Soil, Waste, and Vent Piping:

2.3.1.1 Polyvinyl chloride plastic pipe (PVC); Type DWV; PVC plastic type DWV socket-type fitting, solvent cement joints. Do not use in fire-rated assemblies or return air plenums.

2.3.2 Underground Building Drain Piping (within 5 feet of the building):

2.3.2.1 Pipe Size 6" and Smaller: Polyvinyl chloride sewer pipe (PVC); Type DWV; PVC plastic type DWV socket-type.

2.4 Pipe Specialties: Provide piping specialties complying with Division-23 Basic Mechanical Materials and Methods section "Piping Specialties".

2.5 Supports and Anchors: Provide supports and anchors complying with Division-23 Basic Mechanical Materials and Methods section "Supports and Anchors".

2.6 Cleanouts: Provide factory-fabricated drainage piping products of size and type indicated. Where not indicated, provide proper selection as determined by Installer to comply with installation requirements and governing regulations. Josam, Jay R. Smith, Wade, Zurn.

2.6.1 Cleanout Plugs: Cast-bronze or brass, threads complying with ANSI B2.1 countersunk head.

2.6.2 Cleanout for PVC Systems:

2.6.2.1 Floor Cleanouts: Cast-iron body with adjustable head, brass plug, and scoriated nickel-brass cover. Furnish with clamping ring for floors with membrane. Wade W-6030 hub outlet for push-on.

2.6.2.2 Cleanouts in Piping: PVC cleanout adaptor with threaded PVC plug.

2.6.2.3 Wall Cleanouts: PVC cleanout adaptor with tapped, countersunk, threaded brass plug. Square 9"x9" wall access cover, with scoriated nickel bronze finish.

2.6.2.4 Grade Cleanouts: PVC cleanout adaptor with countersunk, threaded brass plug. Wade W-8590-D plug. In sidewalks and other finished concrete, provide access cover frames with a non-tilting tractor cover. Wade W-7035-Z or equal.

2.6.2.5 Cleanouts in Paved Areas: Cast iron body, adjustable housing, ferrule with plug and round loose scoriated tractor cover. Wade W-8300-MF. Coordinate concrete depth at site with adjustable flange.

3 EXECUTION

3.1 Examine substrates and conditions under which soil and waste systems are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected.

3.2 Piping Installation:

3.2.1 Install above grade soil and waste piping in accordance with Division-23 Basic Mechanical Materials and Methods section "Pipes and Pipe Fittings", and with Florida Building Code-Plumbing.

3.2.2 Install underground soil and waste pipes as indicated and in accordance with Florida Building Code-Plumbing. Lay underground piping beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install required gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements. Clean interior of piping of dirt and other superfluous material as work progresses. Maintain swab or drag in line and pull past each joint as it is completed. Place plugs in ends of uncompleted piping at end of day or whenever work stops.

3.2.3 Install building soil and vent piping pitched to drain at minimum slope of ¼" per foot (2%) for piping smaller than 3", and 1/8" per foot (1%) for piping 3" and larger.

3.3 Install piping specialties in accordance with Division-23 Basic Mechanical Materials and Methods section "Piping Specialties".

3.4 Install supports and anchors in accordance with Division-23 Basic Mechanical Materials and Methods section "Supports and Anchors".

3.5 Installation of Cleanouts: Install in above ground piping and building drain piping as indicated, as required by Florida Building Code-Plumbing; and at each change in direction of piping greater than 45°; at minimum intervals of 50' for piping 4" and smaller and 100' for larger piping; and at base of each vertical soil or waste stack. Install floor and wall cleanout covers for concealed piping, select type to match adjacent building finish.

3.5.1 Size: Cleanouts shall be full size up to 4". Piping over 4" shall have a reducing fitting to accommodate a 4" cleanout unless indicated otherwise on drawings.

- 3.5.2 Install cleanouts to allow adequate clearance for rodding.
- 3.5.3 Protect all finished surfaces of cleanouts with a suitable adhesive covering until construction is completed.
- 3.5.4 Cleanouts to Grade: Provide an 18" x 18" x 8" thick concrete pad around the cleanout. Set the cleanout ferrule, adapter, or access cover frame in the concrete as required. The cleanout shall be extended to the finished grade. The concrete pad shall slope away from the cleanout in all directions approximately one inch. Cover pad with fill to finished grade.
- 3.5.5 Cleanouts in Paved Areas: Provide concrete pad similar to cleanout to grade and coordinate concrete depth at site with adjustable flange. Access cover frames are required.
- 3.6 Flashing Flanges: Install flashing flange and clamping device with each stack and cleanout passing through waterproof membranes.
- 3.7 Vent Flashing Sleeves: Install on stack passing through roof, secure to stack flashing in accordance with manufacturer's instructions. For metal roofs, sleeves and flashing are by Division-7.
- 3.8 Piping Runouts to Fixtures: Provide soil and waste piping runouts to plumbing fixtures and drains, with approved trap, of sizes indicated, but in no case smaller than required by Florida Building Code-Plumbing.
- 3.9 Test, clean, flush, and inspect soil and waste piping in accordance with requirements of Division-23 Basic Mechanical Materials and Methods section "Testing, Cleaning and Sterilization of Piping Systems".

END OF SECTION 22 13 16

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SECTION 22 30 00 - PLUMBING FIXTURES, EQUIPMENT, TRIM & SCHEDULE

1 GENERAL

1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 Division-22 Basic Plumbing Requirements and Basic Plumbing Materials and Methods sections apply to work of this section.

1.3 Division-23 Basic Mechanical Materials and Methods Sections apply to work of this section.

1.4 Extent of plumbing fixtures work required by this section is indicated on drawings and schedules, and by requirements of this section.

1.5 Refer to Division-26 sections for field-installed electrical wiring required for plumbing fixtures; not work of this section.

1.6 Codes and Standards:

1.6.1 Plumbing Fixture Standards: Comply with applicable portions of Florida Building Code-Plumbing pertaining to materials and installation of plumbing fixtures.

1.6.2 ANSI Standards: Comply with applicable ANSI standards pertaining to plumbing fixtures and systems.

1.6.3 PDI Compliance: Comply with standards established by PDI pertaining to plumbing fixture supports.

1.6.4 UL Listing: Construct plumbing fixtures requiring electrical power in accordance with UL standards and provide UL-listing and label.

1.6.5 ARI Compliance: Construct and install water coolers in accordance with ARI Standard 1010 "Drinking-Fountains and Self-Contained Mechanically-Refrigerated Drinking-Water Coolers", and provide Certification Symbol.

1.6.6 ANSI Compliance: Construct and install barrier-free plumbing fixtures in accordance with ANSI Standard A117.1 "Specifications for Making Buildings and Facilities Accessible To and Usable By Physically Handicapped People".

1.7 Approval Submittals:

- 1.7.1 Product Data: Submit manufacturer's technical product data, including rated capacities of selected model clearly indicated, furnished specialties and accessories; and installation instructions. Submit manufacturer's assembly-type drawings indicating dimensions, roughing-in requirements, required clearances, and methods of assembly of components and anchorages. The submittal shall be organized by "fixture number" and each fixture package shall be so identified. Each fixture package shall include all of the required fitting and trim, even if such devices are used for more than one fixture.
- 1.8 O&M Data Submittals: Submit a copy of approval submittals. Submit maintenance data and parts lists for each type of plumbing fixture and accessory; including "troubleshooting" maintenance guide. Include these data in O&M manual.
- 1.9 Handle plumbing fixtures carefully to prevent breakage, chipping and scoring fixture finish. Do not install damaged plumbing fixtures; replace and return damaged units to equipment manufacturer.

2 PRODUCTS

- 2.1 General: Provide factory-fabricated fixtures of type, style and material indicated. For each type fixture, provide trim, carrier, seats, and valves as specified. Where not specified, provide products as recommended by manufacturer, and as required for complete installation. Where more than one type is indicated, selection is Installer's option; but, all fixtures of same type must be furnished by single manufacturer. Where type is not otherwise indicated, provide fixtures complying with governing regulations.
- 2.2 Model Numbers: Basis of design model numbers of a particular manufacturer are listed in the fixture schedule as an aid to contractors. Where conflicts between the model number and the written description occur, the written description shall govern. Where acceptable manufacturers are listed, products are subject to compliance with requirements.
- 2.3 Refer to plumbing construction documents for fixture schedule.
- 2.4 Materials:
- 2.4.1 Provide materials which have been selected for their surface flatness and smoothness. Exposed surfaces which exhibit pitting seam marks, roller marks, foundry sand holes, stains, decoloration, or other surface imperfections on finished units are not acceptable.
- 2.4.2 All fixtures shall be white vitreous china unless otherwise specifically noted. Where enameled iron fixtures are specified, they shall be furnished with acid resisting enamel.
- 2.4.3 Where fittings, trim and accessories are exposed or semi-exposed provide bright chrome-plated or polished stainless steel units. Provide copper or brass where not exposed.
- 2.4.4 Stainless Steel Sheets: ASTM A 167, Type 302/304, hardest workable temper. Finish shall be No. 4, bright, directional polish on exposed surfaces.

- 2.5 Plumbing Fittings, Trim and Accessories:
- 2.5.1 Faucets: At locations where water is supplied (by manual, automatic or remote control), provide commercial quality chrome-plated, cast-brass faucets, valves, or other dispensing devices, of type and size indicated, and as required to operate as indicated.
- 2.5.1.1 Aerators: Provide aerators of types approved by Health Department having jurisdiction.
- 2.5.1.2 Acceptable Manufacturers: Subject to compliance with requirements, provide products of one of the following for each item. American Standard, Chicago Faucet Co., Kohler Co., Speakman Co., T & S Brass and Bronze Works, Water Saver Faucet Co., Zurn.
- 2.5.2 Stops: Provide chrome-plated brass, angle type, manual shutoff valves and 3/8" chrome-plated flexible supply pipes to permit fixture servicing without shutdown of water supply piping systems for all fixtures. Coordinate with fixture requirements.
- 2.5.2.1 Provide loose key stops.
- 2.5.2.2 Acceptable Manufacturers: Subject to compliance with requirements, provide products of one of the following for each item. Zurn or approved equal.
- 2.5.3 Waste Outlets: Provide removable P-traps, drains, waste arms, tailpieces and wastes-to-wall where drains are indicated for direct connection to drainage system for all fixtures unless otherwise noted. Provide drains, tailpieces and waste arms where indirect drains are indicated. Waste outlets shall be full size of fixture drain connection.
- 2.5.3.1 Provide chrome-plated cast-brass P-traps and drains with cleanout.
- 2.5.3.2 P-traps, wastes and drains of all types shall be 17-gauge.
- 2.5.3.3 Acceptable Manufacturers: Subject to compliance with requirements, provide products of one of the following for each item. Zurn, or approved equal.
- 2.5.4 Carriers: Provide cast-iron supports for fixtures of either graphitic gray iron, ductile iron, or malleable iron or steel as indicated. Coordinate with specific fixture requirements and conditions of the project.
- 2.5.4.1 Acceptable Manufacturers: Subject to compliance with requirements, provide products of one of the following for each item. Josam, Wade, Zurn, J.R. Smith.
- 2.5.5 Escutcheons: Where fixture supplies and drains penetrate walls in exposed locations, provide chrome-plated brass escutcheons with friction clips.
- 2.5.6 Comply with additional fixture requirements listed for each fixture and as required for

a complete and functional system.

2.6 Electric Water Coolers:

2.6.1 General: Provide self-contained electric water cooler with entire water system free of lead. All joints shall be made using silver solder. Units shall be complete with an air-cooled refrigeration system consisting of a hermetic compressor, cooler, pre-cooler, condenser fan, thermostat safety controls and all other related devices. The unit shall have a capacity of 8 gallons per hour. The cabinet shall be stainless steel with vermin proof insulation. The top shall be fabricated of stainless steel with a No. 4 finish. Where handicap units are indicated, the bubbler and fountain shall be ADA compliant.

2.6.2 Acceptable Manufacturers: Subject to compliance with requirements, provide products of one of the following for each item. Elkay Mfg. Co., Halsey Taylor Div., Haws Drinking Faucet Co., Sunroc, Oasis.

3 EXECUTION

3.1 Examine roughing-in work of potable water and waste piping systems to verify actual locations of piping connections prior to installing fixtures. Also examine floors and substrates, and conditions under which fixture work is to be accomplished. Correct any incorrect locations of piping, and other unsatisfactory conditions for installation of plumbing fixtures. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 Install plumbing fixtures of types indicated where shown and at indicated heights. Install in accordance with fixture manufacturer's written instructions, roughing-in drawings, and with recognized industry practices. Install in accordance with ADA and applicable handicap code requirements. Ensure that plumbing fixtures comply with requirements and serve intended purposes. Comply with applicable requirements of Florida Building Code-Plumbing pertaining to installation of plumbing fixtures. Furnish templates for cut-outs in countertops. Coordinate exact fixture locations with countertop shop drawings.

3.3 Fasten plumbing fixtures securely to indicated supports or building structure; and ensure that fixtures are level and plumb. Secure plumbing supplies behind or within wall construction so as to be rigid, and not subject to pull or push movement. Mount at heights shown on the drawings. Fixture heights are floor-to-rim distance. Fitting heights are to centerline.

3.4 Install stop valve in water supply to each fixture.

3.5 After fixtures are set, the crack between the fixture and wall shall be caulked with DAP silicone-based caulking, or approved product specified by the architect.

3.6 Protect installed fixtures from damage during remainder of construction period.

3.7 Upon completion of installation of plumbing fixtures and after units are water

pressurized, test fixtures to demonstrate capability and compliance with requirements. When possible, correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace with new units and proceed with retesting.

- 3.8 Inspect each installed unit for damage to finish. If feasible, restore and match finish to original at site; otherwise, remove fixture and replace with new unit. Feasibility and match to be judged by Architect/Engineer. Remove cracked or dented units and replace with new units.
- 3.9 Clean plumbing fixtures, trim, aerators, and strainers of dirt and debris upon completion of installation.
- 3.10 Adjust water pressure at drinking fountains, to provide proper flow stream and specified gpm.
- 3.11 Adjust or replace washers to prevent leaks at faucets and stops.

END OF SECTION 22 30 00

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SECTION 23 01 00 - MECHANICAL GENERAL

PART 1 GENERAL

- 1.01 The work covered by this division consists of providing all labor, equipment and materials and performing all operations necessary for the installation of the mechanical work as herein called for and shown on the drawings.
- 1.02 Related Documents:
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
 - B. This is a Basic Mechanical Requirements Section. Provisions of this section apply to work of all Division 23 sections.
 - C. Review all other contract documents to be aware of conditions affecting work herein.
 - D. Definitions:
 - 1. Provide: Furnish and install, complete and ready for intended use.
 - 2. Furnish: Supply and deliver to project site, ready for subsequent requirements.
 - 3. Install: Operations at project site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar requirements.
- 1.03 Permits and Fees: Contractor shall obtain all necessary permits, meters, and inspections required for his work and pay all fees and charges incidental thereto.
- 1.04 Verification of Owner's Data: Prior to commencing any work the Contractor shall satisfy himself as to the accuracy of all data as indicated in these plans and specifications and/or as provided by the Owner. Should the Contractor discover any inaccuracies, errors, or omissions in the data, he shall immediately notify the Architect/Engineer in order that proper adjustments can be anticipated and ordered. Commencement by the Contractor of any work shall be held as an acceptance of the data by him after which time the Contractor has no claim against the Owner resulting from alleged errors, omissions or inaccuracies of the said data.

- 1.05 Delivery and Storage of Materials: Materials delivered to site shall be inspected for damage, unloaded, and stored with a minimum of handling. All material shall be stored to provide protection from the weather and accidental damage.
- 1.06 Extent of work is indicated by the drawings, schedules, and the requirements of the specifications. Singular references shall not be constructed as requiring only one device if multiple devices are shown on the drawings or are required for proper system operation.
- 1.07 Field Measurements and Coordination:
- A. The intent of the drawings and specifications is to obtain a complete and satisfactory installation. Separate divisional drawings and specifications shall not relieve the Contractor or subcontractors from full compliance of work of his trade indicated on any of the drawings or in any section of the specifications.
 - B. Verify all field dimensions and locations of equipment to insure close, neat fit with other trades' work. Make use of all contract documents and approved shop drawings to verify exact dimension and locations.
 - C. Coordinate work in this division with all other trades in proper sequence to ensure that the total work is completed within contract time schedule and with a minimum cutting and patching.
 - D. Locate all apparatus symmetrical with architectural elements. Install to exact height and locations when shown on architectural drawings. When locations are shown only on mechanical drawings, be guided by architectural details and conditions existing at job and correlate this work with that of others.
 - E. Install work as required to fit structure, avoid obstructions, and retain clearance, headroom, openings and passageways. Cut no structural members without written approval.
 - F. Carefully examine any existing conditions, piping, and premises. Compare drawings with existing conditions. Report any observed discrepancies. It shall be the Contractor's responsibility to properly coordinate the work and to identify problems in a timely manner. Written instructions will be issued to resolve discrepancies.
 - G. Because of the small scale of the drawings, it is not possible to indicate all offsets and fittings or to locate every accessory. Drawings are essentially diagrammatic. Study carefully the sizes and locations of structural members, wall and partition locations, trusses, and room dimensions and take actual measurements on the job. Locate piping, ductwork, equipment and accessories with sufficient space for installing and servicing. Contractor is responsible for accuracy of his measurements and for coordination with all trades. Contractor shall not order materials or perform work without such verification. No extra compensation will be allowed because field measurements vary from the dimensions on the

drawings. If field measurements show that equipment or piping cannot be fitted, the Architect/Engineer shall be consulted. Remove and relocate, without additional compensation, any item that is installed and is later found to encroach on space assigned to another use.

1.08 Guarantee:

- A. The Contractor shall guarantee labor, materials and equipment for a period of one (1) year from Final Completion, or from Owner's occupancy, whichever is earlier. Contractor shall make good any defects and shall include all necessary adjustments to and replacement of defective items without expense to the Owner.
- B. Owner reserves right to make emergency repairs as required to keep equipment in operation without voiding Contractor's Guarantee Bond nor relieving Contractor of his responsibilities during guarantee period.

1.09 Approval Submittals:

- A. When approved, the submittal control log and submittals shall be an addition to the specifications herewith, and shall be of equal force in that no deviation will be permitted except with the approval of the Architect/Engineer.
 - 1. Shop drawings, product literature, and other approval submittals will only be reviewed if they are submitted in full accordance with the General and Supplementary Conditions and Division 1 Specification sections and the following.
 - 2. Submittals shall be properly organized in accordance with the approved submittal control log.
 - 3. Submittals shall not include items from more than one specification section in the same submittal package unless approved in the submittal control log.
 - 4. Submittals shall be properly identified by a cover sheet showing the project name, Architect and Engineer names, submittal control number, specification section, a list of products or item names with model numbers in the order they appear in the package, and spaces for approval stamps. A sample cover sheet is included at the end of this section.
 - 5. Submittals shall have been reviewed and approved by the General Contractor (or Prime Contractor). Evidence of this review and approval shall be an "Approved" stamp with a signature and date on the cover sheet.
 - 6. Submittals that include a series of fixtures or devices (such as plumbing fixtures or valves) shall be organized by the fixture number or valve type and be marked accordingly. Each fixture must include all items associated with that fixture regardless of whether or not those items are used on other fixtures.

7. The electrical design shown on the drawings supports the mechanical equipment basis of design specifications at the time of design. If mechanical equipment is submitted with different electrical requirements, it is the responsibility of the mechanical contractor to resolve all required electrical design changes (wire and conduit size, type of disconnect or overload protection, point(s) of connection, etc.) and clearly show the new electrical design on the mechanical submittal with a written statement that this change will be provided at no additional cost. Mechanical submittals made with no written reference to the electrical design will be presumed to work with the electrical design. Any corrections required will be at no additional cost.
- B. If the shop drawings show variation from the requirements of contract because of standard shop practice or other reasons, the Contractor shall make specific mention of such variation in writing in his letter of transmittal and on the submittal cover sheet in order that, if acceptable, Contractor will not be relieved of the responsibility for executing the work in accordance with the contract.
 - C. Review of shop drawings, product literature, catalog data, or schedules shall not relieve the Contractor from responsibility for deviations from contract drawings or specifications, unless he has in writing called to the attention of the Architect/Engineer each such deviation in writing at the time of submission, nor shall it relieve him from responsibility for errors of any sort in shop drawings, product literature, catalog data, or schedules. Any feature or function specified but not mentioned in the submittal shall be assumed to be included per the specification.
 - D. Submit shop drawings as called for in other sections after award of the contract and before any material is ordered or fabricated. Shop drawings shall consist of plans, sections, elevations and details to scale (not smaller than 1/4" per foot), with dimensions clearly showing the installation. Direct copies of small scale project drawings issued to the Contractor are not acceptable. Drawings shall take into account equipment furnished under other sections and shall show space allotted for it. Include construction details and materials.
- 1.10 Test Reports and Verification Submittals: Submit test reports, certifications and verification letters as called for in other sections. Contractor shall coordinate the required testing and documentation of system performance such that sufficient time exists to prepare the reports, submit the reports, review the reports and take corrective action within the scheduled contract time.
- 1.11 O&M Data Submittals: Submit Operation and Maintenance data as called for in other sections. When a copy of approval submittals is included in the O&M Manual, only the final "Approved" or "Approved as Noted" copy shall be used. Contractor shall organize these data in the O&M Manuals tabbed by specification number. Prepare O&M Manuals as required by Division 1 and as described herein. Submit manuals at the Substantial Completion inspection.

PART 2 PRODUCTS

2.01 All materials shall be new or Owner-supplied reused as shown on the drawings, the best of their respective kinds, suitable for the conditions and duties imposed on them at the building and shall be of reputable manufacturers. The description, characteristics, and requirements of materials to be used shall be in accordance with qualifying conditions established in the following sections.

