Addendum 1
To Contract Documents for

UMF – Sweatt-Winter Child Care & Early Education Center

ADDENDUM 1
04/15/2022

Prepared by:

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UMF – Sweatt-Winter Child Care & Early Education Center
274 Front Street, Farmington, ME
Addendum No. 1
April 15, 2022

This Addendum modifies, amends and supplements designated parts of the Contract Documents, Project Manual and Drawings for

UMF – Sweatt-Winter Child Care & Early Education Center, dated **April 07, 2022 and is hereby made a part thereof by reference and shall be as binding as though inserted in its entirety in the locations specified herein. It shall be the responsibility of the Contractor to notify all Subcontractors and Suppliers he proposes to use for the various parts of the work of any changes or modifications contained in this Addendum.**

INDEX

PART I- GENERAL INFORMATION

The following questions have been received from bidders either via email or phone:

Q. Is there a ROM (rough order-of-magnitude) for the project?
A. The total project value is over a million dollars.

Q. What is the anticipated construction schedule for the project?
A. Construction can begin as soon as May 23rd, 2022 but no sooner. The bid documents state that Substantial Completion is set for January 27th 2023. The Owner is open to a bid that proposes a Substantial Completion date for spring 2023.

Q. Has the project been permitted? SMFO and Local AHJ? If not, what is the anticipated time required to go through the permitting process?
A. The Design/Owner team will begin the SFMO permit process during the week of April 18. There is no local building permit per se. The Design/Owner team has been working with the town offices and has begun a project and site review process with the Town of Farmington and will complete the process.

Q. Are there LD's on this project?
A. No.

Q. 08 41 10 2.3A calls out "dual thermal-break". We typically only see this for exterior applications. Please confirm if dual thermally broken framing should be carried or non-thermally broken.
A. Non-thermally broken framing is acceptable. The intent of dual glazing here is to provide sound isolation between adjacent spaces, not thermal isolation.

Q. The door schedule calls out doors S2 as being hollow metal. The plan elevations refer to them as storefront. Please confirm they are not supposed to be aluminum.
A. The existing door and frame assembly at Door 100.1 is assumed to be a hollow metal door assembly. The replacement doors will be hollow metal. We will remove the term "storefront" from the elevation drawing.

PART II - ADDENDUM FOR ARCHITECTURAL PROJECT MANUALS AND DRAWINGS:

CHANGES/CLARIFICATIONS TO THE SPECIFICATIONS:

Section 00 11 13 Advertisement for Bids
Page one now states that the pre-bid meetings are non-mandatory.

CHANGES/CLARIFICATIONS TO THE DRAWINGS:

A200 – Exterior Elevations – Refer to revised Sheet A200

PART III - ADDENDUM FOR FIRE PROTECTION SPECIFICATIONS AND DRAWINGS:

CHANGES/CLARIFICATIONS TO THE SPECIFICATIONS:

Adding: Section 21 00 00 General Requirements for Fire Protection Systems
Adding: Section 21 00 04 Coordination with Other Trades
Adding: Section 21 05 00 Basic Fire Protection Materials and Methods
Adding: Section 21 05 29 Hangers, Supports, and Anchors
Adding: Section 21 13 13 Wet-Pipe Sprinkler System

All added sections are already included in the Table of Contents.

CHANGES/CLARIFICATIONS TO THE DRAWINGS:

F100 – Fire Protection Plan – Refer to revised Sheet F100.

END OF ADDENDUM

SECTION 00 11 13
ADVERTISEMENT FOR BIDS

Bids for: **UMF - EARLY CHILDHOOD EDUCATION CENTER**

Shall be submitted electronically to cppmquestions@maine.edu
With the following Email Subject Line: **UMF – Early Childhood Education Center**

Bids will be received until **2 PM** on **Thursday, May 5, 2022** at which time Bids will be opened and read aloud via Zoom.

Bid opening attendance is available via PC, Mac, Linux, iOS or Android:
Zoom Meeting Link

Password: 525300
Or via telephone US:
+13126266799,,84874206389#,,,,*525300# US (Chicago)
+16465588656,,84874206389#,,,,*525300# US (New York)
Meeting ID: 848 7420 6389

Bids received after the stated time will not be considered and will be returned unopened.