2.02 Equipment and Materials:

- A. Shall be new and the most suitable grade for the purpose intended. Equipment furnished under this division shall be the product of a manufacturer regularly engaged in the manufacture of such items for a period of three years. Where practical, all of the components shall be products of a single manufacturer in order to provide proper coordination and responsibility. Where required, Contractor shall furnish proof of installation of similar units or equipment.
- B. Each item of equipment shall bear a name plate showing the manufacturer's name, trade name, model number, serial number, ratings and other information necessary to fully identify it. This plate shall be permanently mounted in a prominent location and shall not be concealed, insulated or painted.
- C. The label of the approving agency, such as UL, IBR, ASME, ARI, AMCA, by which a standard has been established for the particular item shall be in full view.
- D. The equipment shall be essentially the standard product of a manufacturer regularly engaged in the production of such equipment and shall be a product of the manufacturer's latest design.
- E. A service organization with personnel and spare parts shall be available within two hours for each type of equipment furnished.
- F. Install in accordance with manufacturer's recommendations. Place in service by a factory trained representative where required.
- G. Materials and equipment are specified herein by a single or by multiple manufacturers to indicate quality, material and type of construction desired. Manufacturer's products shown on the drawings have been used as basis for design; it shall be the Contractor's responsibility to ascertain that alternate manufacturer's products, or the particular products of named manufacturers, meet the detailed specifications and that size and arrangement of equipment are suitable for installation.
- H. Model Numbers: Catalog numbers and model numbers indicated in the drawings and specifications are used as a guide in the selection of the equipment and are only listed for the contractor's convenience. The contractor shall determine the actual model numbers for ordering materials in accordance with the written description of each item and with the intent of the drawings and specifications.

2.03 Requests for Substitution:

- A. Where a particular system, product or material is specified by name, consider it as standard basis for bidding, and base proposal on the particular system, product or material specified.
- B. Requests by Contractor for substitution will be considered only when reasonable, timely, fully documented, and qualifying under one or more of the following circumstances.
 - 1. Required product cannot be supplied in time for compliance with Contract time requirements.
 - 2. Required product is not acceptable to governing authority, or determined to be non-compatible, or cannot be properly coordinated, warranted or insured, or has other recognized disability as certified by Contractor.
 - 3. Substantial cost advantage is offered Owner after deducting offsetting disadvantages including delays, additional compensation for redesign, investigation, evaluation and other necessary services and similar considerations.
- C. All requests for substitution shall contain a "Comparison Schedule" and clearly and specifically indicate any and all differences or omissions between the product specified as the basis of design and the product proposed for substitution. Differences shall include but shall not be limited to data as follows for both the specified and substituted products:

- Principal of operation.
- Materials of construction or finishes.
- Thickness of gauge of materials.
- Weight of item.
- Deleted features or items.
- Added features or items.
- Changes in other work caused by the substitution.
- Performance curves.

If the approved substitution contains differences or omissions not specifically called to the attention of the Architect/Engineer, the Owner reserves the right to require equal or similar features to be added to the substituted products (or to have the substituted products replaced) at the Contractor's expense.

PART 3 EXECUTION

3.01 Workmanship: All materials and equipment shall be installed and completed in a first-class workmanlike manner and in accordance with the best modern methods and practice. Any materials installed which do not present an orderly and reasonably neat and/or workmanlike appearance, or do not allow adequate space for maintenance, shall be removed and replaced when so directed by the Architect/Engineer.

3.02 Coordination:

- A. The Contractor shall be responsible for full coordination of the mechanical systems with shop drawings of the building construction so the proper openings and sleeves or supports are provided for piping, ductwork, or other equipment passing through slabs or walls.
- B. Any additional steel supports required for the installation of any mechanical equipment, piping, or ductwork shall be furnished and installed under the section of the specifications requiring the additional supports.
- C. It shall be the Contractor's responsibility to see that all equipment such as valves, dampers, filters and such other apparatus or equipment that may require maintenance and operation are made easily accessible, regardless of the diagrammatic location shown on the drawings.
- D. All connections to fixtures and equipment shown on the drawings shall be considered diagrammatic unless otherwise indicated by detail. The actual connections shall be made to fully suit the requirements of each case and adequately provide for expansion and servicing.
- E. The contractor shall protect equipment, material, and fixtures at all times. He shall replace all equipment, material, and fixtures which are damaged as a result of inadequate protection.
- F. Prior to starting and during progress of work, examine work and materials installed by others as they apply to work in this division. Report conditions which will prevent satisfactory installation.
- G. Start of work will be construed as acceptance of suitability of work of others.

3.03 Interruption of Service: Before any equipment is shut down for disconnecting or tie-ins, arrangements shall be made with the Architect/Engineer and this work shall be done at the time best suited to the Owner. This will typically be on weekends and/or holidays and/or after normal working hours. Services shall be restored the same day unless prior arrangements are made. All overtime or premium costs associated with this work shall be included in the base bid.

3.04 Phasing: Provide all required temporary valves, piping, ductwork, equipment and devices as required. Maintain temporary services to areas as required. Remove all temporary material and equipment on completion of work unless Engineer concurs that such material and equipment would be beneficial to the Owner on a permanent basis.

3.05 Cutting and Patching: Notify General Contractor to do all cutting and patching of all holes, chases, sleeves, and other openings required for installation of equipment furnished and installed under this section. Utilize experienced trades for cutting and patching. Obtain permission from Architect/Engineer before cutting any structural items.

- 3.06 Equipment Setting: Bolt equipment directly to concrete pads or vibration isolators as required, using hot-dipped galvanized anchor bolts, nuts and washers. Level equipment.
- 3.07 Painting: Touch-up factory finishes on equipment located inside and outside shall be done under Division 23. Obtain matched color coatings from the manufacturer and apply as directed. If corrosion is found during inspection on the surface of any equipment, clean, prime, and paint, as required.
- 3.08 Clean-up: Thoroughly clean all exposed parts of apparatus and equipment of cement, plaster, and other materials and remove all oil and grease spots. Repaint or touch up as required to look like new. During progress of work, contractor is to carefully clean up and leave premises and all portions of building free from debris and in a clean and safe condition.
- 3.09 Start-up and Operational Test: Start each item of equipment in strict accordance with the manufacturer's instructions; or where noted under equipment specification, start-up shall be done by a qualified representative of the manufacturer. Alignment, lubrication, safety, and operating control shall be included in start-up check.
- 3.10 Climate Control: Operate heating and cooling systems as required after initial startup to maintain temperature and humidity conditions to avoid freeze damage and warping or sagging of ceilings and carpet.
- 3.11 Record Drawings:
- A. During the progress of the work the Contractor shall record on their field set of drawings the exact location, as installed, of all piping, ductwork, equipment, and other systems which are not installed exactly as shown on the contract drawings.
 - B. Upon completion of the work, record drawings shall be prepared as described in the General Conditions, Supplementary Conditions, and Division 1 sections.
- 3.12 Acceptance:
- A. Punch List: Submit written confirmation that all punch lists have been checked and the required work completed.
 - B. Instructions: At completion of the work, provide a competent and experienced person who is thoroughly familiar with project, for one day to instruct permanent operating personnel in operation of equipment and control systems. This is in addition to any specific equipment operation and maintenance training.
 - C. Operation and Maintenance Manuals: Furnish four complete manuals bound in ring binders with Table of Contents, organized, and tabbed by specification section. Manuals shall contain:
 - Detailed operating instructions and instructions for making minor adjustments.
 - Complete wiring and control diagrams.

Routine maintenance operations.

Manufacturer's catalog data, service instructions, and parts lists for each piece of operating equipment.

Copies of approved submittals.

Copies of all manufacturer's warranties.

Copies of test reports and verification submittals.

- D. Record Drawings: Submit record drawings.
- E. Test and Balance Report: Submit four certified copies. The Report shall be submitted for review prior to the Substantial Completion Inspection unless otherwise required by Division 1.
- F. Acceptance will be made on the basis of tests and inspections of job. A representative of firm that performed test and balance work shall be in attendance to assist. Contractor shall furnish necessary mechanics to operate system, make any necessary adjustments and assist with final inspection.

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SECTION 23 05 20 - PIPES AND PIPE FITTINGS

PART 1 GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 This section is a Division-23 Basic Mechanical Materials and Methods section, and is part of each Division- 22 and 23 section making reference to pipes and pipe fittings specified herein.
- 1.03 Extent of pipes and pipe fittings required by this section is indicated on drawings and/or specified in other Division-22 and 23 sections.
- 1.04 Codes and Standards:
- A. Welding: Qualify welding procedures, welders and operators in accordance with ASME B31.1, or ASME B31.9, as applicable, for shop and project site welding of piping work.
 - B. Brazing: Certify brazing procedures, brazers, and operators in accordance with ASME Boiler and Pressure Vessel Code, Section IX, for shop and job-site brazing of piping work.
- 1.05 Test Report and Verification Submittals:
- A. Submit welding certification for all welding installers.
 - B. Submit brazing certification for all brazing installers.

PART 2 PRODUCTS

- 2.01 Piping Materials: Provide pipe and tube of type, joint type, grade, size and weight (wall thickness or Class) indicated for each service. Where type, grade or class is not indicated, provide proper selection as determined by Installer for installation requirements, and comply with governing regulations and industry standards.
- 2.02 Pipe/Tube Fittings: Provide factory-fabricated fittings of type, materials, grade, class and pressure rating indicated for each service and pipe size. Provide sizes and types matching pipe, tube, valve or equipment connection in each case. Where not otherwise

indicated, comply with governing regulations and industry standards for selections, and with pipe manufacturer's recommendations where applicable.

2.03 Piping Materials/Products:

A. Soldering Materials:

1. Tin-Antimony (95-5) Solder: ASTM B-32, Grade 95TA.
2. Silver-Phosphorus Solder: ASTM B-32, Grade 96TS.

B. Pipe Thread Tape: Teflon tape.

C. Protective Coating: Koppers Bitumastic No. 505 or equal.

D. Gaskets for Flanged Joints: ANSI B16.21; full-faced for cast iron flanges; raised-face for steel flanges, unless otherwise noted.

E. Welding Materials: Comply with Section II, Part C, ASME Boiler and Pressure Vessel Code for welding materials. Materials shall be determined by installer to comply with installation requirements.

F. Brazing Materials: Silver content of not less than 15%. Materials shall be determined by installer to comply with installation requirements.

2.04 Copper Tube and Fittings:

A. Copper Tube:

1. Copper Tube: ASTM B88; Type K or L as indicated for each service; hard-drawn temper unless specifically noted as annealed.
2. ACR Copper Tube: ASTM B280.
3. DWV Copper Tube: ASTM B306.

B. Fittings:

1. Wrought-Copper Solder-Joint Fittings: ANSI B16.22.
2. Copper Tube Unions: Provide standard products recommended by manufacturer for use in service indicated.
3. Wrought-Copper Solder-Joint Drainage Fittings: ANSI B16.29.
4. Cast-Copper Flared Tube Fittings: ANSI B16.26.

2.05 Plastic Pipes and Fittings:

- A. Pipes:
 - 1. PVC DWV Pipe: ASTM D-2665, Schedule 40.
 - 2. PVC Sewer Pipe: ASTM D-3034.
- B. Fittings:
 - 1. PVC Solvent Cement: ASTM D-2564.
 - 2. PVC DWV Socket: ASTM D-2665.
 - 3. PVC Sewer Socket: ASTM D-3034.

PART 3 EXECUTION

3.01 Installation

- A. General: Install pipes and pipe fittings in accordance with recognized industry practices which will achieve permanently-leak proof piping systems, capable of performing each indicated service without piping failure. Install each run with minimum joints and couplings, but with adequate and accessible unions for disassembly and maintenance or replacement of valves and equipment. Reduce sizes (where indicated) by use of reducing fittings, not bushings. Align piping accurately at connections, within 1/16" misalignment tolerance.
- B. Comply with ANSI B31 Code for Pressure Piping.
- C. Locate piping runs, except as otherwise indicated, vertically and horizontally (pitched to drain) and avoid diagonal runs wherever possible. Orient horizontal runs parallel with walls and column lines. Locate runs as shown or described by diagrams, details and notations or, if not otherwise indicated, run piping in shortest route which does not obstruct usable space or block access for servicing building and its equipment. Hold piping close to walls, overhead construction, columns and other structural and permanent-enclosure elements of building; limit clearance to ½" where furring is shown for enclosure or concealment of piping, but allow for insulation thickness, if any. Where possible, locate insulated piping for 1" clearance outside insulation.
- D. Concealed Piping: Unless specifically noted as "Exposed" on the drawings, conceal piping from view in finished and occupied spaces, by locating in column enclosures, chases, in hollow wall construction or above suspended ceilings; do not encase horizontal runs in solid partitions, except as indicated.
- E. Electrical Equipment Spaces: Do not run piping through transformer vaults and other electrical, communications, or data equipment spaces and enclosures unless shown. Install drip pan under piping that must run through electrical spaces.

1. Cut pipe from measurements taken at the site, not from drawings. Keep pipes free of contact with building construction and installed work.

3.02 Piping System Joints: Provide joints of the type indicated in each piping system.

- A. Solder copper tube-and-fitting joints where indicated, in accordance with recognized industry practice. Cut tube ends squarely, ream to full inside diameter, and clean outside of tube ends and inside of fittings. Apply non-acid type solder flux to joint areas of both tubes and fittings. Insert tube full depth into fitting, and solder in manner which will draw solder full depth and circumference of joint. Wipe excess solder from joint before it hardens.
- B. Plastic Pipe Joints: Comply with manufacturer's instructions and recommendations, and with applicable industry standards.
 1. Solvent-cemented joints shall be made in accordance with ASTM D-2235 and ASTM F-402.
 2. PVC sewer pipe bell/gasket joints shall be installed in accordance with ASTM D-2321.
- C. Braze copper tube-and-fitting joints where indicated, in accordance with ANSI B.31.

3.03 Piping Installation

- A. Install piping to allow for expansion and contraction.
- B. Isolate all copper tubing from steel and concrete by wrapping the pipe at the contact point, and for one inch on each side, with a continuous plastic sleeve. Isolate all copper tubing installed in block walls with a continuous plastic sleeve.

END OF SECTION 23 05 20

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SECTION 23 05 21 - PIPING SPECIALTIES

PART 1 - GENERAL

- 1.01 Drawings and general provisions of contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 This section is a Division-23 Basic Mechanical Materials and Methods section, and is part of each Division- 23 section making reference to or requiring piping specialties specified herein.

PART 2 - PRODUCTS

- 2.01 General: Provide factory-fabricated piping specialties recommended by manufacturer for use in service indicated. Provide piping specialties of types and pressure ratings indicated for each service, or if not indicated, provide proper selection as determined by Installer to comply with installation requirements. Provide sizes as indicated, and connections, which properly mate with pipe, tube, and equipment connections. Where more than one type is indicated, selection is Installer's option.
- 2.02 Escutcheons:
- A. General: Provide pipe escutcheons as specified herein with inside diameter closely fitting pipe outside diameter, or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Furnish pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish for unoccupied areas.
- B. Pipe Escutcheons: Provide cast brass or sheet brass escutcheons, solid or split hinged.
- 2.03 Dielectric Unions: Provide standard products recommended by manufacturer for use in service indicated, which effectively isolate ferrous from non-ferrous piping (electrical conductance), prevent galvanic action and stop corrosion. .
- 2.04 Fire Barrier Penetration Seals:
- A. Provide seals for any opening through fire-rated walls, floors, or ceilings used as passage for mechanical components such as piping or ductwork in accordance with the requirements of Division 7.

2.05 Fabricated Piping Specialties:

- A. Drip Pans: Provide drip pans fabricated from corrosion-resistant sheet metal with watertight joints, and with edges turned up 2-1/2". Reinforce top, either by structural angles or by rolling top over 1/4" steel rod. Provide hole, gasket, and flange at low point for watertight joint and 1" drain line connection.
- B. Pipe Sleeves: Provide pipe sleeves of one of the following:
 - 1. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gages: 3" and smaller, 20 gage; 4" to 6" 16 gage; over 6", 14 gage.
 - 2. Steel-Pipe: Fabricate from Schedule 40 galvanized steel pipe; remove burrs.
 - 3. Iron-Pipe: Fabricate from cast-iron or ductile-iron pipe; remove burrs.
- C. Sleeve Seals: Provide sleeve seals for sleeves located in foundation walls below grade, or in exterior walls, of one of the following:
 - 1. Caulking and Sealant: Provide foam or caulking and sealant compatible with piping materials used.

PART 3 - EXECUTION

- 3.01 Pipe Escutcheons: Install pipe escutcheons on each pipe penetration through floors, walls, partitions, and ceilings where penetration is exposed to view; and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.
- 3.02 Dielectric Nipples: Install at each piping joint between ferrous and non-ferrous piping. Comply with manufacturer's installation instructions.
- 3.03 Fire Barrier Penetration Seals: Provide pipe sleeve as required. Fill entire opening with sealing compound. Adhere to manufacturer's installation instructions. Refer to Division 7.
- 3.04 Drip Pans: Locate drip pans under piping passing over or within 3' horizontally of electrical equipment, and elsewhere as indicated. Hang from structure with rods and building attachments, weld rods to sides of drip pan. Brace to prevent sagging or swaying. Connect 1" drain line to drain connection, and run to nearest plumbing drain or elsewhere as indicated.
- 3.05 Pipe Sleeves: Install pipe sleeves of types indicated where piping passes through walls, floors, ceilings, and roofs. Do not install sleeves through structural members of work, except as detailed on drawings, or as reviewed by Architect/Engineer. Install sleeves accurately centered on pipe runs. Size sleeves so that piping and insulation (if

any) will have free movement in sleeve, including allowance for thermal expansion; but not less than 2 pipe sizes larger than piping run. Where insulation includes vapor-barrier jacket, provide sleeve with sufficient clearance for installation. Install length of sleeve equal to thickness of construction penetrated, and finish flush to surface; except floor sleeves. Extend floor sleeves ¼" above level floor finish, and ¾" above floor finish sloped to drain. Provide temporary support of sleeves during placement of concrete and other work around sleeves, and provide temporary closure to prevent concrete and other materials from entering sleeves.

- A. Install sleeves in fire-rated assemblies in accordance with the listing of the assembly and the fire barrier sealant.
- B. Install sheet-metal sleeves at interior partitions and ceilings other than suspended ceilings. Fill annular space with caulking or fire barrier sealant as required.
- C. Install iron-pipe sleeves at all foundation wall penetrations and at exterior penetrations; both above and below grade. Fill annular space with caulking or mechanical sleeve seals.

END OF SECTION 23 05 21

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SECTION 23 05 23 - VALVES

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to the work of this section.
- 1.02 This section is a Division-23 Basic Materials and Methods section, and is part of each Division- 22 and 23 section making reference to or requiring valves specified herein.
- 1.03 Extent of valves required by this section is indicated on drawings and/or specified in other Division-22 and 23 sections.
- 1.04 Quality Assurance:
- A. Valve Dimensions: For face-to-face and end-to-end dimensions of flanged or welding-end valve bodies, comply with ANSI B16.10.
 - B. Valve Types: Provide valves of same type by same manufacturer.
- 1.05 Approval Submittals: When required by other Division-23 sections, submit product data, catalog cuts, specifications, and dimensioned drawings for each type of valve. Include pressure drop curve or chart for each type and size of valve. Submit valves with Division-23 section using the valves, not as a separate submittal.
- A. Gate Valves. Type GA.
 - B. Check Valves. Type CK.
 - C. Ball Valves. Type BA.
- 1.06 O&M Data Submittals: Submit a copy of approval submittals. Submit installation instructions, maintenance data and spare parts lists for each type of valve. Include this data in the O&M Manual.

PART 2 - PRODUCTS

- 2.01 General: Provide factory-fabricated valves recommended by manufacturer for use in service indicated. Provide valves of types and pressure ratings indicated; provide

proper selection as determined by Installer to comply with specifications and installation requirements. Provide sizes as indicated, and connections which properly mate with pipe, tube, and equipment connections.

2.02 Acceptable Manufacturers: Subject to compliance with requirements, provide valves of one of the producers listed for each valve type. Other valve manufacturers list names are also acceptable. The model numbers are listed for contractor's convenience only. In the case of a model number discrepancy, the written description shall govern.

2.03 Gate Valves:

A. Packing: Select valves designed for repacking under pressure when fully opened, equipped with non-asbestos packing suitable for intended service. Select valves designed so back seating protects packing and stem threads from fluid when valve is fully opened, and equipped with gland follower.

B. Comply with the following standards:

Cast Iron Valves: MSS SP-70. Cast Iron Gate Valves, Flanged and Threaded Ends.

Bronze Valves: MSS SP-80. Bronze Gate, Globe, Angle and Check Valves.

Steel Valves: ANSI B16.34. Steel Standard Class Valve Ratings.

C. Types of gate (GA) valves:

1. Threaded Ends 2" and Smaller (GA1): Class 125, bronze body, screwed bonnet, rising stem, solid wedge. Stockham B-100. Nibco T-111. Crane 428. Milwaukee 148.
2. Soldered Ends 2" and Smaller (GA2): Class 125, bronze body, screwed bonnet, non-rising stem, solid wedge. Stockham B-108 or B-109. Nibco S-111. Crane 1334. Milwaukee 149.
3. Flanged Ends 2½" and Larger (GA3): Class 125, iron body, bronze mounted, bolted bonnet, rising stem, OS&Y, solid wedge. Stockham G-623. Nibco F617-0. Crane 465½. Milwaukee F2885.
4. Threaded Ends 2" and Smaller (GA4): Class 150, bronze body, screwed bonnet, rising stem, solid wedge. Stockham B-122. Nibco T-131. Crane 431. Milwaukee 1150.
5. Soldered Ends 2" and Smaller (GA5): Class 150, bronze body, screwed bonnet, rising stem, solid wedge. Stockham B-124. Nibco S-134. Milwaukee 1169.
6. Threaded Ends 2" and Smaller (GA6): 175 WWP, bronze body, screwed bonnet, rising stem, OS&Y, solid wedge, UL-listed. Stockham B-133. Nibco T-104-0.