Electronic bid submissions submitted to: rtannenbaum@chacompanies.com,

Bid Submissions may be mailed as well dropped off at:

Facilities Management Office
147 Farmington Falls Road
Farmington, Maine 04938

All Bids must be accompanied by a copy of a satisfactory Bid Bond for 5% of the Bid (checks will not be accepted) which shall be in conformity with the form of Bond contained in Section 00 43 13 of the Specifications. Upon determination of the apparent low bidder, the University will contact the low bidder and request an original hard copy of the bid bond be delivered within 72 hours. The University reserves the right to waive all formalities and reject any or all bids or to accept any bids. Scholarships, donations or gifts to the University will not be considered in the evaluation of responses.

Electronic Bid Submission Requirements:
A **SIGNED** virus-free electronic bid form must be submitted as follows:

- The bid and bid bond must be submitted electronically as a single PDF file to the email address shown above.
- Electronic submission must be received by the required **Thursday, May 5th, 2022** reflected above.

The successful Bidder will be required to furnish a 100% Performance Bond and a 100% Payment Bond to cover the execution of the Contract which shall be in conformity with the form of Bonds contained in Sections 00 61 13.13 and 00 61 13.16, respectively, of the Specifications and shall be for the Contract amount.

Bidders are invited to attend a non-mandatory pre-bid meeting on either Thursday, April 21, 2022 at 9 am or on Monday, April 25, 2022 at 2pm. Attendees are to meet at 274 Front Street, Farmington, Maine. Copies of plans and specifications will not be available at the pre-bid meeting. Acquiring or reviewing plans and specifications prior to the meeting is advised.

Project Summary: The work involves the interior renovation of the existing free-standing building at 274 Front Street at location as indicated on Drawings. Work includes, but is not limited to, selective demolition, and addition of exterior doors and windows, concrete pads and patios at exterior door locations, new and reuse of existing roof penetrations. Work also includes metal partitions, insulation, gypsum board walls and ceilings, acoustical ceilings, resilient flooring, carpeting, custom cabinets and fixtures, carpentry, interior glass storefront

systems, painting, wood doors, metal doors, metal frames, door hardware, toilet partitions and accessories, signage, fire protection and detection systems, security systems, electrical, heating, ventilation, and air conditioning complete and ready for use.

The electronic documents (.pdf) may be examined and downloaded at the following site:

https://www.umf.maine.edu/facilities/home/advertisements-facilities-management/

Any questions related to the plans and specifications must be submitted prior to 2 pm on Tuesday, April 26, 2022 via email to rtannenbaum@chacompanies.com, Architect at CHA Architecture and Lachelle.l.lackey@maine.edu, Project Manager at University of Maine at Farmington.

In complying with the letter and spirit of applicable laws and pursuing its own goal of diversity, the University of Maine System shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, including transgender status, gender expression, national origin, citizenship status, age, disability, genetic information, or veterans' status in employment, education, and all other areas of the University System. The University provides reasonable accommodations to qualified individuals with disabilities upon request. General contractors, subcontractors, and product suppliers bidding on this project must subscribe and adhere to same.

UNIVERSITY OF MAINE SYSTEM
by and through
UNIVERSITY OF MAINE AT FARMINGTON
Laurie A. Gardner, Chief Business Officer, for
University of Maine System Board of Trustees

END OF SECTION 00 11 13

SECTION 21 00 00
GENERAL REQUIREMENTS FOR FIRE PROTECTION SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes general administrative and procedural requirements for all work. The administrative and procedural requirements included in this Section are to expand the requirements specified in other Sections.

1.2 SCOPE OF WORK

A. Provide all labor, material, equipment, and services necessary for and incidental to completion of all work as indicated on the Drawings and/or as specified herein. This includes all incidentals, equipment, appliances, services, hoisting, scaffolding, supports, sleeves, inserts, anchor bolts, tools, supervision, labor, consumable items, fees, licenses, etc., necessary to provide complete and workable systems.

1.3 DRAWING USE AND INTERPRETATION

A. Unless indicated by specific dimensions, drawings are meant to be diagrammatic. Exact equipment locations and routing of utilities shall be governed by field conditions and/or Owner's Representative's instructions.