7. Flanged Ends 2½" and Larger (GA7): 175 WWP, iron body, bolted bonnet, rising stem, OS&Y, solid wedge, UL listed. Stockham G-634. Nibco F-607-0TS
8. Threaded Ends 2" and Smaller (GA8): Class 200, bronze body, union bonnet, rising stem, solid wedge, renewable seat. Stockham B-132. Nibco T-154-SS. Milwaukee 1174.
9. Flanged Ends 2½" and Larger (GA9): Class 250, iron body bronze mounted, bolted bonnet, rising stem, OS&Y, solid wedge. Stockham F-667. Nibco F-667-0. Crane 7½E. Milwaukee F-2894.
10. Threaded Ends 2" and Smaller (GA10): Class 300, bronze body, union bonnet, rising stem, solid wedge, renewable seat. Stockham B-145. Nibco T-174-SS. Crane 634E. Milwaukee 1184.
11. Flanged Ends 2½" and Larger (GA11): Class 300, cast steel body, bolted bonnet, rising stem, solid wedge, seal-welded seat rings. Provide trim to match use. Stockham 30-0F. Crane 33.
12. Flanged Ends 2½" and Larger (GA12): 300 WWP, iron body, bolted bonnet, bronze mounted, rising stem, OS&Y, solid wedge, UL-listed. Stockham F-670. Nibco F-697-0.

2.04 Ball Valves:

- A. General: Select with port area equal to or greater than connecting pipe area, include seat ring designed to hold sealing material.
- B. Construction: Ball valves shall be rated for 150 psi saturated steam and 600 psi non-shock cold water. Pressure containing parts shall be constructed of ASTM B-584 alloy 844, or ASTM B-124 alloy 377. Valves shall be furnished with blow-out proof bottom loaded stem constructed of ASTM B-371 alloy 694 or other approved low zinc material. Provide TFE packing, TFE thrust washer, chrome-plated ball and reinforced teflon seats. Valves 1" and smaller shall be full port design. Valves 1¼" and larger shall be conventional port design. Stem extensions shall be furnished for use in insulated piping where insulation exceeds ½" thickness.
- C. Comply with the following standards:

MSS SP-72. Ball Valves with Flanged or Butt Welding Ends for General Service.
MSS SP-110. Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.
- D. Types of ball (BA) valves:
 1. Threaded Ends 2" and Smaller (BA1): Bronze two-piece full port body with adjustable stem packing. Nibco T-585-70. Stockham S216-BR-R-T.

Milwaukee BA125. Apollo 77-100.

2. Soldered Ends 2" and Smaller (BA2): Bronze three-piece full port body with adjustable stem packing. Nibco S-595-Y-66. Milwaukee BA350. Apollo 82-200.
3. Threaded Ends 1" and Smaller (BA3): Bronze two-piece full port body, UL listed (UL 842) for use with flammable liquids and LP gas. Nibco T-585-70-UL.
4. Threaded Ends 2" and Smaller (BA4): 175 WWP, bronze two-piece body, UL listed for fire protection service. Nibco KT-585-70-UL and KT-580-70-UL.
5. Threaded Ends 2" and Smaller (BA5): 400 WWP, bronze two-piece body, for fire protection service. Nibco KT-580.
6. Threaded Ends 2½" and Smaller (BA6): 300 WWP, bronze three-piece body, gear operator with handwheel, indicator flag, accepts tamper switch, for fire protection, UL listed. Nibco T-505-4 and G-505-4.
7. Flanged Ends 2½" and Larger (BA7): Class 150, carbon steel full bore two-piece body with adjustable stem packing. Nibco F515-CS series. Apollo 88-240.

2.05 Valve Features:

- A. General: Provide valves with features indicated and, where not otherwise indicated, provide proper valve features as determined by Installer for installation requirements. Comply with ANSI B31.1
- B. Valve features specified or required shall comply with the following:
 1. Threaded: Provide valve ends complying with ANSI B2.1.
 2. Solder-Joint: Provide valve ends complying with ANSI B16.18.
 3. Trim: Fabricate pressure-containing components of valve, including stems (shafts) and seats from brass or bronze materials, of standard alloy recognized in valve manufacturing industry unless otherwise specified.
 4. Non-Metallic Disc: Provide non-metallic material selected for service indicated in accordance with manufacturer's published literature.
 5. Renewable Seat: Design seat of valve with removable disc, and assemble valve so disc can be replaced when worn.

PART 3 - EXECUTION

3.01 Installation:

- A. General: Install valves where required for proper operation of piping and equipment, including valves in branch lines to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward below horizontal plane.
 - B. Insulation: Where insulation is indicated, install extended-stem valves, arranged in proper manner to receive insulation.
 - C. Applications Subject to Corrosion: Do not install bronze valves and valve components in direct contact with steel, unless bronze and steel are separated by dielectric insulator.
 - D. Mechanical Actuators: Install mechanical actuators as recommended by valve manufacturer.
- 3.02 Selection of Valve Ends (Pipe Connections): Except as otherwise indicated, select and install valves with the following ends or types of pipe/tube connections:
- A Tube Size 2" and Smaller: Threaded valves.
 - B Pipe Size 2" and Smaller: Threaded valves.
 - C Pipe Size 2½" and Larger: Flanged valves.
- 3.03 Non-Metallic Disc: Limit selection and installation of valves with non-metallic disc to locations indicated and where foreign material in piping system can be expected to prevent tight shutoff of metal seated valves.
- 3.04 Renewable Seats: Select and install valves with renewable seats, except where otherwise indicated.

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SECTION 23 05 29 - SUPPORTS, ANCHORS, AND SEALS

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 This section is a Division-23 Basic Materials and Methods section, and is a part of each Division-22 and 23 section making reference to or requiring supports, anchors, and seals specified herein.
- 1.03 Extent of supports, anchors, and seals required by this section is indicated on drawings and/or specified in other Division-22 and 23 sections.
- 1.04 Code Compliance: Comply with applicable codes pertaining to product materials and installation of supports, anchors, and seals.
- 1.05 MSS Standard Compliance:
- A. Provide pipe hangers and supports of which materials, design, and manufacture comply with ANSI/MSS SP-58.
 - B. Select and apply pipe hangers and supports, complying with MSS SP-69.
 - C. Fabricate and install pipe hangers and supports, complying with MSS SP-89.
 - D. Terminology used in this section is defined in MSS SP-90.

PART 2 - PRODUCTS

- 2.01 Acceptable Manufacturers: Subject to compliance with requirements, provide supports and hangers by Grinnel, Michigan Hanger Company, B-Line Systems, or approved equal.
- 2.02 Horizontal-Piping Hangers and Supports: Except as otherwise indicated, provide factory-fabricated horizontal-piping hangers and supports complying with ANSI/MSS SP-58, of one of the following MSS types listed, selected by Installer to suit horizontal-piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Use only one type by one manufacturer for each piping service. Select size of hangers and supports to exactly fit pipe size for bare piping, and to exactly fit around piping insulation with saddle or shield for insulated piping. Provide copper-plated hangers and supports for copper-piping systems.

- A. Adjustable Steel Clevises: MSS Type 1.
 - B. Steel Double Bolt Pipe Clamps: MSS Type 3.
 - C. Adjustable Steel Band Hangers: MSS Type 7.
 - D. Steel Pipe Clamps: MSS Type 4.
 - E. Pipe Stanchion Saddles: MSS Type 37, including steel pipe base support and cast-iron floor flange.
 - F. Single Pipe Rolls: MSS Type 41.
 - G. Adjustable Roller Hanger: MSS Type 43.
 - H. Pipe Roll Stands: MSS Type 44 or Type 47.
- 2.03 Vertical-Piping Clamps: Except as otherwise indicated, provide factory-fabricated vertical-piping clamps complying with ANSI/MSS SP-58, of one of the following MSS types listed, selected by Installer to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.
- A. Two-Bolt Riser Clamps: MSS Type 8.
 - B. Four-Bolt Riser Clamps: MSS Type 42.
- 2.04 Hanger-Rod Attachments: Except as otherwise indicated, provide factory-fabricated hanger-rod attachments complying with ANSI/MSS SP-58, of one of the following MSS types listed, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-69 and manufacturer's published product information. Use only one type by one manufacturer for each piping service. Select size of hanger-rod attachments to suit hanger rods. Provide copper-plated hanger-rod attachments for copper-piping systems.
- A. Steel Turnbuckles: MSS Type 13.
 - B. Malleable Iron Sockets: MSS Type 16.
- 2.05 Building Attachments: Except as otherwise indicated, provide factory-fabricated building attachments complying with ANSI/MSS SP-58, of one of the following MSS types listed, selected by Installer to suit building substrate conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods.
- A. Center Beam Clamps: MSS Type 21.

- B. C-Clamps: MSS Type 23.
 - C. Malleable Beam Clamps: MSS Type 30.
 - D. Side Beam Brackets: MSS Type 34.
 - E. Concrete Inserts: MSS Type 18.
- 2.06 Saddles and Shields: Except as otherwise indicated, provide saddles or shields under piping hangers and supports, factory-fabricated, for all insulated piping. Size saddles and shields for exact fit to mate with pipe insulation.
- A. Protection Shields: MSS Type 40; of length recommended by manufacturer to prevent crushing of insulation.
 - B. Protection Saddles: MSS Type 39; use with rollers, fill interior voids with segments of insulation matching adjoining insulation.
- 2.07 Miscellaneous Materials:
- A. Metal Framing: Provide products complying with NEMA STD ML 1.
 - B. Steel Plates, Shapes and Bars: Provide products complying with ANSI/ASTM A 36.
 - C. Cement Grout: Portland cement (ANSI/ASTM C 150, Type I or Type III) and clean uniformly graded, natural sand (ANSI/ASTM C 404, Size No. 2). Mix at a ratio of 1.0 part cement to 3.0 parts sand, by volume, with minimum amount of water required for placement and hydration.
 - D. Heavy-Duty Steel Trapezes: Fabricate from steel shapes or continuous channel struts selected for loads required; weld steel in accordance with AWS standards.

PART 3 - EXECUTION

3.01 Preparation

- A. Proceed with installation of hangers, supports and anchors only after required building structural work has been completed in areas where the work is to be installed. Correct inadequacies including (but not limited to) proper placement of inserts, anchors and other building structural attachments.
- B. Prior to installation of hangers, supports, anchors and associated work, Installer shall meet at project site with Contractor, installer of each component of associated work, and installers of other work requiring coordination with work of this section for purpose of reviewing material selections and procedures to be followed in performing the work in compliance with requirements specified.

3.02 Installation of Building Attachments:

- A. Install building attachments at required locations within concrete or on structural steel for proper piping support. Space attachments within maximum piping span length indicated in MSS SP-69. Install additional building attachments where support is required for additional concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten insert securely to forms. Where concrete with compressive strength less than 2500 psi is indicated, install reinforcing bars through openings at top of inserts.
- B. In areas of work requiring attachments to existing concrete, use self drilling rod inserts, Phillips Drill Co., "Red-Head" or equal.

3.03 Installation of Hangers and Supports:

- A. General: Install hangers, supports, clamps and attachments to support piping properly from building structure; comply with MSS SP-69. Arrange for grouping of parallel runs of horizontal piping to be supported together on trapeze type hangers where possible. Install supports with maximum spacings complying with MSS SP-69 or as listed herein, whichever is most limiting. Where piping of various sizes is to be supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe. Do not use wire or perforated metal to support piping, and do not support piping from other piping.
 - 1. Horizontal steel pipe and copper tube 1-1/4" diameter and smaller: support on 6 foot centers.
 - 2. Horizontal steel pipe and copper tube 1-1/2" diameter and larger: support on 10 foot centers.
 - 3. Vertical steel pipe and copper tube: support at each floor.
 - 4. Plastic pipe: support in accordance with manufacturer's recommendations.
 - 5. Fire protection piping: support in accordance with NFPA 13.
- B. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and other accessories.
- C. Paint all black steel hangers with black enamel. Galvanized steel and copper clad hangers do not require paint.
- D. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated, or by other recognized industry methods.
- E. Provision for Movement:

1. Install hangers and supports to allow controlled movement of piping systems and to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends and similar units.
 2. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.
 3. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes, and so that maximum pipe deflections allowed by ANSI B31 are not exceeded.
- F. Insulated Piping: Comply with the following installation requirements.
1. Shields: Where low-compressive-strength insulation or vapor barriers are indicated, install coated protective shields.
 2. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.
- G. Support fire protection piping independently of other piping.

3.04 Installation of Anchors:

- A. Install anchors at proper locations to prevent stresses from exceeding those permitted by ANSI B31, and to prevent transfer of loading and stresses to connected equipment.
- B. Fabricate and install anchors by welding steel shapes, plates and bars to piping and to structure. Comply with ANSI B31 and with AWS standards.
- C. Anchor Spacings: Where not otherwise indicated, install anchors at ends of principal pipe-runs, at intermediate points in pipe-runs between expansion loops and elbows. Make provisions for preset of anchors as required to accommodate both expansion and contraction of piping.
- D. Where expansion compensators are indicated, install anchors in accordance with expansion unit manufacturer's written instructions to limit movement of piping and forces to maximums recommended by manufacturer for each unit.

3.05 Equipment Bases:

- A. Provide concrete housekeeping bases for all floor mounted equipment furnished as part of the work of Division 23. Size bases to extend minimum of 4" beyond equipment base in any direction; and 4" above finished floor elevation. Construct of reinforced concrete, roughen floor slab beneath base for bond, and provide

steel rod anchors between floor and base. Locate anchor bolts using equipment manufacturer's templates. Chamfer top and edge corners.

- 3.06 Provide structural steel stands to support equipment not floor mounted or hung from structure. Construct of structural steel members or steel pipe and fittings. Provide factory-fabricated tank saddles for tanks mounted on steel stands. Prime and paint with black enamel.

END OF SECTION 23 05 29

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SECTION 23 05 48 - VIBRATION ISOLATION

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 This section is a Division-23 Basic Mechanical Materials and Methods section, and is part of each Division-23 section making reference to vibration isolation equipment.
- 1.03 Extent of vibration isolation required by this section is indicated on drawings and/or specified in other Division-23 sections.
- 1.04 Approval Submittals: When required by other Division-23 sections, submit product data sheets for each type of vibration isolation equipment including configuration and rating data. Submit with Division-23 section using vibration isolation, not as a separate submittal. Provide calculations showing supported weight, deflection, and isolator size and type for each item of supported equipment. Submit for:
- A. Equipment Mountings. Type EM.
- 1.05 O&M Data Submittals: Submit a copy of approval submittals for each type of vibration isolation equipment. Include this data in O&M Manual.

PART 2 - PRODUCTS

- 2.01 General: Provide factory-fabricated products recommended by manufacturer for use in service indicated. Provide products of types and deflections indicated; provide proper selection as determined by Installer to comply with specifications and installation requirements. Provide sizes which properly fit with equipment. All metal parts installed outside shall be hot dipped galvanized after fabrication.
- 2.02 Acceptable Manufacturers: Subject to compliance with requirements, provide vibration isolation equipment of: Mason Industries, Keflex, Consolidated Kinetics, Vibration Mountings & Controls, Wheatley or approved equal. All vibration isolators shall be supplied by a single approved manufacturer.
- 2.03 Equipment Mountings:
- A. Select mountings with the required deflection and fastening means. Provide steel rails or bases as required to compensate for equipment rigidity and overhang.

B. Types of equipment mountings (EM):

1. Spring Mountings (EM1): Spring isolators shall be free-standing and laterally stable without any housing. All mounts shall have leveling bolts. Spring diameter shall be not less than 0.8 of the compressed height of the spring at rated load. Springs shall have a minimum additional travel to solid equal to 50% of the rated deflection. Springs shall be so designed that the ratio of horizontal stiffness to vertical stiffness is approximately one. Provide a nominal static deflection of at least 1.0". Basis of Design: Mason Industries SLFH.
2. Spring Mountings with Housings (EM2): Spring isolators shall consist of open, stable steel springs and include vertical travel limit stops to control extension when weight is removed. The housing of the spring unit shall serve as blocking during erection of equipment. Provide a nominal static deflection of at least 1.0". All mountings used outside shall be hot dipped galvanized. Basis of Design: Mason Industries SLR.
3. Spring Mountings with Housings (EM3): Spring isolators shall consist of open, stable steel springs with neoprene inserts to limit movement between upper and lower housing on start and stop. Provide a nominal static deflection of at least 1.0". Mountings shall be specifically designed for critical areas on light-weight floors. Basis of Design: Mason Industries C.
4. Neoprene Mountings (EM4): Double deflection neoprene-in-shear mountings shall have a minimum static deflection of 0.35". All metal surfaces shall be neoprene covered. The top and bottom surfaces shall be neoprene ribbed and bolt holes shall be provided in the base. Basis of design: Mason Industries ND.
5. Pads (EM5): Waffle or ribbed pattern neoprene pads shall be fabricated from 40-50 durometer neoprene. Provide rigid steel plate and mounting angles as required. Basis of design: Mason Industries Super W.

PART 3 - EXECUTION

- 3.01 Install vibration isolation devices for the duty indicated and for ease of inspection, adjustment, and proper operation. Install in accordance with the manufacturer's written instructions and coordinate with shop drawings of supported equipment.
- 3.02 All connections to fixtures and equipment shown on the drawings shall be considered diagrammatic unless otherwise indicated by detail. The actual connections shall be made to fully suit the requirements of each case and adequately provide for expansion and servicing.
- 3.03 Piping, ductwork and conduit shall not be suspended from one another or physically contact one another. Vibrating systems shall be kept free from non-vibrating systems.
- 3.04 Equipment Mountings:

- A. Unless otherwise shown or specified, all floor-mounted equipment shall be set on housekeeping equipment bases. Refer to Division-23 section "Supports, Anchors, and Seals".
- B. No equipment unit shall bear directly on vibration isolators unless its own frame is suitably rigid to span between isolators, and such direct support is approved by the equipment manufacturer. All support frames shall be sufficiently stiff and rigid so as to prevent distortion and misalignment of components installed thereon.
- C. Align equipment mountings for a free, plumb installation. Isolators that are binding, offset or fully compressed will not be accepted.

3.05 Connections of Ducts: Ducts shall be connected to fan intakes and discharges by means of flexible connectors in accordance with Division-23 section "Ductwork Accessories" so that all vibrating equipment is fully isolated.

END OF SECTION 23 05 48

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SECTION 23 05 53 - MECHANICAL IDENTIFICATION

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 This section is a Division-23 Basic Mechanical Materials and Methods section, and is part of each Division-22 and 23 section making reference to or requiring identification devices specified herein.
- 1.03 Extent of mechanical identification work required by this section is indicated on drawings and/or specified in other Division-23 sections.
- 1.04 Refer to Division-26 sections for identification requirements of electrical work; not work of this section. Refer to other Division-23 sections for identification requirements for controls; not work of this section.
- 1.05 Codes and Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

PART 2 - PRODUCTS

- 2.01 General: Provide manufacturer's standard products of categories and types required for each application as referenced in other Division-23 sections. Where more than single type is specified for application, selection is Installer's option, but provide single selection for each product category.
- 2.02 Painted Identification Materials
- A. Stencils: Standard fiberboard stencils, prepared for required applications with letter sizes generally complying with recommendations of ANSI A13.1 for piping and similar applications, but not less than 1- $\frac{1}{4}$ " high letters for ductwork and not less than $\frac{3}{4}$ " high letters for access door signs and similar operational instructions.
- B. Stencil Paint: Standard exterior type stenciling enamel; black, except as otherwise indicated; either brushing grade or pressurized spray-can form and grade.
- C. Identification Paint: Standard identification enamel.
- 2.03 Plastic Pipe Markers

- A. Pressure-Sensitive Type: Provide manufacturer's standard pre-printed, permanent adhesive, color-coded, pressure-sensitive vinyl pipe markers.
 - 1. Lettering: Manufacturer's standard pre-printed nomenclature which best describes piping system in each instance, as selected by Architect/Engineer in cases of variance with name as shown or specified.
 - 2. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as separate unit of plastic.

2.04 Valve Tags:

- A. Brass Valve Tags: Provide 19-gage polished brass valve tags with stamp-engraved piping system abbreviation in ¼" high letters and sequenced valve numbers ½" high, and with 5/32" hole for fastener. Provide 1-½" diameter tags, except as otherwise indicated.
- B. Plastic Laminate Valve Tags: Provide manufacturer's standard 3/32" thick engraved plastic laminate valve tags, with piping system abbreviation in ¼" high letters and sequenced valve numbers ½" high, and with 5/32" hole for fastener. Provide 1-½" square black tags with white lettering, except as otherwise indicated.

2.05 Engraved Plastic-Laminate Signs:

- A. General: Provide engraving stock melamine plastic laminate, in the sizes and thicknesses indicated, engraved with engraver's standard letter style a minimum of 3/4" tall and wording indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.
- B. Thickness: 1/16" for units up to 20 sq. in. or 8" length; 1/8" for larger units.
- C. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.

2.06 Stamped Nameplates: Provide equipment manufacturer's standard stamped nameplates for motors, AHUs, pumps, etc.

PART 3 - EXECUTION

3.01 Coordination: Where identification is to be applied to surfaces which require insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.

3.02 Ductwork Identification:

- A. General: Identify air supply, return, exhaust, intake and relief ductwork with stenciled signs and arrows, showing ductwork service and direction of flow, in black or white.
- B. Location: In each space where ductwork is exposed, or concealed only by removable ceiling system, locate signs near points where ductwork originates or continues into concealed enclosures, and at 50' spacings along exposed runs.
- C. Access Doors: Provide stenciled signs on each access door in ductwork and housings, indicating purpose of access (to what equipment) and other maintenance and operating instructions, and appropriate and procedural information.

3.03 Piping System Identification:

- A. General: Install pipe markers of one of the following types on each system indicated to receive identification, and include arrows to show normal direction of flow:
 - 1. Plastic pipe markers.
 - 2. Stenciled markers, black or white for best contrast.
- B. Locate pipe markers as follows wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces and exterior non-concealed locations.
 - 1. Near each valve and control device.
 - 2. Near each branch, excluding short take-offs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
 - 3. Near locations where pipes pass through walls, floors, ceilings, or enter non-accessible enclosures.
 - 4. At access doors, manholes and similar access points which permit view of concealed piping.
 - 5. Near major equipment items and other points of origination and termination.
 - 6. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
 - 7. On piping above removable acoustical ceilings, except omit intermediately spaced markers.

- 3.04 Valve Identification: Provide coded valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibs, and shut-off valves at plumbing fixtures, HVAC terminal devices and similar rough-in connections of end-use fixtures and units. Coordinate code with operating instructions.
- 3.05 Valve Charts: Provide framed, glass covered valve charts in each mechanical room. Identify coded valve number, valve function, and valve location for each valve.
- 3.06 Mechanical Equipment Identification: Install engraved plastic laminate sign on a vertical surface on or near each major item of mechanical equipment and each operational device. Label shall indicate type of system and area served. Provide signs for the following general categories of equipment and operational devices:
- A. Main control and operating valves, including safety devices.
 - B. HVAC air handlers and fan coil units.
 - C. Air conditioning indoor and outdoor units.
- 3.07 Stamped Nameplates: Equipment manufacturers to provide standard stamped nameplates on all major equipment items such as motors, pumps, AHUs, etc. Where motors are hidden from view (within equipment casing, or otherwise not easily accessible, etc.), the equipment supplier shall furnish a duplicate motor data nameplate to be affixed to the equipment casing in an easily visible location, unless data is already included on the equipment nameplate.]
- 3.08 Adjusting and Cleaning:
- A. Adjusting: Relocate any mechanical identification device which has become visually blocked by work of this division or other divisions.

END OF SECTION 23 05 53

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SECTION 23 05 56 - ACCESS DOORS

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 This section is a Division-23 Basic Mechanical Materials and Methods section, and is part of each Division-22 and 23 section making reference to or requiring access panels specified herein.
- 1.03 Approval Submittals:
- A. Product Data: When required by other Division-23 sections, submit product data for access doors. Submit with Division-23 section using access doors, not as a separate submittal. Include rating data.
- 1.04 O&M Data Submittals: Submit a copy of approval submittal. Include this data in O&M Manuals.

PART 2 - PRODUCTS

- 2.01 Acceptable Manufacturers: Subject to compliance with requirements, provide access doors by Acudor, Milcor, Jay R. Smith, Zurn, BOICO, Elmdor, or approved equal.
- 2.02 General: Where floors, walls and ceilings must be penetrated for access to mechanical work, provide types of access doors indicated. Furnish sizes indicated or, where not otherwise indicated, furnish adequate size for intended and necessary access. Furnish manufacturer's complete units, of type recommended for application in indicated substrate construction, in each case, complete with anchorages and hardware.
- 2.03 Access Door Construction: Except as otherwise indicated, fabricate wall/ceiling door units of welded steel construction with welds ground smooth; 16-gauge frames and 14-gauge flush panel doors; 175° swing with concealed spring hinges; flush screw-driver-operated cam locks; factory-applied rust-inhibitive prime-coat paint finish.

PART 3 - EXECUTION

- 3.01 Access doors shall be installed to operate and service all mechanical equipment including valves, dampers, duct access panels, and other items requiring maintenance that are concealed above or behind finished construction. Access doors shall be installed in walls, chase and floors as necessary, but are not required in accessible suspended ceiling systems. Access doors shall have factory applied protective phosphate coating and baked enamel primer suitable for field painting.
- 3.02 Access doors shall be installed by the Division installing the substrate construction. However, responsibility for furnishing and determining location of access doors is part

of this Division's work. The style of access door shall be suitable for construction into which installed.

- 3.03 Access doors shall be sized and located as required to provide proper maintenance and service access in accordance with the manufacturer's recommendations and code authority requirements for all devices and equipment.

END OF SECTION 23 05 56

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SECTION 23 05 73 - EXCAVATION & BACKFILL

1 GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 This section is a Division-23 Basic Mechanical Materials and Methods section, and is part of each Division-22 and 23 section making reference to or requiring excavation and backfill specified herein.
- 1.3 Existing Utilities: Underground utilities shown were taken from old drawings. The exact location of these utilities and irrigation branches and abandoned services are not known. Use extreme caution when excavating.
- 1.4 Refer to other Division-22 or 23 sections and/or drawings for specific requirements of the particular piping system being installed. Where another Division-22 or 23 section or the drawings conflict with requirements of this section, the other Division-22 or 23 section or the drawings shall take precedence over the general requirements herein.
- 1.5 OSHA: Contractor employee worker protection for all trenching and excavation operations shall comply with 29 CFR 1926.650 Subpart P and all current OSHA requirements.
- 1.6 Trench Safety Act: Contractor shall comply with all requirements of Florida Statutes Chapter 553, including the requirement to provide a separate line item to identify the cost to comply on a per lineal foot of trench and per square foot of shoring.

2 PRODUCTS

- 2.1 Sand: Clean, hard, uncoated grains free from organic matter or other deleterious substances. Sand for backfill shall be of a grade equal to mortar sand.
- 2.2 Gravel: Clean, well graded hard stone or gravel, free from organic material. Size range to be from No. 4 screen retentions to 1".
- 2.3 Earth: Fill free of clay, muck, stones, wood, roots or rubbish.
- 2.4 Identification Tape: Polyethylene 6 inches wide, 0.004 inches thick, continuously printed with "CAUTION" in large letters and type of pipe below.
- 2.5 Copper Identification Wire: 14-gauge.

3 EXECUTION

- 3.1 Ditching and Excavation: Shall be performed by hand wherever there is a possibility of encountering obstacles or any existing utility lines of any nature whatsoever. Where clear and unobstructed areas are to be excavated, appropriate machine excavation methods may be employed. Avoid use of machine excavators within the limits of the building lines.
- 3.2 Bedding: Excavate to bottom grade of pipe to be installed, and shape bed of undisturbed earth to contour of pipe for a width of at least 50% of pipe diameter. If earth conditions necessitate excavation below grade of the pipe, such as due to the presence of clay, muck, or roots, subcut and bring bed up to proper elevation with clean, new sand (as described in paragraph 2.1), deposited in 6" layers and tamped. Notify Architect/Engineer if subcut exceeds 12", or if bed is of an unstable nature. In this case a 6" minimum layer of gravel will be required before sand bedding begins. Submit cost proposal if the earth conditions require subcut in excess of 12" or if gravel is required to achieve proper bedding.
- 3.3 Placing: Pipe shall be carefully handled into place. Avoid knocking loose soil from the banks of the trench into the pipe bed. Rig heavier sections with nylon slings in lieu of wire rope to avoid crushing or chipping. Pipe which is handled with insulation in place, coated pipe, and jacketed pipe shall have special handling slings as required to prevent damage to the material.
- 3.4 Backfilling: Deposit clean new sand (as described in paragraph 2.1) to 6" above the pipe and tamp. Then deposit sand or earth carefully in 6" layers, maintaining adequate side support, especially on nonferrous piping materials. Compact fill in 6" layers, using mechanical means, up to the top elevation of the pipe, and in 12" layers to rough or finish grade as required. Fine grade and restore surface to original condition.
- 3.5 Special: Excavations shall be installed and maintained in satisfactory condition during the progress of the work. Subsurface structures are to be constructed in adequately sized excavations. De-watering equipment shall be installed and properly maintained where required. Shoring shall be employed in the event of unstable soil condition, and in all cases where required by OSHA regulations and necessary to protect materials and personnel from injury.
- 3.6 Identification: Install identification tape directly above all underground piping, one tape for each pipe where multiple pipes are installed. Depth of tape shall be at least 6 inches below finished grade and 24" above buried pipe. Install copper wire above non-metallic pipes.
- 3.7 Depth of Cover: Minimum cover for underground piping is two feet unless indicated otherwise.

END OF SECTION 23 05 73

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SECTION 23 05 90 - START-UP REQUIREMENTS FOR HVAC SYSTEMS

PART 1 - GENERAL

- 1.01 Intent: It is the intent of this section to require that the startup requirements and report noted herein be performed prior to starting TAB work on each system. Work can be phased with permission of the Engineer.
- 1.02 Coordination:
- A. The Contractor shall furnish to the TAB Contractor a complete set of plans, specifications, addenda, shop drawings, equipment performance data sheets, change orders, etc. as requested by the TAB Contractor.
 - B. The Contractor shall participate in a TAB coordination meeting to discuss interface requirements with the TAB Contractor and to establish a schedule for TAB work prior to start of TAB work.
- 1.03 Test Reports and Verification Submittals:
- A. Submit Startup Report as described herein for each system. Attach Factory Startup Report for equipment as required by other Division-23 sections.

PART 2 - PRODUCTS: None

PART 3 - EXECUTION:

- 3.01 The TAB work shall not commence until the Engineer has received written notice from the Contractor that HVAC systems are 100% complete and are fully operational. Submit Startup Report as described herein.
- 3.02 The Contractor shall place all HVAC systems and equipment into complete operation during each working day of TAB work.
- 3.03 The Contractor shall provide access to HVAC systems and equipment by supplying ladders and/or scaffolding, and opening access panels and equipment room doors.
- 3.04 The TAB Contractor will provide to the Contractor TAB punch lists of non-complying HVAC work as they are discovered. The Contractor shall replace or repair non-complying work as soon as possible in order not to delay completion of TAB work.

- 3.05 Airside Systems: The Contractor shall provide the following information to the Engineer to substantiate proper start-up and preliminary adjustments of air handler units, belt driven fans, and duct systems.
- A. Verify that air grilles (supply, return, exhaust, transfer, outdoor, etc.) are installed and connected to the duct system.
 - B. Verify that duct systems are clean of debris.
 - C. Verify that ducts attached with flexible connectors are aligned within ½" and have a uniform gap between ducts of 1"-1.5". Flexible connectors shall not leak and shall be insulated.
 - D. Verify that filters are clean and filter spacers are installed.
 - E. Verify that balancing dampers at grilles and branch ducts are operational and are fully opened.
 - F. Verify that fan discharges are appropriate for the outlet ductwork with regards to the "system effect" per AMCA Publication 201. Inappropriate fan discharges will not be accepted.
 - G. Verify proper fan rotation.
 - H. Verify proper belt drive alignment.
 - I. Verify fan motor overload elements are correctly sized.
 - J. Adjust fan sheave until CFM is at or above design CFM. Provide additional sheaves and belts as required. Verify that motor is not overloaded.
 - K. Verify that HVAC control systems are fully operational.

- 3.06 Startup Report: The Contractor shall submit the startup information required by this section to the Engineer in a typed report organized as outlined herein. The Startup Report is required to meet the written notice described herein prior to starting TAB work. TAB work will not start until the Startup Report has been submitted and approved.

END OF SECTION 23 05 90

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SECTION 23 05 91 - TESTING, CLEANING, AND STERILIZATION OF PIPING SYSTEMS

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 This section is a Division-23 Basic Mechanical Materials and Methods section, and is part of each Division-22 and 23 section making reference to or requiring the testing and other procedures specified herein.
- 1.03 Notify the Architect/Engineer when system tests are ready to be witnessed at least 24 hours prior to the test.
- 1.04 All materials, test equipment, and devices required for cleaning, testing, sterilizing or purging shall be provided by the Contractor.

PART 2 - PRESSURE TESTS

- 2.01 General: Provide temporary equipment for testing, including pump and gauges. Test piping systems before insulation is installed wherever feasible, and remove control devices before testing. Test each natural section of each piping system independently but do not use piping system valves to isolate sections where test pressure exceeds valve pressure rating. Fill each section with indicated medium and pressurize for indicated pressure and time.
- 2.02 Required test period is four hours.
- 2.03 No piping, fixtures, or equipment shall be concealed or covered until they have been tested. The contractor shall apply each test and ensure that it is satisfactory for the period specified before calling the Architect/Engineer to observe the test. Test shall be repeated upon request to the satisfaction of those making the inspection.
- 2.04 Observe each test section for leakage at the end of the test period. Test fails if leakage is observed or if pressure drop exceeds 5% of the test pressure.
- 2.05 Check of systems during application of test pressures should include visual check for water leakage and soap bubble or similar check for air and nitrogen leakage.
- 2.06 During heating and cooling cycles, linear expansion shall be checked at all elbows and expansion joints for proper clearance.

2.07 Repair piping systems sections which fail required piping test. Disassemble and re-install using new materials to extent required to overcome leakage. Do not use chemicals, stop-leak compounds, mastics, or other temporary repair methods.

2.08 Pressure Test Requirements:

- A. Soil, Waste, and Vent Test all piping within the building with a 10 foot head of water. Test piping in sections so that all joints are tested. Provide test tees as required.
- B. Domestic Water: Perform hydrostatic test on all piping within the building at twice the normal static pressure at service point, but not less than 100 psig. Once tested, flush out piping and leave under pressure of the supply main or 40 psig for the balance of the construction period.

PART 3 - CLEANING AND STERILIZATION

3.01 General: Clean exterior surfaces of installed piping systems of superfluous materials, and prepare for application of specified coatings (if any). Flush out piping systems with clean water or blowdown with air before proceeding with required tests. Inspect each run of each system for completion of joints, supports and accessory items.

3.02 Flush and drain all water systems at least three times. Reverse flush systems from smallest piping to largest piping. Replace startup strainers with operating strainers.

3.03 Sterilization of Domestic Water Systems:

- A. Prerequisites: All new cold water piping installed (complete), all fixtures connected, system flushed out, and system filled with water.
- B. The shut off valve at the point of connection shall be closed, all fixture outlets opened slightly, and a sterilizing solution shall be introduced at a manifold connection installed by the Contractor at the point of connection.
- C. The solution shall contain 50 parts per million of available chlorine. The chlorinating material shall be either liquid chlorine or calcium hypochlorite. The solution shall be allowed to stand in the system for at least eight hours after which the entire system shall be flushed.
- D. After final flushing, all aerators shall be removed, cleaned, and reinstalled. After final flush the residual chlorine shall not exceed 0.2 parts per million.
- E. The Architect/Engineer shall be notified 24 hours prior to the procedure so that it can be witnessed.
- F. Provide sampling and certified report by an independent testing lab. Provide written Health Department approval of disinfection samples.

END OF SECTION 23 05 91

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SECTION 23 05 93 - TESTING AND BALANCING OF MECHANICAL SYSTEMS

PART 1 – GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section. Division-23 Basic Mechanical Materials Sections apply to work of this section.
- 1.02 Description of Work:
- A Extent of testing, adjusting, and balancing work (TAB) is indicated by requirements of this section, and also by drawings and schedules, and is defined to include, but is not necessarily limited to, air distribution systems, hydronic distribution systems and associated equipment and apparatus of mechanical work. The work consists of setting speed and volume (flow) adjusting facilities provided for systems, recording data, conducting tests, preparing and submitting reports, and recommending modifications to work as required.
- B Coordination: Coordinate with the General Contractor and Mechanical Contractor responsible for the HVAC system installation as required to complete the TAB work.
- 1.03 The intent of this specification is to balance HVAC systems within the tolerances listed, maintaining the pressure relationships indicated, with a minimum of noise.
- A Airflow Tolerances:
- 1 Air Handling: The supply air, return air and outdoor air quantities shall be balanced within $\pm 5\%$ of design values.
- 2 Ceiling Diffusers, Supply Registers, Return and Exhaust Inlets: Balance to an air quantity within $\pm 10\%$ of the design values.
- B Temperature Tolerances:
- 1 Air Handling Temperatures: The controlled temperatures at AHUs shall be verified to be under control within $\pm 1^\circ\text{F}$ of design values.
- 2 Room Temperatures: Balance systems and controls within $\pm 2^\circ\text{F}$ of indicated settings.
- C Pressure Relationships: Where code or design indicates a specific pressure relationship, the pressure relationship shall take precedence over airflow tolerances. Airflow tolerances may need to be held tighter than allowed tolerances to meet

pressure relationships. Demonstrate the existence of positive or negative pressure to Engineer and authority having jurisdiction by making direct measurements of room relative pressure and/or flow direction.

1.04 Quality Assurance: The TAB Contractor shall be certified as follows:

- A Tester: A firm certified by National Environmental Balancing Bureau (NEBB) in those testing and balancing disciplines required for this project, who is not the Installer of the systems to be tested and is otherwise independent of the project. Comply with NEBB's "Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems" as applicable to this work.
- B Tester: A firm certified by Associated Air Balance Council (AABC) in those testing and balancing disciplines required for this project. AABC-certified firms are independent by definition. Comply with AABC's Manual MN-1 "AABC National Standards", as applicable to this work.
- C Industry Standards: Comply with American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) recommendations pertaining to measurements, instruments and testing, adjusting and balancing, except as otherwise indicated.

1.05 Job Conditions:

- A Do not proceed with testing, adjusting, and balancing work until HVAC work (including Controls) has been completed and is operable. Ensure that there is no residual work still to be completed.
- B Do not proceed until work scheduled for testing, adjusting, and balancing is clean and free from debris, dirt and discarded building materials.
- C Do not proceed until architectural work that would affect balancing (walls, ceiling, windows, doors) have been installed.
- D Testing may proceed system by system, but each HVAC system must be complete as describe herein.
- E The mechanical contractor shall make any changes in pulleys, belts, and dampers, and/or add dampers as required for correct balancing.

1.06 Approval Submittals

- A Submit the name of the proposed test and balance company for the Engineer's approval within thirty (30) days after awarding of contract.

1.07 Test Reports and Verification Submittals:

- A Submit four (4) copies of the dated test and balance report upon completion of TAB work. The report shall include a list of instruments used for the work. The report shall

be signed by the supervisor who performed the TAB work.

PART 2 PRODUCTS

- 2.01 Patching Materials: Except as otherwise indicated, use same products as used by original Installer for patching holes in insulation, ductwork and housings which have been cut or drilled for test purposes, including access for test instruments, attaching jigs, and similar purposes.
- 2.02 Test Instruments: Utilize test instruments and equipment of the type, precision, and capacity as recommended in the referenced standard. All instruments shall be in good condition and shall have been calibrated within the previous six (6) months (or more recently if required by standard).

PART 3 EXECUTION

- 3.01 General:
- A Examine installed work and conditions under which testing is to be done to ensure that work has been completed, cleaned and is operable. Do not proceed with TAB work until unsatisfactory conditions have been corrected in manner acceptable to Tester.
- B Test, adjust and balance environmental systems and components, as indicated, in accordance with procedures outlined in applicable standards, and as modified or detailed herein.
- C Test, adjust and balance systems during summer season for air conditioning systems and during winter season for heating systems, including at least a period of operation at outside conditions within 5°F wet bulb temperature of maximum summer design condition, and within 10°F dry bulb temperature of minimum winter design condition. When seasonal operation does not permit measuring final temperatures, then take final temperature readings when seasonal operation does permit. The Contractor shall return for a change of seasons test at no additional cost to the Owner and submit the revised TAB report.
- D Punch List: Prepare a deficiency (punch)list for the Contractor with a copy of the Engineer that lists all items that are incorrectly installed or are functioning improperly. Provide a retest after all items are corrected.
- E Prepare TAB report of test results, including instrumentation calibration reports, in format recommended by applicable standards, modified as required to include all data listed herein.
- F Patch holes in insulation, ductwork and housings, which have been cut or drilled for test purposes, in manner recommended by original Installer.
- G Mark equipment settings, including damper control positions, valve indicators, fan speed control levers, and similar controls and devices, to show final settings at completion of TAB work. Provide markings with paint or other suitable permanent

identification materials.

H Include in the TAB report recommendations for correcting unsatisfactory mechanical performances when system cannot be successfully balanced.

I Include an extended warranty of ninety (90) days after completion of test and balance work, during which time the Engineer, at his discretion, may request a recheck, or resetting of any component as listed in test report. The TAB company shall provide technicians and instruments and make any tests required by the Engineer during this time period.

3.02 Controls

A Check all HVAC controls for proper location, calibration and sequence of operation.

B Check operation of all controllers and controlled devices to verify proper action and direction. Check the operation of all interlocks.

C Check all motorized damper motors for leakage when in closed position. If leakage is more than 5%, mechanical contractor shall reset damper linkages.

D Check all control valves for complete closure and correct action under all operating conditions.

3.03 Air Balancing

A Leakage tests on ductwork must have been completed before air balancing.

B Set dampers, volume controls and fan speeds to obtain specified air delivery with minimum noise level. Rebalance as required to accomplish this. Simulate fully loaded filters during test.

C Set grille deflections as noted on plans. Modify deflections if required to eliminate drafts or objectionable air movement.

D Record air terminal velocity after completion of balance work.

E Record final grille and register deflection settings if different from that specified on contract drawings.

F Record all fan speeds.

3.04 Data Collection:

A In addition to the data required for any specified performance tests, measure and record the temperatures, pressures, flow rates, and nameplate data for all components listed herein.

B It is the intent of this section to record data on balanced systems, under normal

operating or design conditions.

C Temperatures:

1. Outside dry and wet bulb temperatures.
2. Dry bulb temperature in each room and at least one wet bulb temperature in each zone.
3. Refrigerant liquid and suction temperatures.
4. Inlet and outlet temperature of each heat exchange device - both fluids.

D Pressures:

1. Suction and discharge static pressure of each fan.
2. Suction and discharge pressure of each pump.
3. Each refrigerant suction and discharge pressure.

E Flow rates:

1. Flow rate through each fan.
3. Flow rate through each coil or heat exchange device.

F Nameplate Data:

1. Complete nameplate data for all equipment.
2. Motor data to include horsepower, phase, voltage, RPM, full load nameplate current, fuse rating in disconnect switch, number or manufacturer's size designation, and ampere rating of overcurrent and low voltage protection devices in starters.

END OF SECTION 23 05 93

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SECTION 23 07 13 - EXTERIOR INSULATION FOR DUCTWORK

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 Division-23 Basic Mechanical Materials and Methods sections apply to work of this section.
- 1.03 Approval Submittals:
- A. Product Data: Submit producer's data sheets and installation instructions on each insulation system including insulation, coverings, adhesives, sealers, protective finishes, and other material recommended by the manufacturer for applications indicated. Submit for:
Rigid duct insulation
- 1.04 O&M Data Submittals: Submit a copy of all approval submittals. Include in O&M Manual.