B. All dimensions which relate to the building shall be taken as construction progresses. All errors incurred as result of the failure to check or verify dimensions, measurements, etc., shall be corrected.

C. The drawings show the general arrangement of utilities, equipment, and accessories. Drawings do not indicate all offsets, fittings, accessories, and changes in elevation, which may be necessary. Make all changes in equipment, locations, etc., to accommodate the work and to avoid obstacles at no increase in contract price. Provide offsets, fittings, and accessories as may be required to meet such conditions.

1.4 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Streamlined Language: The Specifications generally use the imperative mood and streamlined language. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.
   a. The words "shall be" are implied where a colon (:) is used within a sentence or phrase.

1.5 DEFINITIONS

A. General: Basic Contract definitions are included in the conditions of the Contract.

B. Indicated: The term “indicated” refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as “shown,” “noted,” “scheduled,” and “specified” are used, it is to help the reader locate the reference; no limitation on location is intended.

C. Directed: Terms such as “directed,” “requested,” “authorized,” “selected,” “approved,” “required,” and “permitted” mean “directed by the Engineer,” “requested by the Engineer,” and similar phrases.

D. Approved: The term “approved,” where used in conjunction with the Engineer’s action on the Contractor’s submittals, applications, and requests, is limited to the Engineer’s duties and responsibilities as stated in the Conditions of the Contract.

E. Regulations: The term “Regulations” includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term “furnish” is used to mean “supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.”

G. Install: The term “install” is used to describe operations at project site including the actual “unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.”

H. Provide: The term “provide” means “to furnish and install, complete and ready for the intended use.”

I. Installer: An “installer” is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier 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.

1. The term “experienced,” when used with the term “installer,” means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
2. Trades: Use of titles such as “carpentry” is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter.” It also does not imply that requirements specified apply exclusively to trades persons of the corresponding generic name.
3. Assignment of Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility of fulfilling Contract requirement remains with the Contractor.
   a. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

J. The term “concealed”: embedded in masonry or other construction, installed behind wall furring, within partitions or hung ceilings (permanent or removable), in trenches, or in crawl spaces.

K. The term “exposed”: not installed underground or concealed. Equipment in rooms with exposed construction (i.e. mechanical rooms, electrical rooms, janitor’s closets, etc.) are classified as exposed.

L. The term “piping”: piping fittings, flanges, valves, controls, hangers, traps, drains, insulation, and items necessary or required in connection with or relating thereto.

M. The “Project Site” is the space available to the contractor for performance of construction activities, either exclusively or in conjunction with other performing other work as part of the Project.

N. Testing Laboratories: A “testing laboratory” is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.6 COMPLETE SYSTEMS

A. General: Provide all materials as required for complete systems, including all parts obviously or reasonably incidental to a complete installation, whether specifically indicated or not. All systems shall be completely assembled, tested, adjusted and demonstrated to be ready for operation prior to Owner’s acceptance.

B. Systems: The systems specified and/or shown on the Drawings are for complete and workable systems. Any deviation from these systems due to a particular manufacturer’s requirements shall be made at no additional cost to the Owner.

1.7 CODES AND REGULATIONS

A. General: Comply with all governing federal, state, and local laws, ordinances, codes, rules, and regulations. Where the Contract Documents exceed these requirements, the Contract Documents shall govern. In no case shall work be installed contrary to or below minimum legal standards.

B. Utilities: Comply with all applicable rules, restrictions, and requirements of the utility companies serving the project site/facilities. Contractor shall be required to contact state regulated “call before you dig” service prior to any excavation work.

C. Non-Compliance: Should any work be performed which is found not to comply with any of the above codes and regulations, provide all work and pay all costs necessary to correct the deficiencies.

1.8 REFERENCE STANDARDS

A. All published standards of the following associations/organizations, as mandated by specific state standards, shall be followed and applied as a minimum.
   1. AIA, The American Institute of Architects.
   2. ANSI, American National Standards Institute.
   3. ASME, American Society of Mechanical Engineers.
   4. ASTM, American Society for Testing and Materials.
   5. AWS, American Welding Society.
   6. AWWA, American Water Works Association.
   7. FMG, Factory Mutual Global.
   8. NEC, National Electrical Code (from NFPA).
   9. NFPA, National Fire Protection Association.
   10. UL, Underwriters Laboratories Inc.