PART 2 - PRODUCTS

- 2.01 Acceptable Manufacturers: Subject to compliance with requirements, provide insulation products by Knauf, Owens-Corning, Johns Manville, Certainteed.
- 2.02 Flame/Smoke Ratings: Provide composite mechanical insulation (insulation, coverings, sealers, mastic, and adhesive) with a flame spread rating of 25 or less, and a smoke-developed rating of 50 or less as tested by ANSI/ASTM 84.
- 2.03 Rigid Fiberglass Insulation Board: ASTM C612, Class 1 (non load bearing). Boards shall be 3 pcf density with UL rated aluminum foil vapor barrier (FSK).
- 2.04 General Purpose Mastic: Benjamin Foster 35-00 Series, Insulcoustic VIAC Mastic, Childers CP-10, or approved equal. The final selection of this product for the specific application indicated is the responsibility of the insulation supplier. The insulation system must meet the specified application.
- 2.05 Vapor Barrier Sealant: Benjamin Foster 30-35, Insulcoustic IC-501, 3M EC-1378, Childers CP-30, or approved equal. Provide "Low Odor" type. The final selection of this product for the specific application indicated is the responsibility of the insulation supplier. The insulation system must meet the specified application.

2.06 Adhesive: Benjamin Foster 85-20, Insulcoustic IC-205, 3M EC-35, Childers CP-82, Childers CP-89, or approved equal. The final selection of this product for the specific application indicated is the responsibility of the insulation supplier. The insulation system must meet the specified application.

2.07 Fiber-Glas Mesh: 10x10 Mesh. Foster Mastafab or equal.

PART 3 - EXECUTION

3.01 Insulate all rectangular supply, return and outdoor air ductwork not internally insulated with 1½" thick rigid fiberglass insulation with vapor barrier.

3.02 Installation of Rigid Insulation:

- A. Clean and dry ductwork prior to insulating. Butt insulation firmly together to ensure complete and tight fit over surfaces to be covered. Install insulation materials with smooth and even surfaces. Maintain integrity of aluminum vapor barrier wherever possible. Extend insulation without interruption through walls, floors and similar ductwork penetrations except where otherwise indicated.
- B. Install with facing to the outside with a maximum of 25% compression. Butt all insulation joints firmly together. Longitudinal seam of the vapor retarder must be overlapped a minimum of 2". Staples shall be outward clinch and placed approximately 6" on center. All penetrations, joints, seams, and damage to the facing shall be sealed with glass fabric and mastic prior to system startup. For rectangular ducts over 24" wide, secure the insulation to the bottom of the duct with mechanical fasteners spaced on 12" centers to reduce sag. Do not overcompress the insulation with the retainer. Larger ducts shall be secured with fasteners on 12-inch centers and 3 inches from all edges.
- C. Apply open mesh glass fabric embedded in vapor barrier mastic. Then apply a second coat of general purpose mastic with aluminum grey color. This finish shall be complete over all rigid insulation.

3.03 Installation of Insulation on Exterior Ducts:

- A. Install 3" thick rigid insulation. Provide weatherproof finish.
- B. Pitch the upper surface of the duct insulation to drain by installing a 6" wide insulation board (or equal) down the center of the duct prior to applying the insulation.
- C. Clean and dry ductwork prior to insulating. Butt insulation firmly together to ensure complete and tight fit over surfaces to be covered. Install insulation materials with smooth and even surfaces. Maintain integrity of aluminum vapor barrier wherever possible. Extend insulation without interruption through walls, floors and similar ductwork penetrations except where otherwise indicated.

- D. Adhere insulation to duct with 50 percent coverage using approved insulation adhesive applied in 6-inch wide swaths with 6-inch spaces between swaths. Additionally secure insulation with perforated pins and Tuff-Bond or by self-sticking pins with a 3/8" self-tapping screw. Space on 12-inch centers and 3 inches from all edges. Ducts up through 24" wide only require one row of pins. Ducts over 24" wide shall have pins spaced as described herein.
- E. Apply open mesh glass fabric embedded in vapor barrier mastic. Then apply a second coat of general purpose mastic with aluminum grey color.
- F. Provide a smooth 0.016" aluminum jacket with seams positioned to shed water.

END OF SECTION 23 07 13

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SECTION 23 31 13 - HVAC METAL DUCTWORK

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 Division-23 Basic Mechanical Materials and Methods Sections apply to work of this section.
- 1.03 Extent of HVAC metal ductwork is indicated on drawings and in schedules, and by requirements of this section.
- 1.04 Refer to other Division-23 sections for exterior insulation of metal ductwork.
- 1.05 Refer to other Division-23 sections for ductwork accessories.
- 1.06 Codes and Standards:
- A. SMACNA Standards: Comply with SMACNA's "HVAC Duct Construction Standards, Metal and Flexible" 1985 Edition for fabrication and installation of metal ductwork, unless otherwise noted.
 - B. NFPA 90A Compliance: Comply with NFPA 90A "Standard for the Installation of Air Conditioning and Ventilating Systems".
- 1.07 Approval Submittals:
- A. Product Data: Submit manufacturer's technical product data and installation instructions for the following.
 - 1. Factory-fabricated ductwork
 - 2. Sealants
 - 3. Duct liner
 - 4. Adhesive
 - 5. Flexible duct
 - 6. Spin-in fittings
 - 7. Side take-off fittings
 - B. Shop Drawings: Submit scaled layout drawings of HVAC metal ductwork and fittings including, but not limited to, duct sizes, locations, elevations, and slopes of horizontal runs, wall and floor penetrations, and connections. Show interface and spatial relationship between ductwork and proximate equipment. Show modifications of indicated requirements, made to conform to local shop practice, and how those modifications ensure that free area, materials, and rigidity are not

reduced.

PART 2 - PRODUCTS

2.01 Ductwork Materials:

- A. Exposed Ductwork Materials: Where ductwork is indicated to be exposed to view in occupied spaces, provide materials which are free from visual imperfections including pitting, seam marks, roller marks, stains and discolorations, and other imperfections, including those which would impair painting.
- B. Galvanized Sheet Metal: Except as otherwise indicated, fabricate ductwork from galvanized sheet steel complying with ASTM A 527, lockforming quality; with G 90 zinc coating in accordance with ASTM A 525; and mill phosphatized for exposed locations. Stamp gauge and manufacturer's identification on each sheet. Break sheets so that identification is exposed.

2.02 Miscellaneous Ductwork Materials:

- A. General: Provide miscellaneous materials and products of types and sizes indicated and, where not otherwise indicated, provide type and size required to comply with ductwork system requirements including proper connection of ductwork and equipment.
- B. Duct Liner: Fibrous glass, 1½ pcf minimum density, complying with Thermal Insulation Manufacturers Association (TIMA) AHC-101; of thickness indicated. Certaineed "Coated Ultralite", Owens Corning "Aeroflex", PPG "Textrafine", or Manville "Linacoustic".
- C. Duct Liner Adhesive: Comply with ASTM C 916 "Specifications for Adhesives for Duct Thermal Insulation".
- D. Duct Liner Fasteners: Comply with SMACNA HVAC Duct Construction Standards, Article S2.11.
- E. Duct Sealant: Provide non-hardening, non-migrating mastic or liquid elastic sealant, type applicable for fabrication/installation detail, as compounded and recommended by manufacturer specifically for sealing joints and seams in ductwork.
- F. Ductwork Support Materials: Except as otherwise indicated, provide hot-dipped galvanized steel fasteners, anchors, rods, straps, trim and angles for support of ductwork. For exposed stainless steel ductwork, provide matching stainless steel support materials.
- G. Spin-in and Side Take-off Fittings: Provide round branch run-outs as follows.
 - 1. Where duct height does not permit the use of conical spin-in fittings, use low profile side take-off fittings equal to Crown 3300-DS or Flexmaster STOD-BO.
- H. Fittings: Provide radius type fittings fabricated of multiple sections with maximum 15° change of direction per section. Unless specifically detailed otherwise, use 45° laterals and 45° elbows for branch takeoff connections. Where

90° branches are indicated, provide conical type tees.

2.03 Fabrication:

- A. Shop fabricate ductwork in 4, 8, 10 or 12-ft lengths, unless otherwise indicated or required to complete runs. Preassemble work in shop to greatest extent possible, so as to minimize field assembly of systems. Disassemble systems only to extent necessary for shipping and handling. Match-mark sections for reassembly and coordinated installation.
- B. Shop fabricate ductwork of gauges and reinforcement complying with SMACNA "HVAC Duct Construction Standards", except provide sealant at all joints. Supply duct from air conditioning units and all return and exhaust duct shall be minimum 2" pressure class unless otherwise noted.
- C. Fabricate duct fittings to match adjoining ducts, and to comply with duct requirements as applicable to fittings. Except as otherwise indicated, fabricate elbows with center-line radius equal to 1½ times associated duct width; and fabricate to include turning vanes in elbows where shorter radius is necessary. Limit angular tapers to 30° for contracting tapers and 20° for expanding tapers.
- D. Fabricate ductwork with accessories installed during fabrication to the greatest extent possible. Refer to Division-23 section "Ductwork Accessories" for accessory requirements.

2.04 Factory-Fabricated Low Pressure Ductwork (Maximum 2" W.G.):

- A. Material: Galvanized sheet steel complying with ASTM A 527, lockforming quality, with ASTM A 525, G90 zinc coating, mill phosphatized.
- B. Gauge: 28-gauge minimum for round ducts and fittings, 4" through 8" diameter. 26-gauge minimum 9" through 14", 24-gauge minimum 15" through 26".
- C. Elbows: One piece construction for 90° and 45° elbows 14" and smaller. Provide multiple gore construction for larger diameters with standing seam circumferential joint.
- D. Divided Flow Fittings: 90° tees, constructed with saddle tap spot welded and bonded to duct fitting body.
- E. Internally Insulated Duct and Fittings: Construct with outer pressure shell, 1" thick insulation layer, and perforated inner liner. Construct shell and liner of galvanized sheet steel complying with ASTM A 527, of spiral lockseam construction, use longitudinal seam for over 59", in minimum gauges listed.

| <u>Nominal Duct Diameter</u> | <u>Outer Shell</u> | <u>Inner Liner</u> |
|------------------------------|--------------------|--------------------|
| 3" to 12" | 26 ga. | 24 ga. |
| 13" to 24" | | 24 ga. 24 ga. |
| 25" to 34" | | 22 ga. 24 ga. |
| 35" to 48" | | 20 ga. 24 ga. |
| 49" to 58" | | 18 ga. 24 ga. |
| Over 59" | 16 ga. | 20 ga. |

Fittings and Couplings: Construct of minimum gauges listed. Provide continuous weld along seams of outer shell.

| <u>Nominal Duct Diameter</u> | <u>Outer Shell</u> | <u>Inner Liner</u> |
|------------------------------|--------------------|--------------------|
| 3" to 34" | 20 ga. | 20 ga. |
| 36" to 48" | | 18 ga. 20 ga. |
| Over 48" | 16 ga. | 20 ga. |

Inner Liner for Straight Duct: Perforate with 3/32" holes for 22% open area. Provide metal spacers welded in position to maintain spacing and concentricity. Provide a plastic film between the perforated liner and insulation to act as a vapor barrier.

Inner Liner for Fittings: Solid sheet metal. Provide metal spacers welded in position to maintain spacing and concentricity.

- F. Acceptable Manufacturers: Subject to compliance with requirements, provide factory-fabricated ductwork by Semco Mfg., Inc. or United Sheet Metal Div., United McGill Corp, or approved equal.

PART 3 - EXECUTION

3.01 General: Examine areas and conditions under which HVAC metal ductwork is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 Installation Of Metal Ductwork:

- A. General: Assemble and install ductwork in accordance with recognized industry practices which will achieve air-tight (5% leakage for systems rated 3" and under; 1% for systems rated over 3") and noiseless (no objectionable noise) systems, capable of performing each indicated service. Install each run with minimum number of joints. Align ductwork accurately at connections, within 1/8" misalignment tolerance and with internal surfaces smooth. Support ducts rigidly with suitable ties, braces, hangers and anchors of type which will hold ducts true-to-shape and to prevent buckling. Support vertical ducts at every floor.
- B. Supports: Install concrete inserts for support of ductwork in coordination with formwork, as required to avoid delays in work. Install self-drilling screw anchors in prestressed concrete or existing work.
- C. Field Fabrication: Complete fabrication of work at project as necessary to match shop-fabricated work and accommodate installation requirements. Seal joints in round or oval ductwork with hard cast or shrink bands, and sheet metal screws, or by welding.
- D. Routing: Locate ductwork runs, except as otherwise indicated, vertically and horizontally. Avoid diagonal runs wherever possible. Locate runs as indicated by diagrams, details and notations or, if not otherwise indicated, run ductwork in shortest route which does not obstruct useable space or block access for servicing building and its equipment. Hold ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building. Limit clearance to 1/2" where furring is shown for enclosure or concealment of

ducts, but allow for insulation thickness, if any. Where possible, locate insulated ductwork for 1" clearance outside of insulation. In finished and occupied spaces, conceal ductwork from view by locating in mechanical shafts, hollow wall construction or above suspended ceilings, unless specifically noted as "Exposed". Do not encase horizontal runs in solid partitions, except as specifically shown. Coordinate layout with suspended ceiling and lighting layouts and similar finished work.

- E. Internally Lined Ductwork: Cover leading and trailing edge of duct liner with sheet metal nosing zee.
 - F. Electrical Equipment Spaces: Do not route ductwork through transformer vaults or other electrical equipment spaces and enclosures.
 - G. Penetrations: Where ducts pass through interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and duct or duct insulation with sheet metal flanges of same gauge as duct. Overlap opening on 4 sides by at least 1½". Fasten to duct and substrate. Where ducts pass through fire-rated floors, walls, or partitions, provide firestopping between duct and substrate.
 - H. Coordination: Coordinate duct installations with installation of accessories, dampers, coil frames, equipment, controls and other associated work of ductwork system.
 - I. Installation: Install metal ductwork in accordance with SMACNA HVAC Duct Construction Standards. Fan discharge outlet ducts shall be installed correctly with regard to "system effect" per AMCA Publication 201.
- 3.03 Leakage Tests: After each duct system is completed, test for duct leakage in accordance with Sections 3 and 5 of the SMACNA HVAC Air Duct Leakage Test Manual. Test pressure shall be equal to pressure class of duct, less 0.5" static pressure. Repair leaks and repeat tests until total leakage is less than 5% of system design air flow for low pressure systems and less than 1% for systems rated over 3".
- 3.04 Equipment Connections: Connect metal ductwork to equipment as indicated, provide flexible connection for each ductwork connection to equipment mounted on vibration isolators, and/or equipment containing rotating machinery. Provide access doors as indicated.
- 3.05 Clean ductwork internally free of dust and debris. Clean external surfaces of foreign substances which might cause corrosive deterioration of metal or, where ductwork is to be painted, might interfere with painting or cause paint deterioration. Keep ducts closed with poly during construction to prevent contamination by construction dust and debris.
- 3.06 Balancing: Refer to Division-23 section "Testing, Adjusting, and Balancing" for air distribution balancing of metal ductwork; not work of this section. Seal any leaks in ductwork that become apparent in balancing process.
- 3.07 System Adjustment: Adjust the system to provide functional operation to the extent possible, and leave ready for Testing and Balancing work. It is not the intent of this section to provide final testing and balancing, but to leave the system operational with

a minimum of noise.

END OF SECTION 23 31 13

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SECTION 23 31 16 - HVAC FABRIC DUCTWORK

1 GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 Division-23 Basic Mechanical Materials and Methods Sections apply to work of this section.
- 1.3 Extent of HVAC Fabric Ductwork is indicated on drawings and in schedules, and by requirements of this section.
- 1.4 Refer to other Division-23 sections for ductwork accessories.
- 1.5 Design, Quality Assurance, and Code Compliance:
 - 1.5.1 NFPA 90A Compliance: Comply with NFPA 90A "Standard for the Installation of Air Conditioning and Ventilating Systems".
 - 1.5.2 Any production facility used by manufacturer must be ISO 9001 registered. All product sections must be labeled with the logo and classification marking of Underwriter's Laboratories, order number and manufacture date.
 - 1.5.3 Product must be classified in accordance with the 25/50 flame spread/smoke development requirements of UL723 based on NFPA 90A - 1993, "Installation of Air Conditioning and Ventilating Systems". In addition products must be classified in accordance with ICC Evaluation Service AC167 and UL 2518.
 - 1.5.4 Fabrics shall meet minimum criteria for use in ISO Class 4 application (Clean room, non shedding material) as defined by ISO 14644-1.
 - 1.5.5 Textile Material shall meet minimum tensile strength warp1880/ weft1090N as defined by ISO 136934-1.
 - 1.5.6 Fabric Duct air dispersion system must designed in software which documents, calculates and provides: pressure loss, inlet velocity, turbulent condition warnings, throw capability, entrainment, deflection, flow models, sizing, installation methods, sound generated and temperature corrections.
- 1.6 Approval Submittals:
 - 1.6.1 Product Data: Submit manufacturer's technical product data and installation instructions for the following.

Ductwork

Supports

- 1.6.2 Shop Drawings: Submit scaled layout drawings of HVAC ductwork and fittings including, but not limited to, duct sizes, locations, elevations, and slopes of horizontal runs, wall and floor penetrations, and connections. Show interface and spatial relationship between ductwork and proximate equipment. Show modifications of indicated requirements, made to conform to local shop practice, and how those modifications ensure that free area, materials, and rigidity are not reduced.

2 PRODUCTS

2.1 Fabric Dispersion Ductwork:

- 2.1.1 This specification is based upon products from Prihoda. Equal products from alternate manufacturers listed are acceptable. Subject to compliance with requirements, choose the following or equal:

DuctSox[®] Corporation
Fabric Aire
Durkee Sox
Prihoda

2.1.2 Fabric Air Dispersion System:

Fabric Duct Air Dispersion System shall be constructed of PMS fabric. The material is a woven fire retardant and permeable fabric complying with the following characteristics:

Fabric: 100% Flame Retardant Polyester
Weight: 6.5 oz./yd² per ASTM D3776 minimum
Strength: warp1880/ weft1090N Per ISO13934
Shrinkage: Max. 0,5% per ISO 6330-2000
Available Standard Colors: **White** (RAL 9016), **Light Grey** (Pantone 420/RAL 7035), **Dark Grey** (Pantone 424/RAL 7037), **Yellow** (Pantone 135/RAL 1017),**Light Blue** (pantone 2915/RAL 5012) **Blue** (Pantone 7462/RAL 5005) **Green** (pantone 340/ RAL7037) **Black** (Pantone 419/RAL9017), **Red** (Pantone187/RAL 3001). Custom color available, Architect/Owner must specify PANTONE or RAL number.
Temperature Range: -75°F to +230°F
Permeability: 2 cfm (+/-1) (to prevent condensation only)
Fire Retardant: Must meet the requirements in NFPA 90-A, ICC AC-167 and UL2518

2.1.3 Systems Fabrication Requirements:

Laser Cut Perforations/holes (comfort, medium, & long throw)
-4mm – 3” diameter project dependent.
-Laser cut (punching method not acceptable)
-location, number and size determined by manufacturer

Provide system in sections optimized for maintenance (16' maximum for diameters over 32"), connected by zippers. Zippers must provide closure completely around the circumference to prevent leakage.

Each section to have a unique tag including information about: manufacturer's order number, position, diameter of section, length of section, maintenance instruction, code compliance and contact details for spare parts.

Zippered inlet connection.

Endcap can be zippered or sewn to the last duct section as required.

Equalizers (flow correctors) and/or dampers to be included as shown on plans or schedules.

Include hooks which slide into track profile or snap on to wire/cable or continuous fabric strip which slides into track if shown in detail or noted on plans

Include SS inlet clamp for securing to metal outlet connection point.

2.1.4 Design Parameters:

Fabric air diffusers shall be designed from 0.25" water gage minimum to 3.0" maximum, with 0.5" as the standard.

Fabric air diffusers shall be limited to design temperatures between 0 degrees F and 180 degrees F (-17.8 degrees C and 82 degrees C).

Design CFM, static pressure and diffuser length shall be designed or approved by the manufacturer.

Do not use fabric diffusers in concealed locations.

Use fabric diffusers only for positive pressure air distribution components of the mechanical ventilation system.

2.1.5 Suspension Hardware:

2.1.5.1 **Single aluminum track profile** - Fabric Duct system to be attached to track profile using plastic gliders located at 12 o'clock spaced 20 inches or continuous reinforced fabric strip. Wire/cable hangers spaced at 6.6 feet.

2.1.5.2 **Hanging Hardware options –**

- a. Plastic Coated Galvanized Cable – all other components Galvanized Steel

3 EXECUTION

3.1 General: Examine areas and conditions under which HVAC ductwork is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

- 3.2 Installation of Fabric Air Dispersion System:
- 3.2.1 Install chosen suspension system in accordance with the requirements of the manufacturer. Instructions for installation shall be provided by the manufacturer with product.
- 3.2.2 Cleaning and Protection:
- 3.2.3 Clean air handling unit and ductwork prior to the DuctSox system unit-by-unit as it is installed. Clean external surfaces of foreign substance which may cause corrosive deterioration of facing.
- 3.2.4 Temporary Closure: At ends of ducts which are not connected to equipment or distribution devices at time of ductwork installation, cover with polyethylene film or other covering which will keep the system clean until installation is completed.
- 3.2.5 If fabric dispersion duct systems become soiled during installation, they should be removed and cleaned following the manufacturers standard terms of laundry.
- 3.3 Clean ductwork internally free of dust and debris. Clean external surfaces of foreign substances which might cause corrosive deterioration of metal or, where ductwork is to be painted, might interfere with painting or cause paint deterioration. Keep ducts closed with poly during construction to prevent contamination by construction dust and debris.

END OF SECTION 23 31 16

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SECTION 23 33 00 - DUCTWORK ACCESSORIES

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 Division-23 Basic Mechanical Materials and Methods sections apply to work of this section.
- 1.03 Extent of ductwork accessories work is indicated on drawings and in schedules, and by requirements of this section.
- 1.04 Refer to other Division-23 sections for testing, adjusting, and balancing of ductwork accessories; not work of this section.
- 1.05 Codes and Standards:
- A. SMACNA Compliance: Comply with applicable portions of both SMACNA "HVAC Duct Construction Standards, Metal and Flexible" .
 - B. NFPA Compliance: Comply with applicable provisions of NFPA 90A "Air Conditioning and Ventilating Systems" pertaining to installation of ductwork accessories.
- 1.06 Approval Submittals:
- A. Product Data: Submit manufacturer's technical product data for each type of ductwork accessory, including dimensions, capacities, and materials of construction; and installation instructions as follows:
 - 1. Low pressure manual dampers
 - 2. Duct access doors
 - 3. Flexible connections
 - B. O&M Data Submittals: Submit manufacturer's maintenance data including parts lists. Include this data, product data, and a copy of approval submittals in O&M manual.

PART 2 - PRODUCTS

- 2.01 Dampers:

- A. Low Pressure Manual Dampers: Provide 16 gauge dampers of single-blade type (12" maximum blade width) or multiblade type. Damper blades to be gang-operated from a single shaft with nylon or ball bearings on each end. Provide indexed locking quadrant. Parallel or opposed blade style is acceptable. Provide 2" standoff on locking quadrant for externally insulated duct.
- 2.02 Turning Vanes: Provide manufactured or fabricated single wall turning vanes and vane runners, constructed in accordance with SMACNA "HVAC Duct Construction Standards".
- 2.03 Duct Access Doors:
- A. General: Provide duct access doors of size indicated, or as required for duty indicated.
 - B. Construction: Construct of same or greater gauge as ductwork served. Provide insulated doors for insulated ductwork. Provide flush frames for uninsulated ductwork, extended frames for externally insulated duct. Provide one side hinged, other side with one handle-type latch for doors 12" high and smaller, 2 handle-type latches for larger doors.
 - C. Acceptable Manufacturers: Subject to compliance with requirements, provide access doors by Air Balance, Inc., Duro Dyne Corp., Ruskin Mfg. Co., or Ventfabrics, Inc.
- 2.04 Flexible Connections:
- A. General: Provide flexible duct connections wherever ductwork connects to vibration isolated equipment. Construct flexible connections of neoprene-coated flameproof fabric crimped into duct flanges for attachment to duct and equipment. Make airtight joint. Provide adequate joint flexibility to allow for thermal, axial, transverse, and torsional movement, and also capable of absorbing vibrations of connected equipment.
 - B. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following: Duro Dyne Corp., Flexaust (The) Co., or Ventfabrics, Inc.

PART 3 - EXECUTION

- 3.01 Examine areas and conditions under which ductwork accessories will be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.
- 3.02 Installation of Ductwork Accessories:
- A. Install ductwork accessories in accordance with manufacturer's installation instructions, with applicable portions of details of construction as shown in SMACNA standards, and in accordance with recognized industry practices to

ensure that products serve intended function.

- B. Install balancing dampers at all main ducts adjacent to units in return air, outside air and where indicated.
 - C. Install turning vanes in square or rectangular 90° elbows in supply, return, and exhaust air systems, and elsewhere as indicated.
 - D. Install access doors to open against system air pressure, with latches operable from either side, except outside only where duct is too small for person to enter. Install in duct adjacent to all smoke detectors.
 - E. Install flexible connections in ductwork such that the clear length of the connector is approximately two inches. Provide thrust restraints as required. Flexible material shall not be so slack as to take a definite concave or convex shape during fan operation.
 - F. Coordinate with other work, including ductwork, as necessary to interface installation of ductwork accessories properly with other work.
- 3.03 Operate installed ductwork accessories to demonstrate compliance with requirements. Test for air leakage while system is operating. Repair or replace faulty accessories as required to obtain proper operation and leakproof performance.
- 3.04 Adjusting And Cleaning:
- A. Adjusting: Adjust ductwork accessories for proper settings.
 - B. Final positioning of manual dampers is specified in Division-23 section "Testing, Adjusting, and Balancing". However, the system shall be left functional with all dampers open or throttled.
 - C. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

END OF SECTION 23 33 00

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SECTION 23 37 13 - GRILLES, REGISTERS AND CEILING DIFFUSERS

PART 1 - GENERAL

- 1.01 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.02 Division-23 Basic Mechanical Materials and Methods sections apply to work of this section.
- 1.03 Extent of air outlets and inlets work is indicated by drawings and schedules, and by requirements of this section.
- 1.04 Refer to other Division-23 sections for ductwork and duct accessories required in conjunction with air outlets and inlets and for balancing of air outlets and inlets; not work of this section.
- 1.05 Codes and Standards:
- A. ADC Compliance: Test and rate air outlets and inlets in certified laboratories under requirements of ADC 1062 "Certification, Rating and Test Manual". Provide air outlets and inlets bearing ADC Certified Rating Seal.
 - B. NFPA Compliance: Install air outlets and inlets in accordance with NFPA 90A "Standard for the Installation of Air Conditioning and Ventilating Systems".
- 1.06 Approval Submittals:
- A. Product Data: Submit manufacturer's technical product data for air outlets and inlets indicating construction, finish, and mounting details.
 - B. Performance Data: For each type of air outlet and inlet furnished, provide aspiration ability, temperature and velocity traverses, throw and drop, and noise criteria ratings. Indicate selections and data as required.
- 1.07 O&M Data Submittals: Submit cleaning instructions for finishes and spare parts lists. Include this data and a copy of approval submittals in O&M manual.

PART 2 - PRODUCTS

- 2.01 General:
- A. Except as otherwise indicated, provide manufacturer's standard grilles, registers,

and ceiling diffusers where shown; of size, shape, capacity and type indicated; constructed of materials and components as indicated, and as required for complete installation.

- B. Manufacturers not listed in the following specification will not be considered for approval unless accepted by addendum prior to bid.
 - C. Performance: Provide grilles, registers and ceiling diffusers that have, as minimum, temperature and velocity traverses, throw and drop, and noise criteria ratings for each size device equal to the basis of design.
 - D. Ceiling and Wall Compatibility: Provide grilles, registers and diffusers with border styles that are compatible with adjacent wall and ceiling systems, and that are specifically manufactured to fit into ceiling module or wall with accurate fit and adequate support. Refer to general construction drawings and specifications for types of ceiling systems and walls which will contain each type of ceiling diffuser, grille, or register.
 - E. Appearance: All grilles and registers shall be aluminum construction, unless otherwise noted, with uniform matching appearance for each type of outlet. Ceiling mounted grilles and registers shall be set to be sight tight from the predominant exposure.
 - F. Finish: All ceiling mounted grilles, registers, and diffusers shall be finished with baked white enamel. Wall and door mounted grilles and registers shall be finished with clear anodized finish .
- 2.02 Acceptable Manufacturers: Subject to compliance with requirements, provide products by Titus or Metal Aire.
- 2.03 Return, Transfer, and Exhaust Grilles: Provide grilles with one set of 45 degree fixed louvers, parallel to the long dimension. Provide mounting frame for all wall and plaster ceiling installations.

PART 3 - EXECUTION

- 3.01 Coordinate installation with ceiling and light fixture installation. Locate ceiling outlets as indicated on architectural Reflected Ceiling Plans. Unless otherwise indicated, locate ceiling outlets in the center of acoustical ceiling modules with sides parallel to the grid.
- 3.02 Install air outlets and inlets in accordance with manufacturer's written instructions and in accordance with recognized industry practices to ensure that products serve intended functions.
- 3.03 Coordinate with other work, including ductwork and duct accessories, as necessary to interface installation of air outlets and inlets with other work.
- 3.04 Set air volumes to values shown on the drawings so that the system is functional.

Leave ready for test and balance contractor.

- 3.05 Furnish to Owner three operating keys for each type of outlet and inlet that require them; obtain receipt.

END OF SECTION 23 37 13

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SECTION 23 81 43 - PACKAGED AIR CONDITIONING UNITS (DX)

1 GENERAL

- 1.1 Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- 1.2 Division-23 Basic Mechanical Materials and Methods sections apply to work of this section.
- 1.3 Refer to other Division-23 sections for testing, adjusting, and balancing of air conditioning units (RTUs).
- 1.4 Approval Submittals:
 - 1.4.1 Product Data: Submit manufacturer's technical product data, including dimensions, ratings, electrical characteristics, weight, capacities, materials of construction, and installation instructions.
 - 1.4.1.1 Packaged heat pump units
 - 1.4.1.2 Vibration Isolation
- 1.5 O&M Data Submittals: Submit manufacturer's maintenance data including parts lists. Include these data, a copy of approval submittals, product data, and wiring diagrams in O&M manual.

2 PRODUCTS

- 2.1 Quality Assurance:
 - 2.1.1 Provide units tested by UL, ARL or ETL.
 - 2.1.2 Construct refrigeration system in accordance with ASHRAE 15 (ANSI B 9.1) "Safety Code for Mechanical Refrigeration".
 - 2.1.3 Test and rate PHPs in accordance with the applicable ARI standards and provide certified rating seal. Sound test and rate units in accordance with ARI 270.
 - 2.1.4 Provide units with an EER that meets the Florida Energy Efficiency Code and the schedules on the drawings.

- 2.1.5 Acceptable Manufacturers: Subject to compliance with requirements provide units by: Carrier, Trane, Lennox, Daikin, or approved equal.
- 2.2 General:
- 2.2.1 Units shall be factory-assembled, wired and tested. All controls shall be factory-adjusted and preset to the design conditions.
- 2.2.2 Casings: Construct of heavy gauge steel (or aluminum) formed panels rigidly reinforced and braced. Each unit shall be provided with removable panels to permit the unit (including fans and compressors) to be properly maintained and serviced. Entire casing shall be painted with factory-applied finish. Casing for outdoor units shall be provided with weatherproof construction with all seams bolted. Units shall be sealed to minimize leakage.
- 2.2.3 Base: The base pan of the entire unit shall be sealed against moisture leakage after fabrication.
- 2.3 Condensing Section:
- 2.3.1 Condenser Fans and Drives: Fan shall of rustproof construction: hot-dipped galvanized steel, stainless steel or aluminum. Unit shall have a variable speed motor suitable for the duty indicated. Provide a close fretwork galvanized steel or non-ferrous fan and guard. Motors shall be the permanently lubricated type, resiliently mounted.
- 2.3.2 Condenser Coil: Construct of copper tubes and aluminum fins. Provide inlet guard to protect condenser fins.
- 2.3.3 Compressor: Shall be direct drive, hermetic, scroll type, design for R454B refrigerant with vibration isolation. Each unit shall have dual compressors connected to a manifolded circuit. Motors shall be ball bearing, high starting torque, low starting current type for compressor service. Compressors shall not produce objectionable noise or vibration inside the building. Provide units with hot gas reheat for humidity control. Compressors shall have five (5) year warranty.
- 2.3.4 Service Valves: Provide for high and low pressure readings.
- 2.4 Evaporator Section:
- 2.4.1 Interior of unit shall be thermally and acoustically insulated with minimum R=4.2 insulation. Provide removable panels to permit the unit to be properly serviced and maintained.
- 2.4.2 The evaporator shall include centrifugal fan, fan motor, direct drive and lubricated bearings. Motors shall be high efficiency type as per Division-23, Basic Mechanical Materials and Methods section, "Motors". Provide cooling coils constructed of copper tubes and aluminum fins. Filters and coils shall be selected for a maximum face velocity of 500 fpm. Provide thermal expansion valve, sight glass, refrigerant drier,

strainer, controls and other necessary devices for a completely automatic unit.

2.4.3 Each unit shall be equipped with sloped IAQ drain pans under the entire evaporator coil to prevent condensate carry-over.

2.5 Electric Heater Section:

2.5.1 Provide electric heating coils controlled by one or more magnetic contactors. Three phase coils shall be wired for balanced current in each wire, if possible. Furnish and install necessary overheating and air flow controls to meet the requirements of the National Electric Code. Provide built-in air flow switch and heater interlock relay.

2.5.2 Heaters shall be factory mounted and wired with all required fuses and contactors to provide single point connection.

2.6 Unit Controls:

2.6.1 All safety and operational controls shall be factory wired.

2.6.2 Safety and Operational Control Features:

Internal compressor overtemperature protection.

Crankcase heaters.

Individual motor overcurrent protection.

High pressure cutout.

Low pressure cutout.

Anti-recycle timer (5 minute)

Timer-type defrost control.

Phase failure and low voltage protection.

Liquid line solenoid.

Hot gas bypass.

2.6.3 Room thermostat shall be low voltage, remote-mounted with sub-base and thermometer for controlling heating and cooling cycles. The fan selector shall include "AUTO-ON" controls. The system selector shall include "OFF-COOL-HEAT-EM HT" controls. Provide automatic changeover thermostats with fan that run continuously. The room thermostats shall be manually adjustable by occupants and shall indicate setting and temperature in degrees Fahrenheit. Provide two heating stages.

2.6.4 Outdoor air thermostat shall energize electric heat below 35° F on call for heating by second stage of room thermostat.

2.6.5 Emergency heat switch shall allow operation of all electric heat.

2.6.6 Smoke Detector Operation: Duct-mounted smoke detectors are provided by Division-26 in the supply air stream that stop the PHP and heater when actuated.

- 2.7 Basic Vibration Isolation: Provide vibration isolation products complying with Division-23 section "Vibration Isolation" and the following list:
- 2.7.1 Equipment Mounting: EM1
- 3 EXECUTION
- 3.1 Installation: Install in accordance with producer's printed instructions. Anchor housing to curb with cadmium plated self-tapping screws, lag screws, or bolts, as directed by curb construction. Secure unit to withstand 125 mph wind velocity. Provide curb as required to raise outdoor air intake a minimum of 24" above adjoining grade.
- 3.2 Cleaning: Clean tar and all other soil from housing exterior. Leave ready for Division 7, Caulking Work.
- 3.3 Brush out fins on all coils.
- 3.4 Condensate Drain: Pipe trapped copper condensate drain (full size of unit outlet) to the nearest point of disposal as shown on the drawings.
- 3.5 Construction Filters: Provide 2" thick filters in all units during construction. After construction (but prior to the test and balance being performed) install clean final filters.
- 3.6 Startup: Check entire assembly for correctness of installation, alignment, and control sequencing. Start all component parts in proper sequence. Make all adjustments required to insure proper smooth quiet operation.

END OF SECTION 23 81 43

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SECTION 26 00 00 - ELECTRICAL GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Electrical General Requirements specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements.

1.02 PROJECT/SITE CONDITIONS:

- A. Install work in locations shown on Drawings, unless prevented by project conditions.
- B. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to work specified in other Sections. Obtain permission of Engineer before proceeding.
- C. Before submitting a proposal for the work contemplated in these specifications and accompanying Drawings, each bidder shall examine the site and familiarize himself with all the existing conditions and limitations. No additional compensation will be allowed because of the Contractor's misunderstandings as to the amount of work involved or his lack of knowledge of any condition in connection with the work.

1.03 REGULATORY REQUIREMENTS:

- A. Permits and Inspections: This Contractor shall secure and pay for all permits, and inspections required on work performed under this section of the Specifications. He shall assume full responsibility for all assessments and taxes necessary for the completion and acceptance of the work.
- B. Applicable Standards and Codes: All materials and workmanship shall comply with all applicable codes, specifications, local ordinances, industry standards and utility company regulations. In case of difference between building codes, specifications, federal and state laws, local ordinances, industry standards and utility company regulations and the Contract Documents, the most stringent requirements shall govern. The Contractor shall promptly notify the Engineer in writing of such differences. Should the Contractor perform any work that does not comply with the requirements of the applicable building codes, federal and state laws, local ordinances, industry standards and utility company regulations, he shall bear all costs arising in correcting the deficiencies. Applicable codes and standards shall include all State laws, State Board of Health and State Rating Bureau, local ordinances, utility company regulations and

the applicable requirements of the following:

1. Standard Building Code
2. National Fire Protection Association - NFPA
3. National Electrical Manufacturers Association - NEMA
4. National Bureau of Standards
5. American National Standards Institute - ANSI
6. Underwriters' Laboratories - UL

1.04 COOPERATION:

- A. Cooperate with others in laying out the electrical work so that this phase of the work will properly fit the building and other contractor's requirements.

1.05 PRODUCTS FURNISHED BY OTHERS:

- A. Products are furnished by the Owner or under other Divisions of these Specifications that require electrical connection. This Contractor shall provide all necessary materials and labor to connect to the electrical system all equipment and fixtures having electrical power connection requirements. Refer to other Divisions of these Specifications for additional or specific requirements. Actual rough-in dimensions shall be obtained from Shop Drawings or measurements of the equipment or fixture.
- B. The unpacking, assembling and setting of equipment furnished by the Owner or under other Divisions of these Specifications will be performed by others, unless stated otherwise.
- C. Because the manufacturer of the equipment actually purchased or supplied may vary slightly from that specified, as hereinbefore stated, some rearranging of the requirements may be necessary. This Contractor shall make connections as required by the actual equipment furnished.

1.06 SEQUENCING AND SCHEDULING:

- A. Construct work in sequence under provisions of applicable sections of these specifications.
- B. Power outages shall be scheduled with the Owner and other Contractors. Outages shall be at the convenience of the Owner.

1.07 APPROVAL OF MATERIALS AND EQUIPMENT:

- A. Whenever a material, article, or piece of equipment is identified on the Drawings or in these Specifications by reference to manufacturer's or vendor's name, trade name, catalog number or the like, it is so identified for the purpose of establishing a standard of quality and shall not be construed as limiting competition. Any material, article, or piece of equipment of other manufacturers or vendors, which will perform adequately the intent of the design, will be considered equally acceptable provided written approval has been granted by the Engineer. Materials submitted for approval shall comply with all applicable Sections of these Specifications prior to acceptance. Submit proposed

substitutions to the Architect for approval at least ten
(10) days prior to the bid so that an addendum can be issued to all contractors.
Engineer's opinion shall be final on the equality of substituted items.

B. After the Contract has been awarded, catalog cuts on the following items shall be submitted to the Architect/Engineer for final approval before purchase of the equipment whether substitutions are being made or not:

1. Light Fixtures
2. Panelboards and Switchboards
3. Distribution Equipment
4. Wiring Devices
5. Fabricated Equipment
6. Automatic Transfer Switches

1.08 OBSERVATION, TESTING AND BALANCING:

- A. Observation: The complete job will be, during and/or after construction, subject to the administration of the Engineer. Site visit(s) shall be conducted by the Architect/Engineer or his designated representative as necessary to maintain compliance with the Contract requirements.
- B. Balancing: All branch circuits and feeders shall be tested under typical load conditions (under maximum load conditions if so desired/requested by general contractor or engineer), and loads shall be balanced on the phases of the electrical system.
- C. **Prior to disconnecting existing panels/equipment, phase rotation shall be field-verified and noted. Prior to reconnection, verify so existing phase rotation is maintained.**

1.09 WORKMANSHIP:

- A. All work shall be executed in a neat and substantial manner by skilled workman, well qualified, and regularly engaged in the type of work required. Substandard work shall be removed and replaced by the Contractor at no cost to the Owner.

1.10 OPERATING AND MAINTENANCE INSTRUCTIONS/AS BUILT DRAWINGS:

- A. Four (4) complete sets of instructions containing the manufacturer's operating and maintenance instructions for each piece of equipment shall be furnished to the Owner. Each set shall be permanently bound and shall have a hard cover. One complete set shall be furnished at the time that the test procedure is submitted, and remaining sets shall be furnished before the Contract is completed. Flysheets shall be placed before instructions covering each subject. The instruction sheets shall be approximately 8-1/2" by 11" with large sheets of Drawings folded in. The instructions shall include information for major pieces of equipment and systems.
- B. Upon completion of the work and at the time designated, the services of one project engineer shall be provided by the Contractor to instruct the representative of the

Owner in the operation and maintenance of the systems.

- C. This Contractor shall provide as-built Drawings at the completion of the job. Drawings shall show all significant changes in equipment, wiring, routing, location, etc.

1.11 GUARANTEE:

- A. This Contractor shall guarantee to the Owner, all work performed under this contract to be free from defects in workmanship and material for a period of one year from date of final acceptance by Owner and Architect. Any defects arising during this period will be promptly remedied by the Contractor without cost to the Owner. Lamps and fuses burned out during normal operation after acceptance are exempt from guarantee. This Contractor shall furnish the Owner with an estimated time, from notification of a problem to presence on the site, for all service calls on warranty items.

1.12 COMPLIANCE:

- A. In the event of a conflict between Specifications, Drawings, Codes, Requirements, etc., the most stringent requirements shall govern.
- B. The interpretation of conflicts and resolution thereof shall remain the right of the Architect/Engineer or his designated representative.

PART 2 PRODUCTS: Not Used

PART 3 EXECUTION: Not Used

END OF SECTION 26 00 00

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**SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS, CABLES,
AND DEVICES**

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. Section 260000 - Electrical General Requirements, apply to the work specified in this Section, with additions and modifications specified herein.

1.2 SECTION INCLUDES:

- A. Wire and Cable
- B. Wiring Devices

PART 2 PRODUCTS

2.1 WIRE AND CABLE

- A. Building Wire:
 - 1. Feeder and Branch Circuits 10 AWG and Smaller: Copper, solid conductor, 600 volt insulation, rated 75 degrees C, THHN/THWN.
 - 2. Feeder and Branch Circuits 8 AWG and 6 AWG: Copper, stranded conductor, 600 volt insulation, rated 75 degrees C, THHN/THWN.
 - 3. Feeder and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600 volt insulation, rated 75 degrees C, THW.
 - 4. Control Circuits: Copper, stranded conductor, 600 volt insulation, THHN/THWN.

NOTE: The use of Romex cable is not allowed on this project. MC (metal clad) cable may be used where applicable and approved by local AHJ. Aluminum wire may be used for feeder conductors provided the local AHJ approves and the minimal allowable ampacity (as specified) is met.

- B. Remote Control Signal Cable (where applicable):
 - 1. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 60 degree C, individual conductors

twisted together, shielded, and covered with PVC jacket.

2. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60 degree C, individual conductors twisted together, shielded, and covered with PVC jacket; UL listed.
- C. Cords: Oil-resistant thermoset-insulated multi-conductor flexible cord with identified equipment grounding conductor, suitable for extra hard usage in damp locations, type SO.