B. Federal Government Agencies: Names and titles of federal government standard- or specification-producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard- or specification-producing agencies of the federal government. Names are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

1. EPA, Environmental Protection Agency.
2. OSHA, Occupational Safety and Health Administration (U.S. Department of Labor).

C. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.

D. Copies of Standards: Each entity engaged in construction on the project is required to be familiar with industry standards applicable to that entity's construction 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.

1.9 QUALITY ASSURANCE

A. Manufacturers' Qualifications: Not less than five years of experience in the actual production of the specified products.

B. Installers' Qualifications:

1. Firm with not less than five years of experience in the installation of fire protection systems and equipment similar in scope and complexity to those required for this Project and having successfully completed at least ten comparable scale projects.
2. Painting, patching, carpentry, and the like related to or required for Division 21 work shall be performed by craftsman skilled in the appropriate trade.
3. All welding shall be performed by ASME-certified welders.

1.10 INSPECTIONS

A. General: During and upon completion of the work, arrange and pay all associated costs for inspections of all work installed under this Contract, in accordance with the Conditions of the Contract.

B. Inspections Required: As per the laws and regulations of the local and/or state agencies having jurisdiction at the project site.

C. Inspection Agency: Approved by the local and/or state agencies having jurisdiction at the project site.

PART 2 – PRODUCTS

2.1 GENERAL

A. Where Specified: Materials and equipment shall be as specified in subsequent sections of the Project Manual and/or as indicated on the Drawings.

B. General: All materials and equipment to be new, clean, undamaged, and free of defects and corrosion.

C. Acceptable Products: The product will be acceptable only when that product complies with all requirements of the Contract Documents as determined by the Engineer.

D. Common Items: Where more than one of any specific item is required, all shall be of the same type and manufacturer.

E. Listing: All materials and equipment shall be Underwriters' Laboratories (UL) listed and labeled, where UL standards and listings exist for the specified materials or equipment.

F. Special Tools: Provide all special tools needed for proper operation, adjustment, and maintenance of equipment.

PART 3 – EXECUTION

3.1 GENERAL

A. The installation of all fire protection work shall be in accordance with the letter and intent of the Contract Documents, as determined by the Engineer.

B. Installation Requirements: All materials and equipment shall be installed as recommended by the respective manufacturers, by mechanics experienced and skilled in their particular trade, in a neat and workmanlike manner, in accordance with the standards of the trade, and so as not to void any warranty, UL or ETL listing.

3.2 DELIVERY STORAGE AND HANDLING

A. Packing and Shipping: Deliver products in original, unopened packaging, properly identified with manufacturer's identification, and compliance labels.

B. Storage and Protection: Comply with all manufacturer's written recommendations. Protect all equipment, materials, and work from the weather elements, paint, mortar, construction debris, and damage throughout duration of project.

C. Damaged Products: Do not install damaged products. Arrange for prompt replacement.

3.3 EXAMINATION

A. Conditions Verification: Examine the areas and conditions under which the work is to be performed. Identify and Report any conditions detrimental to the proper and timely completion of the work to the Owner's Representative.

3.4 DIMENSIONS

A. Building Dimensions: Exact locations of building elements shall be based on contractor's field measurements.

B. Limiting Dimensions: Where equipment dimension and clearances are indicated on the Drawings, do not provide equipment larger than equipment dimensions or clearances specified.

C. Verify all dimensions by field measurements.

3.5 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

3.6 CUTTING AND PATCHING

A. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

B. Perform cutting and patching of fire protection equipment and materials required to:
   1. Uncover Work to provide for installation of non-coordinated and/or improperly installed work.
   2. Remove and replace defective Work.
   3. Remove and replace Work not conforming to requirements of the Contract Documents.
   4. Remove samples of installed Work as specified for testing.
   5. Install equipment and materials in existing structures.
   6. Uncover and restore Work to provide for Engineer observation of concealed Work.

C. Cut, remove, and legally dispose of equipment, components, and materials as indicated. Removal shall include all ancillary items associated with items removed. Remove all items made obsolete by the new work.