2.2 WIRING DEVICES AND WALL PLATES:

- A. Manufacturers:
1. Hubbell
 2. Leviton
 3. Arrow Hart
- B. Wall Switches: AC general use, quiet-operating snap switch rated 20 amperes and 120/277 volts AC, with plastic toggle handle, ivory color unless noted otherwise on architectural drawings. Confirm with COSCo.
1. Single Pole Switch: Hubbell 1221-I (or equal)
 2. Three Way Switch: Hubbell 1223-I (or equal)
- C. Receptacle:
1. Convenience Receptacle Configuration: Type 5-20R, plastic face, ivory color. Model 5262-I manufactured by Hubbell (or equal).
 2. Specific Purpose Receptacle: Configuration indicated on Drawings with black plastic face.
 3. Provide straight-blade receptacles to NEMA WD 1.
 4. Provide straight-blade receptacles to NEMA WD 5.
 5. GFCI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter. Model GFR-5352IA manufactured by Hubbell (or equal). Device shall be compliant to the requirements of UL 943.
- D. Wall Dimmer: Rotary dial or slide type, ivory color. (Confirm with COSCo) Model C-2000 manufactured by Lutron. (or equal) Rating of 2000 watts at 120 volts, AC.
- E. Decorative Cover Plate: Smooth Stainless steel, ivory color, ANSI 302.
- F. Weatherproof Cover Plate: Gasketed cast metal with hinged gasketed device covers rated raintight while in use in accordance with Article 410-57 of the National

Electrical Code.

- G. Attachment Plug Cap: Match receptacle configuration provided for equipment connection.
- H. Cord Reels: Provide cord reels as indicated on the drawings. Cords shall be sized per loads served and shall be 50' in length.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION:

- A. Verify that interior of building has been physically protected from weather.
- B. Verify that mechanical work which is likely to injure conductors has been completed.
- C. Completely and thoroughly swab raceway system before installing conductors.

3.2 INSTALLATION:

- A. Wiring Methods:
 - 1. Concealed Interior Locations: Building wire in raceway.
 - 2. Exposed Interior Locations: Building wire in raceway.
 - 3. Above Accessible Ceilings: Building wire in raceway.
 - 4. Wet or Damp Interior Locations: Building wire in raceway.
 - 5. Exterior Locations: Building wire in raceway.
 - 6. Underground Locations: Building wire in raceway.
 - 7. Hazardous Locations: Building wire in raceway conforming to applicable NEC Articles as identified on the Drawings.
- B. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring. Conductors shall be sized to compensate for voltage drop.
- C. Neatly train and secure wiring inside boxes, equipment and panelboards.
- D. Use UL listed wire pulling lubricant for pulling conductors in raceways.
- E. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.

- F. Devices shall mount flush or as indicated on the Drawings.
- G. Install wiring devices in accordance with manufacturer's instructions.
 - 1. Install wall switches 48 inches above floor, "OFF" position down.
 - 2. Install wall dimmers 48 inches above floor. De-rate ganged dimmers as instructed by manufacturer. Do not use a common neutral, provide a separate neutral for each dimmed circuit.
 - 3. Unless noted otherwise, install convenience receptacles 18 inches above floor, 6 inches above counters or splash backs, with grounding pole on bottom.
 - 4. Install GFCI receptacles at all outdoor locations and all indoor locations as required by NFPA70, and as indicated.
 - 5. Install specific purpose receptacles at heights shown on Drawings.
 - 6. Install cord and attachment plug caps on equipment where acceptable and approved by all local AHJ's... and deemed necessary. Size cord for connected load and rating of branch circuit over- current protection.
- K. Install wall plates flush and level.
 - 1. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
 - 2. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.
 - 2. Install weatherproof cover plates on all devices/boxes in wet or outdoor locations.

3.3 FIELD QUALITY CONTROL:

- A. Perform field inspection and testing of circuits under provisions of Section 16000.
 - 1. Inspect wire and cables for physical damage and proper connection.
 - 2. Torque test conductor connections and terminations to manufacturer's recommended values.
 - 3. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

END OF SECTION 26 05 19

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SECTION 26 05 30 - RACEWAY SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. Section 260000 - Electrical General Requirements, apply to the work specified in this section, with additions and modifications specified herein.

1.2 SECTION INCLUDES:

- A. Conduit and Conduit Fittings
- B. Electrical Boxes and Fittings
- C. Cable Tray PART

2 PRODUCTS

2.1 CONDUIT AND FITTINGS:

A. Conduit:

- 1. Metal Rigid Conduit: Galvanized steel.
- 2. Metal Tubing: Galvanized steel.
- 3. Flexible Conduit: Steel.
- 4. Liquid-Tight Flexible Conduit: Flexible conduit with PVC Jacket.
- 5. Plastic Conduit and Tubing: NEMA TC 2; PVC. Use Schedule 40 conduit.

B. Conduit and Fittings:

- 1. Conduit Fittings and Conduit Bodies: NEMA FB 1. Conduit fittings to be steel, threaded type. Split couplings are not acceptable.
- 2. Tubing Fittings: NEMA FB 1. Tubing fittings to be steel compression type for conduit up to 2" in diameter and set screw type for conduit 2-1/2" and larger.
- 3. Flexible Conduit Fittings: NEMA FB 1. Flexible conduit fittings to be steel set

screw or screw in type.

4. Liquid-Type Flexible Conduit Fittings: NEMA FB 1. Liquid-tight flexible conduit fittings to be steel compression type.
5. Plastic Fittings and Conduit Bodies: NEMA TC 3.

2.2 ELECTRICAL BOXES:

A. Boxes:

1. Sheet Metal: NEMA OS 1; galvanized steel, 4" or 4-11/16" square. Provide galvanized plaster/tile ring for recessed outlet boxes.
 2. Cast Metal: Aluminum or cast ferroalloy, deep type, gasketed cover, threaded hubs.
 3. Nonmetallic: NEMA OS 2.
- B. Large Enclosures: NEMA 250; Type 4, steel enclosures with manufacturer's standard enamel finish and cover, held closed screws.

2.3 CABLE TRAY (where applicable):

A. Manufacturers:

1. B-line
 2. Mono-Systems
- B. Ladder type, constructed of aluminum with 9" rung spacing, 6" siderails and 18" wide
- C. Fittings: Horizontal 90° elbows, horizontal tees, and horizontal crosses with all metal accessories to connect to straight sections.
- D. Support: Supports shall be fabricated channel, and threaded rods.
- E. Grounding: Provide grounding straps as each junction, splice, fitting, etc.

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION:

- A. Examine supporting surfaces to determine that surfaces are ready to receive work.
- B. Electrical boxes shown on Contract Drawings are approximate locations unless dimensioned.

3.2 INSTALLATION:

- A. Use conduit and tubing for raceways in the following locations:
 - 1. Underground Installations: Rigid steel conduit, painted with two coats of epoxy asphaltum paint, or PVC conduit.
 - 2. Installations In Concrete: Rigid steel conduit, or PVC conduit.
 - 3. In Slab Above Grade: Rigid steel conduit, or PVC conduit.
 - 4. Exposed Outdoor Locations: Rigid steel conduit where damage from an external source is likely. Otherwise, schedule 80 PVC may be used.
 - 5. Wet Interior Locations: Rigid steel conduit or electrical metallic tubing. Use threaded or raintight fittings for conduit.
 - 6. Concealed Dry Interior Locations: Rigid steel conduit or electrical metallic tubing.
 - 7. Exposed Dry Interior Locations: Rigid steel conduit or electrical metallic tubing.
 - 8. Feeders: Galvanized rigid steel conduit on all feeders.
- B. Size raceways for conductor type installed.
 - 1. Minimum Size Conduit: 1/2 inch.
- C. Arrange conduit and tubing to maintain headroom and to present a neat mechanical appearance.
 - 1. Route exposed raceway parallel and perpendicular to walls and adjacent piping.
 - 2. Maintain minimum 6 inch clearance to piping and 12 inch clearance to heat surfaces such as flues, piping, and heating appliances.
 - 3. Maintain required fire, acoustic, and vapor barrier rating when penetrating walls, floors, and ceilings.
 - 4. Route conduit through roof openings for piping and ductwork where possible; otherwise, route through roof jack with pitch pocket.
 - 5. Group in parallel runs where practical. Use rack constructed of steel channel. Maintain spacing between raceways or de-rate circuit ampacities to NFPA 70 requirements.
 - 6. Use approved manufactured conduit hangers and clamps; do not fasten with wire or perforated pipe straps. Utilize conduit hangers for conduits located below floor slabs.

7. Use conduit bodies to make sharp changes in direction.
 8. Terminate all conduits with insulated bushings.
 9. Use suitable caps to protect installed raceway against entrance of moisture and dirt.
 10. Provide a pull string in all empty raceways.
 11. Install expansion joints fittings where raceway crosses building expansion joints.
 12. Install plastic conduit and tubing in strict accordance with the manufacturer's recommendations. When plastic conduit is installed, use galvanized rigid elbows for 90E bends.
- D. Install electrical boxes as shown on the Drawings, and as required for splices, taps, wire pulling, equipment connections and regulatory requirements.
1. Use cast outlet box in exterior locations, wet locations, and exposed interior locations.
 2. Use large enclosure for interior pull and junction boxes larger than 12 inches in any dimension.
 3. Locate and install electrical boxes to allow access. Provide access panels if required.
 4. Locate and install electrical boxes to maintain headroom and to present a neat mechanical appearance.
 5. Install pull boxes and junction boxes above accessible ceilings or in unfinished areas.
 6. Provide knockout closure for unused openings.
 7. Align wall-mounted outlet boxes plumb and level for switches, and similar devices.
 8. Coordinate mounting heights and locations of outlets above counters and backsplashes.
 9. Install lighting outlets to locate luminaires as shown on the Drawings.
- E. Use recessed outlet boxes in finished areas where indicated.

1. Secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness, and plaster/tile ring installation.
2. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.
3. Locate boxes in masonry walls to require cutting corner only. Coordinate masonry cutting to achieve neat openings for boxes.
4. Do not install boxes back-to-back in walls; provide 6 inch separation, minimum. In acoustic-rated walls provide 24 inch separation minimum.
5. Do not damage insulation.

END OF SECTION 26 05 30

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SECTION 26 27 13 - SERVICE AND DISTRIBUTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. Section 260000 - Electrical General Requirements, apply to the work specified in this Section, with additions and modifications specified herein.

1.2 SECTION INCLUDES:

- A. System Description
- B. Utility Requirements
- C. Grounding
- D. Switchboards
- E. Panelboards
- F. Enclosed Switches
- G. Fuses
- H. Transformers
- I. Enclosed Circuit Breakers
- J. Plug-in Duct

1.4 SYSTEM DESCRIPTION:

- A. The existing electrical service to remain. Refer to 'Power Riser Diagram' for installation of new 120/208V, 3-phase, 4-wire underground feeder from existing main electrical room. The EC shall field-coordinate with the owner and utility companies prior to construction to confirm method of new feeder and all requirements.

1.5 PROJECT CONDITIONS:

- A. Verify field measurements for the equipment to ensure proper fit within the space proposed.

1.6 UTILITY REQUIREMENTS:

- A. The existing serving utility is FP&L (formerly GPCo). No new electrical service required.
- B. No new metering required for this project. When required, metering shall be provided by the utility company and installed by electrical contractor.
 - 1. Coordinate with the utility for exact metering requirements.
 - 2. Install metering devices provided by the utility company.

PART 2 PRODUCTS

2.1 SWITCHBOARD:

- A. Manufacturers:
 - 1. Square D Company
 - 2. ITE-Siemens
 - 3. General Electric Company
 - 4. Cutler Hammer
- B. Switchboard: NEMA PB2.
 - 1. Line and Load Terminations: Accessible from front only of switchboard, suitable for conductor materials used.
 - 2. Main Sections Devices: Individually mounted.
- C. Ratings: As shown on Drawings.
- D. Bussing:
 - 1. Bus Material: Copper or Aluminum with tin plating sized in accordance with NEMA PB2.
 - 2. Bus Connections: Accessible from front for maintenance.
 - 3. Ground Bus: Copper

- E. Enclosure: Type 1 General purpose as shown on the Drawings.
 - 1. Align sections at front and rear.
 - 2. Height: 90 inches
 - 3. Finish: Manufacturer's standard light gray enamel over external surfaces.

- F. Future Provisions:
 - 1. Fully equip spaces for future devices with bussing and bus connection provisions; continuous current rating as indicated on the Drawings.
 - 2. Do not taper main bus rating.

- G. Switching and Over-Current Protection Devices:
 - 1. Molded Case Circuit Breakers: NEMA AB 1.
 - 2. Solid State Molded Case Circuit Breakers: NEMA AB 1; with electronic sensing, timing and tripping circuits for adjustable current settings; ground fault trip; instantaneous trip and adjustable short time trip.

- H. Switchboard Instruments:
 - 1. Ground Fault Sensors: Zero sequence type.
 - 2. Ground Fault Relay: Adjustable ground fault sensitivity from 200 to 1200 amperes, time delay adjustable from 0 to 1 second.
 - 3. Square D Power Logic metering.

2.2 PANELBOARDS:

- A. Manufacturers:
 - 1. Square D Company
 - 2. ITE-Siemens
 - 3. General Electric Company
 - 4. Cutler Hammer

- B. Distribution Panelboards: NEMA PB 1; circuit breaker type.
 - 1. Enclosures: Type 1 or 3R as shown on Drawings.

2. Mounting: Surface or flush mount as shown on Drawings.
 3. Bus: Copper.
 4. Ground Bus: Copper
 5. Voltage and phase: As shown on Drawings.
 6. Minimum Integrated Equipment: As shown on Drawings.
 7. Hinged door with lock.
 8. Circuit Breakers: Bolt-on, ratings as shown on Drawings.
- C. Light and Power Panelboards: NEMA PB 1; circuit breaker type.
1. Enclosures: Type 1 or 3R as shown on Drawings.
 2. Surface or flush mount as shown on Drawings.
 3. Bus: Copper.
 4. Ground Bus: Copper.
 5. Voltage and phase as shown on Drawings.
 6. Minimum Integrated Equipment: As shown on Drawings.
 7. Hinged door with lock.
 8. Circuit Breakers: Bolt-on, ratings as shown on Drawings.
- D. Accessories: Provide panel and branch device accessories as shown on Drawings.
- E. Future Provisions: Where space provisions are indicated on the Drawings provide bussing, bus extensions, etc. require to mount future circuit breakers. Where spare provisions are indicated on the Drawings provide circuit breakers complete and ready for connection.

2.3 ENCLOSED SWITCHES:

- A. Manufacturers:
1. Square D Company
 2. ITE-Siemens
 3. General Electric Company

4. Cutler Hammer
- B. Enclosed Switch Assemblies: NEMA KS 1; Type HD.
 1. Fuse Clips: Designed to accommodate Class 'R' or 'J' fuses as shown on Drawings.
- C. Enclosures: NEMA KS 1; Type 1 or 3R as required.
- D. Ground: Provide grounding lug.
- E. Ratings: 600 or 250 volts to match system service requirements, poles and ampere ratings as indicated on the Drawings.

2.4 FUSES:

- A. Manufacturers:
 1. Bussman
 2. Shawmut
 3. Little Fuse
- B. Service Entrance/Feeder Circuits-601 Amp and Larger
 1. Current Limiting
 2. UL Class L
 3. 200,000 Ampere RMS Interrupting Rating
 4. Voltage Rating: As required for system compatibility.
- C. Service Entrance/Feeder Circuits-600 Amp and Smaller
 1. Current Limiting
 2. UL Class RK1
 3. 200,000 Ampere RMS Interrupting Rating
 4. Voltage Rating: As required for system compatibility
- D. Motor, Motor Controller, Transformer and Inductive Circuits
 1. Current Limiting

2. UL Class RK1, Time Delay
3. 200,000 Ampere RMS Interrupting Rating
4. Voltage Rating: As required for system compatibility.

2.5 TRANSFORMERS:

A. Manufacturers:

1. Square D Company
2. ITE-Siemens
3. General Electric Company
4. Cutler Hammer

B. Description: Enclosed air-cooled dry type transformer.

C. Ratings:

1. Primary Voltage: As shown on Drawings.
2. Secondary Voltage: As shown on Drawings.
3. Capacity: KVA ratings as shown on Drawings.
4. Basic Impulse Level: 10 BIL.
5. Insulation Class/Temperature Rise: Class 220/115 degrees C.

D. Configuration: Two winding, delta-wye.

E. Winding Taps: Four full capacity primary taps, each at 2.5 percent below rated voltage; and two full capacity primary taps, each at 2.5 percent above rated voltage.

F. Mounting: Wall, floor, or trapeze as shown on Drawings.

G. Enclosures: Code gauge steel, NEMA 1 or 3R as required.

2.6 ENCLOSED CIRCUIT BREAKERS:

A. Manufacturers:

1. Square D Company

2. ITE-Siemens
 3. General Electric Company
 4. Cutler Hammer
- B. Circuit Breaker: NEMA AB 1.
1. Voltage: As shown on Drawings.
 2. Enclosure: NEMA AB 1; Type 1 or 3R as required.
 3. Accessories: As indicated on Drawings.

2.7 PLUG-IN DUCT:

- A. Manufacturers:
1. Square D Company
 2. ITE-Siemens
 3. General Electric
 4. Cutler Hammer
- B. Plug-in Duct
1. Bus Material: Copper
 2. Enclosure: NEMA 1
 3. Mounting: Suspended from structure
 4. Rating: 225 amperes, 600 volt, 3 phase, 4 wire
- C. Plug-in Units
1. Fusible switches

PART 3 EXECUTION

3.1 EXAMINATION AND PREPARATION:

- A. Make arrangements with utility company to obtain permanent electrical service to the facility.
- B. Provide concrete pad for utility transformer. Pad details on the Drawings are for estimating purposes. Coordinate exact pad requirements with the utility prior to

installation.

3.2 INSTALLATION:

- A. Install utility services in accordance with utility company standards and requirements.
 - 1. Underground Service: Install service entrance conduits and conductors from the utility pad mounted transformer to the service equipment as shown on the Drawings. (Verify with utility prior to bid/construction.) In addition, coordinate with utility company for required provisions for utility-owned underground primary cabling.
 - 2. If applicable...provide lugs on utility transformer spaces sized to accommodate service entrance conductors.
- B. Install equipment in accordance with manufacturer's instructions.
- C. Install switchboard to NEMA PB 2.1.
- D. Install panelboards to NEMA PB 1.1.
- E. Ground the electrical service in accordance with NFPA 70, National Electrical Code, Article 250.
- F. Provide labels for all switchboards, panelboards, and distribution equipment.
- G. Provide typewritten directory inside panel door for all

panelboards.

END OF SECTION 26 27 13

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SECTION 26 50 00 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. Section 260000 - Electrical General Requirements, apply to the work specified in this Section, with additions and modifications specified herein.

1.2 SECTION INCLUDES:

- A. Grounding and Bonding
- B. Supports
- C. Identification
- D. Connection of Equipment
- E. Excavation, Trenching, and Backfilling
- F. Cleaning and Painting
- G. Cutting and Patching

1.3 PROJECT CONDITIONS:

- A. Existing project conditions indicated on Drawings are based on casual field observation and existing record documents.
- B. Verify field measurements and circuiting arrangements as shown on the Drawings.
- C. Report discrepancies to Engineer before disturbing existing

installation. **PART 2 PRODUCTS**

2.1 GROUNDING MATERIALS:

- A. Ground Rod: Copper clad steel, 3/4 inch in diameter x 10 feet in length.
- B. Mechanical Connectors: Cast bronze construction with matching bolt, nuts, and washers.

- C. Exothermic Welds: Materials shall be from the same source. Materials shall be Cadweld or approved equal.
- D. Conductors: Insulated type complying with applicable Sections of these Specifications or bare soft drawn copper as indicated.

2.2 SUPPORTS:

- A. Fabrication Steel: Galvanized or painted steel of standard shapes and sizes.
- B. Manufactured Channel: Hot dipped galvanized with all hardware required for mounting as manufactured by

Unistrut, Kindorf, or Powerstrut.
- C. Miscellaneous Hardware: Standard sizes treated for corrosion resistance.

2.3 IDENTIFICATION:

- A. Nameplates: Engraved three-layer laminated plastic, black letters on white background.
- B. Wire and Cable Markers: Cloth type, split sleeve type, or tubing type.
- C. Panel Directories: Typewritten under plastic

cover. PART 3 EXECUTION

3.1 INSTALLATION:

- A. Install Products in accordance with manufacturer's instructions.
- B. Except where specifically indicated otherwise, all exposed non-current-carrying metallic parts of electrical equipment, metallic raceway systems, and service neutral of the electrical system shall be grounded.
 - 1. Equipment grounding shall be accomplished by installing a separate grounding conductor in each raceway of the system. The Conductor shall be provided with a distinctive green insulation or marker and shall be sized in accordance with Table 250-122 of the National Electrical Code for circuit ampacity ratings.
 - 2. The electrical system grounding electrode shall be made at the main service equipment and shall be extended to the point of entrance of the metallic cold water service. Ground to be sized in accordance with Table 250-66 of the National Electrical Code. Connection to the water pipe shall be made by a suitable ground clamp. If flanged pipes are encountered, connection shall be made on the street side of the flange connection. If the metallic water service is coated with an insulating material or there is no metallic water service to the building, ground connection shall be made to ground rods at the exterior of the

building driven full length into the earth. The maximum resistance of the driven ground shall not exceed 25 ohms under normally dry conditions. If this resistance cannot be obtained with a single rod, additional rods shall be installed not less than 6 feet on centers, or if sectional type rods are used, additional sections may be coupled together and driven with the first rod. The resultant resistance shall not exceed 25 ohms measured not less than 48 hours after rainfall.

3. Ground all building steel including reinforcing bars in concrete and all piping entering the building from outside. Where applicable, see Section 16900 for additional requirements.
- C. Make electrical connections to equipment in accordance with equipment manufacturer's instructions.
1. Verify that wiring and outlet rough-in work is complete and that equipment is ready for electrical connection, wiring, and energization.
 2. Make wiring connections in control panel or in wiring compartment of pre-wired equipment. Provide interconnecting wiring as required by equipment manufacturer.
 3. Install and connect disconnect switches, controllers, control stations, and control devices as required by equipment manufacturer.
 4. Make conduit connections to equipment using flexible conduit. Use liquid-tight flexible conduit in damp or wet locations.
 5. Install pre-fabricated cord set where connections with attachment plug is indicated or specified, or use attachment plug with suitable strain-relief clamps.
 6. Provide suitable strain-relief clamps for cord connections to outlet boxes and equipment connection boxes.
- D. Install support systems sized and fastened to accommodate weight of equipment and conduit, including wiring, which they carry.
1. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using precast insert system, expansion anchors, preset inserts, beam clamps, or spring steel clips.
 2. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors or preset inserts in solid masonry walls; self-drilling anchors or expansion anchors on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.
 3. Do not fasten supports to piping, ceiling support systems, ductwork, mechanical equipment, conduit, etc.