D. Protect the structure, furnishings, finishes, and adjacent materials not indicated to be removed.

E. Provide and maintain temporary dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

F. Patch surfaces and building components using new materials matching existing adjacent materials.

3.7 ADMINISTRATION AND SUPERVISION

A. The Contractor shall supervise the work and shall have at all times some competent person, approved by the Owner, following the work to receive instructions and to act with authority.

3.8 TESTING AND ADJUSTING

A. General: Provide testing equipment, materials, instruments, and personnel to perform all test procedures and adjustments required by the applicable NFPA standard and/or deemed necessary by the Engineer to establish proper performance and installation of systems and equipment. All test instruments to be accurately calibrated and in good working order.

B. Scheduling: Schedule tests at least three days in advance, and so as to allow Engineer and Owner representative(s) to witness the test, unless directed otherwise. Do not schedule tests until the system installation is complete and fully operational, unless indicated or directed otherwise.

C. Correction/Replacement: After testing, correct any deficiencies, and replace materials and equipment shown to be defective or unable to perform at design or rated capacity. Retest without additional cost to the Owner or Contract. Submit finalization report indicating corrective measures taken, and satisfactory results of retest.

3.9 SYSTEMS DEMONSTRATION

A. Instruct the Owner’s representative(s) in the start-up, operation, and maintenance of all systems and equipment in accordance with the Contract Documents.

3.10 CLEANING

A. General: Remove from the project site, all waste, rubbish, and construction debris weekly unless indicated otherwise. The premises shall be left clean and free of any debris and unused construction materials, prior to final acceptance.

B. Equipment: Remove all dust, dirt, debris, mortar, rust, and other foreign materials from the interior and exterior of all equipment and enclosures and wipe down.

C. Utilities: Thoroughly clean all utilities, just prior to final inspection.

3.11 TOUCH-UP PAINTING

A. Touch-Up Painting: Restore and refinish to original condition, all surfaces of equipment scratched, marred, and/or dented during shipping, handling, or installation. Remove all rust, and prime and paint as recommended by the manufacturer.

END OF SECTION

SECTION 21 00 04
COORDINATION WITH OTHER TRADES

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. This section describes the coordination and procedural requirements for Contractors.

B. Definitions:
1. Owners Representative - Architect, Engineer, Construction Manager, General Contractor, Clerk of the works or any stipulated Agent or Representative of the Owner.
2. GC - General Contractor.
3. MC - Mechanical Contractor/Subcontractor.
4. PC - Plumbing Contractor/Subcontractor.
5. EC - Electrical Contractor/Subcontractor.
6. SM - Sheet Metal Subcontractor.
7. SC - Sprinkler Contractor/Subcontractor.

1.2 COMPLIANCE

A. Cost incurred including those of other contractors and/or Owner due to noncompliance with this Section shall be the responsibility of the non-compliant contractor.

1.3 SUBMITTALS

A. Complete coordinated shop drawing shall be submitted in PDF format to the Engineer for their record by the MC. Submitted coordinated shop drawing shall include all signatures required by sign-off procedure.

PART 2 – PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 COORDINATION

A. General: Sequence, coordinate, and integrate the installation of all materials and equipment for efficient flow of work, in conjunction with the other trades. Review and become familiar with all of the Drawings and work of all the other trades. Report and resolve any discovered discrepancies and/or interferences prior to commencing work.

B. Cooperation: Cooperate with the other Contractors and individual disciplines for placement, anchorage, and accomplishment of the work.

C. Chases, Slots, and Openings: Arrange for chases, slots, and openings during the progress of construction, as required to allow for installation of the work.

D. Supports and Sleeves: Coordinate the location installation of required supporting devices and sleeves to be set in concrete and other structural components, as they are constructed.

E. Right-of-Way:

1. Adjust location of utilities, equipment, etc., to accommodate the work to prevent interferences, both anticipated and encountered.
2. Determine the exact route and location prior to fabrication.
3. Pitched piping has the right-of-way over utilities, which do not pitch.
4. Furnish and install ancillary materials and equipment including but not limited to traps, air vents, drains, etc., as required to accommodate offsets, transitions, and changes in direction.