4. Do not use powder-actuated anchors.
 5. Do not drill structural steel members.
 6. Fabricate supports from structural steel or steel channel.
 7. Install surface mounted cabinets and panelboards with minimum of four anchors.
 8. Provide steel channel supports to stand cabinets one inch off wall in wet locations.
 9. Bridge studs top and bottom with channels to support flush mounted cabinets and panelboards in stud walls.
 10. Install free-standing electrical equipment on 4 inch high concrete pads.
- E. Identify electrical distribution and control equipment, and loads served, to meet regulatory requirements and as specified herein.
1. Degrease and clean surface to receive nameplates.
 2. Secure nameplates to equipment fronts using screws or rivets with edges parallel to equipment lines.
 3. Use nameplates with 1/4 inch lettering to identify Switchboard, Panelboards, Safety Switches, Motor Starters and Branch Devices of Switchboards.
 4. Panel directories shall accurately indicate load served and location of load.
 5. Engrave plates as indicated by Schedules on the Drawings.
- F. Install wire markers on each conductor in panelboard gutters, boxes, and at load connections.
1. Use distribution panel and branch circuit or feeder number to identify power and lighting circuits.
 2. Use control wire number as indicated on schematic and interconnection diagrams or equipment manufacturer's shop drawings to identify control wiring.
- G. Excavating, trenching, and backfilling shall be accomplished as indicated on the Drawings or where required to install systems and/or equipment.
1. Trenches for all underground conduits or equipment shall be excavated to the required depths. Where soft, wet, or unstable soil is encountered, the bottom of the trench shall be filled with 6 inches of compacted gravel and sand fill. All

trench bottoms shall be tamped hard. Trenches shall be shored as required to meet OSHA requirements and general safe working conditions.

2. After conduits or equipment have been inspected and approved by the Architect and prior to backfilling, all forms shall be removed and the excavation shall be cleaned of all trash and debris. Material for backfilling shall consist of the excavation, or borrow of sand, gravel, or other materials approved by the Architect and shall be free of trash, lumber, or other debris. Backfill shall be placed in horizontal layers, not exceeding 9 inches in depth and properly moistened to approximate optimum requirements. Each layer shall be compacted by hand or machine tamped to a density equivalent to surrounding soil.
- H. Cleaning and Painting: The respective Contractors for the various phases of work shall clear away all debris, surplus materials, etc., resulting from their work or operations, leaving the job and equipment furnished in the clean first class condition.
1. All fixtures and equipment shall be thoroughly cleaned of plaster, stickers, rust, stains and other foreign matter or discoloration, leaving every part in an acceptable condition ready for use.
 2. The Contractor shall refinish and restore to the original condition and appearance, all electrical equipment which has sustained damage to manufacturer's prime and finish coats or enamel or paint. Materials and workmanship shall be equal to the requirements described for other painting.
- I. Cutting and Patching: This Contractor shall provide all cutting, digging, etc., incident to his work and shall make all required repairs thereafter to the satisfaction to the Engineer, but in no case shall the Contractor cut into any major structural element, beam, or column without written approval of the Engineer.
1. Pavements, sidewalks, roads, curbs, walls, ceilings, floors, and roofs shall be cut, patched, repaired and/or replaced as required to permit the installation of the electrical work.
 2. The Contractor shall bear the expense of all cutting, patching, painting, repairing, or replacing of the work of other trades required because of his fault, error, or tardiness or because of any damage done by him.

END OF SECTION 26 50 00

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SECTION 26 51 00 – LIGHTING

PART 1 – GENERAL

Luminaire Schedule: Product for each luminaire are specified in luminaire schedule on drawings. **EQUALS MUST BE SUBMITTED TO ARCHITECT/ENGINEER FOR APPROVAL 10 DAYS PRIOR TO SUBMITTING BID.**

1.01 SUMMARY

A. Section includes the following types of LED luminaires:

1. Cylinder.
2. Downlight.
3. Lowbay.
4. Recessed linear.
5. Strip light.
6. Surface mount, linear.
7. Surface mount, nonlinear.
8. Suspended, linear.
9. Suspended, nonlinear.
10. Materials.
11. Finishes.
12. Luminaire support.

1.02 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. LED: Light-emitting diode.
- F. Lumen: Measured output of lamp and luminaire, or both.
- G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product, arranged by designation.
- B. Shop Drawings: For nonstandard or custom luminaires.
 - 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.
- C. Product Schedule: For luminaires and lamps, **Use same designations indicated on Drawings.**

1.04 INFORMATIONAL SUBMITTALS

- A. Seismic Qualification Certificates: For luminaires, accessories, and components, from manufacturer.
- B. Product Certificates: For each type of luminaire.
- C. Sample warranty.

1.05 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.06 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: **Five** year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE 7.

2.02 LUMINAIRE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Standards:
 - 1. ENERGY STAR certified.
 - 2. California Title 24 compliant.
 - 3. NRTL Compliance (where applicable): Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.
 - 4. FM Global Compliance (where applicable): Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.
 - 5. UL Listing: Listed for damp location.
 - 6. Recessed luminaires shall comply with NEMA LE 4.
- C. CRI of minimum 80. CCT of minimum 2700 K (interior fixtures) and minimum 4000 K (exterior fixtures unless noted otherwise on drawings).
- D. Rated lamp life of 50,000 hours to L70.
- E. Lamps dimmable from 100 percent to 0 percent of maximum light output.
- F. Internal driver.
- G. Nominal Operating Voltage: 120-277 V ac (unless specified otherwise on drawings).
 - 1. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
- H. Housings:
 - 1. Extruded-aluminum housing and heat sink.
 - 2. Fixture dependent; refer to 'LIGHTING FIXTURE SCHEDULE' on drawings.

2.03 CYLINDER wall-mounted luminaires, used for direct or indirect lighting.

- A. **If 'Other Than Specified' fixtures are to be considered as equal for bidding, equal fixture shall be submitted to Architect/Engineer a minimum of 10 days prior to submitting bid.**
- B. Minimum 1000 lumens. Minimum allowable efficacy of 80 lumens per watt.
- C. With integral mounting provisions.

2.04 DOWNLIGHT

- A. Minimum 1,000 lumens. Minimum allowable efficacy of **80** lumens per watt.
- B. Universal mounting bracket.
- C. Integral junction box with conduit fittings.
- D. Optics:
 - 1. Refer to drawings to determine if fixtures are to have Fixed or Adjustable lens.
 - 2. Refer to drawings to determine Spot/[Medium/[Wide light distribution.

2.05 LOWBAY

- A. Minimum 5,000 lumens. Minimum allowable efficacy of 80 lumens per watt.
- B. Universal mounting bracket.

2.06 RECESSED LINEAR

- A. Minimum 1,500 lumens. Minimum allowable efficacy of 85 lumens per watt.
- B. Integral junction box with conduit fittings.

2.07 STRIP LIGHT

- A. Minimum 750 lumens. Minimum allowable efficacy of 80 lumens per watt.
- B. Integral junction box with conduit fittings.

2.08 SURFACE MOUNT, LINEAR

- A. Minimum 750 lumens. Minimum allowable efficacy of **80** lumens per watt.
- B. Integral junction box with conduit fittings.

2.09 SURFACE MOUNT, NONLINEAR

- A. Minimum 750 lumens. Minimum allowable efficacy of 80 lumens per watt.
- B. Integral junction box with conduit fittings.

2.10 SUSPENDED, LINEAR

- A. Minimum 1,500 lumens. Minimum allowable efficacy of 85 lumens per watt.

2.11 SUSPENDED, NONLINEAR

- A. Minimum 1,500 lumens. Minimum allowable efficacy of 85 lumens per watt.
- B. Integral junction box with conduit fittings.

2.12 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging

- B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit re-lamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during re-lamping and when secured in operating position.

C. Diffusers, and Globes:

1. Acrylic: One hundred percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
2. Glass: Annealed crystal glass unless otherwise indicated.
3. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.

D. Housings:

1. Extruded-aluminum housing and heat sink.
2. Refer to drawings for type of finish.

2.13 METAL FINISHES

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.14 LUMINAIRE SUPPORT

- A. Comply with requirements in Section 265000 "Basic Electrical Materials & Methods" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- C. Wires: ASTM A 641/A 641 M, Class 3, soft temper, zinc-coated steel, 12 gage.
- D. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.
- E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports: Sized and rated for luminaire weight.
- E. Flush-Mounted Luminaire Support: Secured to outlet box.
- F. Wall-Mounted Luminaire Support:
 - 1. Attached to structural members in walls, to a minimum 20 gauge backing plate attached to wall structural members, or using through bolts and backing plates on either side of wall.
 - 2. Do not attach luminaires directly to gypsum board.
- G. Ceiling-Mounted Luminaire Support:
 - 1. Ceiling mount with minimum one (1) 5/32-inch diameter aircraft cable supports 120 inches in length.
 - 2. Ceiling mount with pendant mount with 5/32-inch diameter aircraft cable supports adjustable to [120 inches in length.
 - 3. Ceiling mount with hook mount.
- H. Suspended Luminaire Support:

1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
 2. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
 3. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of luminaire chassis, including one at each end.
 4. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.
- I. Ceiling-Grid-Mounted Luminaires:
1. Secure to any required outlet box.
 2. Secure luminaire using approved fasteners in a minimum of four locations, spaced near corners of luminaire.
- J. Comply with requirements in Section 16100 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.02 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 26 51 00

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**BAY DISTRICT SCHOOLS
TOMMY SMITH ELEMENTARY
PLAYGROUND ENCLOSURE
CONSTRUCTION DOCUMENTS
MARCH 6, 2026**

SECTION 28 31 00 - FIRE DETECTION AND ALARM

PART 1 GENERAL

1.01 SECTION INCLUDES:

- A. Fire alarm and smoke detection system.

1.02 REFERENCES:

- A. NFPA 13: Standard for the Installation of Sprinkler Systems.
- B. NFPA 13A: Recommended Practice for the Inspection, Testing and Maintenance of Sprinkler Systems.
- C. NFPA 70: National Electrical Code
- D. NFPA 72: Installation, Maintenance, and Use of Local Protective Signaling System.
- E. NFPA 72E: Automatic Fire Detectors.
- F. NFPA 72G: Notification Appliances for Protective Signaling Systems.
- G. NFPA 72H: Guide for Testing Procedure for Local, Auxiliary, Remote Station and Proprietary Protective Signaling Systems.
- H. NFPA 90: Standard for the Installation of Air Conditioning and Ventilating Systems.
- I. NFPA 101: Life Safety Code.

1.03 REGULATORY REQUIREMENTS:

- A. Systems: UL and FM listed.
- B. Conform to requirements of NFPA.
- C. Conform to requirements of Standard Building Code.
- D. Conform to requirements of Americans with Disabilities Act - ADA.

1.04 SYSTEM REQUIREMENTS:

A. The existing addressable fire alarm system to remain. The new devices to match the existing system and be 100% compatible with the existing FACP. Where applicable, the system shall include, but not be limited to the following elements.

1. Master system CPU including all fire detection.
2. Circuit interface panels including all modules.
3. Power supplies, batteries and battery chargers.
4. Equipment enclosures.
5. Intelligent addressable manual pull stations, heat detectors, analog smoke detectors, alarm monitoring modules, and supervised control modules.
6. Annunciator panels, printers and video display terminals.
7. Audible and visual evacuation signals (equipped with voice evacuation technology).
8. Color graphic displays and historical archiving.
9. Software and firmware as required to provide a complete functioning system.
10. Wiring and raceway.
11. Installation, testing and certification and education labor.
12. Multipliex, system driven remote annunciator.

1.05 SYSTEM FUNCTION:

- A. The system shall be a complete, electrically supervised multiplex style fire detection and audio/visual evacuation system (w/ voice-evacuation) with intelligent analog alarm initiation, to be device addressable and annunciated as described and shown on the Drawings.
- B. The system shall support intelligent analog smoke detection, conventional smoke detection, manual station, water flow, supervisory, security, and status monitoring devices. The system shall also support audio/visual circuits.
- C. The panel shall be UL listed as a test instrument for the measurement of the sensitivity of connected intelligent analog ionization and photoelectric smoke detectors to comply with the testing requirements of NFPA 72E.
- D. The system shall annunciate a trouble condition when any smoke detector approaches 80% of its alarm threshold due to gradual contamination, signaling the need for service and eliminating unwanted alarms.

- E. Any intelligent analog smoke detector or conventional smoke detector zone shall include a selectable alarm verification capability. This feature shall provide automatic verification capability. This feature shall provide automatic verification of smoke detector alarms as described by NFPA 72E.
- F. The system shall recognize initiating of an alarm and indicate the alarm condition in a degrade mode of operation, in the event of processor failure or the loss of system communications to the circuit interface panels.
- G. The system shall provide a one-person field test of either the complete system or a specified area, maintaining full function of areas not under test.
- H. The system shall be provided with eight levels of password protection with up to forty passwords.
- I. The system shall be programmed in the field via a laptop computer. All programmed information shall be stored in nonvolatile memory after downloading into the control panel. No special programming terminal or prom burning shall be required and the system shall continue in service during reprogramming. Systems requiring on line programming or not capable of mass uploading of software for offsite documentation or editing will not be considered acceptable.
- J. The system shall consist of central architecture using a single centrally located control unit. The system also shall be operable in a distributed multiplex architecture using a centrally located control unit with interconnection to remote circuit interface panels containing any combination of plug-in intelligent analog signaling circuits, plug in conventional initiating device circuits and plug in relays.
- K. The system shall support a UL listed supervised printer.
- L. The system as installed shall be expandable to its predetermined maximum capacity of 3,000 initiation devices and/or 2,000 combined zones of audio/visual devices.

1.06 SYSTEM OPERATION:

- A. Activation of any fire alarm initiating device shall cause the following actions and indications:
 - 1. Display a custom message describing the device originating the alarm condition, at the fire alarm control panel LCD alpha numeric display. Remote LCD annunciators shall display the alarm condition via unique messages as required by the system Owner. LED type annunciator displays conventional and graphic style shall indicate alarm zoning as specified.
 - 2. Sound the audio/voice circuits, and activate the visual signals.
 - 3. Shut down all air handling units within the smoke zone of alarm origin.

4. Furnish an alarm system closure for connection to an off-site reporting device as contracted for by the system user, via a dialer provided under this Section. THIS OPTION REQUIRED IF EXISTING SYSTEM IS NOT EQUIPPED TO PROVIDE THIS OPTION.
 5. Close all smoke doors and smoke dampers (if any present in facility) shown on the Drawings to prevent the spread of smoke.
 6. Record within the non-volatile system historical memory the occurrence of the event, the time and date of occurrence and the device initiating the event.
- B. WHERE APPLICABLE... Activation of any smoke detector or two cross zoned smoke detectors in a single elevator lobby or an elevator equipment room shall, besides the actions described above, cause the recall of that bank of elevators to the terminal floor and the lockout of controls. In the event of recall initiation by a detector in the first-floor lobby, the recall shall be to the alternate floor.
- C. Activation of any detector in an elevator hoist way or machine room shall cause the capture of that bank of elevators per local requirements, upon completion of these actions, activate the sprinkler system pre-action release panel.
- D. Activation of any supervisory circuit, shall cause the following actions and indications:
1. Display the origin of the supervisory condition report at the alarm control panel alphanumeric LCD display.
 2. Activate supervisory audible and visual signals as indicated on the Drawings.
 3. Furnish an alarm system closure for connection to an off-site reporting device as contracted for by the system user.
 4. Record the occurrence of the event, the time of occurrence and the device initiating the event.
- E. Receipt of a trouble report (primary power loss, open or grounded initiating or signaling circuit wiring, open, grounded or shorted indication system wiring, device communication failure, battery disconnect) at the fire alarm control panel shall cause the following actions and indications:
1. Display at the alarm control panel alphanumeric LCD display, the origin of the trouble condition report.
 2. Activate trouble audible and visual signals at the control panel and as indicated on the Drawings.
 3. Furnish an alarm system closure for connection to an off-site reporting device as contracted for by the system user, via a Dialer furnished under this Section.
 4. Record the occurrence of the event, the time of occurrence and the device initiating

the event.

1.07 SYSTEM ZONING:

- A. Each intelligent addressable device or conventional zone on the system shall be displayed at the fire alarm control panel by a unique alpha numeric label identifying its location.

1.08 QUALIFICATIONS:

- A. Manufacturer: Company specializing in smoke detection and fire alarm systems with five years' experience and an office within 125 miles of job site.
- B. Installer: Company specializing in smoke detection and fire alarm system with three years' experience.

1.09 SUBMITTALS:

- A. Submit shop Drawings and products data.
- B. Provide wiring diagrams, data sheets, and equipment ratings, layout, dimensions, and finishes. Include location of end-of-line devices.
- C. Submit manufacturer's installation instructions.

1.10 OPERATION AND MAINTENANCE DATA:

- A. Submit as-built Drawings indicating location of all devices, wiring, and end-of-line devices.
- B. Include operating instructions, and maintenance and repair procedures.
- C. Include manufacturer representative's letter stating that system is operational, and install in accordance with NFPA 72A, 72B, 72E, 72G and 101 and tested in accordance with NFPA 72H.

PART 2 PRODUCTS

2.01 MANUFACTURERS:

- A. Where new fire alarm systems are required, acceptable manufacturers are: Pyrotronics, Simplex, EST, Gamewell, Notifier, and FCI (Fire Control Instruments)

2.02 FIRE ALARM CONTROL PANEL:

- A. The control panel shall be modular in construction and shall include, but not limited to; the hardware, software and firmware required to perform system functions.
- B. The control panel shall be housed within a code gage steel enclosure flush wall mounted.

- C. System power supplies shall be housed within the enclosure. Primary power supply shall be from the building distribution system. Secondary power shall be provided by internal sealed gelled electrolyte batteries with capability to operate the system for eight (8) hours.
- D. The panel shall provide a system for maintaining a historical event record.

2.03 FIRE ALARM INITIATING DEVICES:

- A. Smoke Detector, Intelligent Ionization: The detector shall be addressable, dual chamber, self-compensating for ambient temperature and humidity. Detectors shall be suitable for two wire operation.
- B. Smoke Detector, Intelligent Photoelectric: The detector shall be addressable, self-compensating for ambient temperature and humidity with integral self, restoring 135 degree heat detector. Detectors shall be suitable for two wire operation.
- C. Smoke Detector, Intelligent Duct Type: The detector shall be addressable, self-compensating for ambient temperature and humidity, ionization or photoelectric type as application requires.
- D. Smoke Detector, Projected Beam: The detector shall consist of an infrared light beam transmitter and a light receiver. The detector shall be self-compensating for ambient and temperature changes.
- E. Thermal Detector, Intelligent: The detectors shall be addressable, rate compensated rated at 135 degrees or 200 degrees Fahrenheit. Detectors shall be suitable for two wire operation.
- F. Manual Pull Station, Intelligent: The pull station shall be addressable single station type. Pull stations shall be flush wall mounted.

2.04 ZONE AND INTERFACE MODULES:

- A. Remote Conventional Zone Module: Provide, for integration of compatible 2 wire and shorting style contact devices into the analog signaling circuit.
- B. Intelligent System Interface Module: Furnish and install, for the monitoring of contact type initiation devices and for the control of electrical devices where required.
- C. Intelligent Supervised Control Module: Furnish and install for the control of supervised relays, contractors, audible signal circuits, visual signal circuits, distributed speaker circuits and two-way fire fighters' communication circuits.

2.05 EVACUATION/SIGNALLING DEVICES:

- A. Evacuation Horn (Speaker)/Strobe. Provide audible horns with strobe as indicated on the Drawings. Integral strobe shall be flashing, polarized type with polycarbonate lens producing 8000 peak candlepower at one flash per second.

- B. Evacuation Strobe: Provide visual evacuation strobes at locations indicated on the Drawings. Strobes shall be flush wall mounted, flashing, polarized type with polycarbonate lens producing 8000 peak candlepower at one flash per second.

2.06 FIRE ALARM WIRE AND CABLE:

- A. Fire Alarm Power Circuits: Building wire as specified in Section 16300. Minimum size conductors shall be 12 AWG.
- B. Fire Alarm Loop Circuits: Analog loop circuits shall be 18 AWG twisted pair.
- C. Fire Alarm Speaker Circuits: Speaker circuits shall be 18 AWG twisted pair.
- D. Fire Alarm Initiating and Strobe Circuits: Circuits shall be minimum 14 AWG building wire as specified in Section 16300.

- 2.07 DIALER: Provide dialer for off-site notification where required locally. Verify if existing system is equipped with the local requirement.

PART 3 EXECUTION

3.01 INSTALLATION:

- A. Install system in accordance with manufacturer's instructions.
- B. Install manual station with operating handle 48 inches above floor. Install audible and visual devices 80 inches above floor or as indicated.
- C. Install cables and wiring in conduit.
- D. Mount end-of-line device in control panel or in box with last device or separate box adjacent to last device in circuit.
- E. Make conduit and wiring connections to sprinkler flow switches, sprinkler valve tamper switches, duct smoke detectors, HVAC shutdown equipment, and elevator control equipment.
- F. Automatic Detector Installation: NFPA 72E.
- G. Provide surge suppression for all wiring of the fire alarm system.

3.02 FIELD QUALITY CONTROL:

- A. Field inspection and testing will be performed.
- B. Test in accordance with NFPA 72H and local fire department requirements.

3.03 MANUFACTURER'S FIELD SERVICES:

- A. Provide manufacturer's field services as required for installation.
- B. Include services of certified technician to supervise installation, adjustments, final connections, and system testing.
- C. Instruct Owner in operation and function of the system.

END OF SECTION 28 31 00