F. Headroom: Install systems, materials, and equipment to maximize headroom unless noted otherwise.

G. Utility Connections: Coordinate connection with underground and overhead utility services. Comply with requirements of governing regulations, utility providers, and controlling agencies. Provide required connection for each service.

3.2 COORDINATED SHOP DRAWINGS

A. The coordination shop drawing process shall occur in the following manner:

1. The MC shall create 3/8-inch scale AutoCAD (2002 or newer) base plans which shall incorporate and coordinate with structural steel and ceiling system framing supports and show framing members on the shop drawings. This shall include existing building components not shown on Contract Documents.
2. The MC shall require the Sheet Metal Subcontractor to submit AutoCAD shop drawings, as expeditiously as possible, to the Engineer (through normal channels) for review and approval. The shop drawings shall incorporate all ductwork (including top and bottom of duct elevations at a maximum interval of 25 linear feet and at each elevation change), structural steel (building and misc. support steel), equipment, and accessories as shown and/or specified in the Contract Documents.
3. All roof penetrations, wall and floor openings shall be coordinated with the structural steel Subcontractor, Supplier, and/or Erector through the Owner's Representative. All conflicts with structural steel members shall be resolved through the Owner's Representative.
4. After review and final approval of the sheet metal shop drawing by the Engineer, the sheet metal Subcontractor shall incorporate all required corrections, additions, and modifications on the AutoCAD ductwork shop drawings.
5. The approved AutoCAD ductwork shop drawings shall be utilized for coordination with all other Contractors or Subcontractors whose involvement is mandated. The SM shall submit the AutoCAD ductwork shop drawings (hard copy and electronic files) to the MC to initiate the "coordination" process. The MC shall review the drawings for accuracy and completeness prior to distribution.
6. The MC shall forward, with transmittal, the ductwork shop drawings (hard copy and electronic files) to the PC for coordination of the plumbing work. The MC shall forward a copy of the transmittal to the Owner's Representative.
7. The PC shall (upon receipt of drawings from the MC) superimpose his scope of work on the AutoCAD ductwork shop drawings illustrating all plumbing equipment, piping, and hangers.
8. The PC shall include invert of pipes; elevations (top and bottom) and pipe sizes including insulation at a maximum of 25-foot intervals and at each elevation change.
9. Any conflicts between the plumbing and ductwork shall be clouded by the PC on the AutoCAD ductwork shop drawing file.
10. PC shall request coordination meeting to resolve the conflicts as clouded on the coordinated shop drawings. PC shall provide clouded shop drawing at the coordination meeting. All conflicts that arise between the plumbing and ductwork shall be resolved through and by the Owner's Representative.

11. The PC and/or the SM shall correct and shall complete the AutoCAD drawings depicting all resolutions.
12. When it is ascertained that no conflicts exist between the ductwork and plumbing work, the PC shall forward the final ductwork/plumbing coordinated drawings (hard copy and electronic files) to the MC with transmittal and provide the Owner's Representative with a copy of the transmittal.
13. The MC shall (upon receipt of drawings from the PC) superimpose all heating and air conditioning piping, equipment, hangers, and insulation, including elevations (top and bottom) and pipe sizes (including insulation), on the AutoCAD drawings.
14. Any conflicts between the ductwork/plumbing/mechanical work shall be clouded by the MC on the AutoCAD shop drawing file.
15. MC shall request coordination meeting to resolve the conflicts as clouded on the coordinated shop drawings. MC shall provide clouded shop drawing at the coordination meeting. All conflicts that arise between the MC, SM, and PC shall be resolved through and by the Owner's Representative.
16. The MC, PC, and SM shall correct and complete the AutoCAD drawings depicting all resolutions.
17. When it is ascertained that no conflicts exist between the MC, SM, and PC, the MC shall forward the final ductwork/plumbing/mechanical coordinated drawings (hard copy and electronic files) to the EC with transmittal and provide the Owner's Representative with a copy of the transmittal.
18. The EC shall (upon receipt of drawings from the MC) superimpose all electrical equipment including but not limited to light fixtures, conduit, and hangers on the AutoCAD drawings.
19. The EC shall include elevations of light fixtures, electrical conduit, and conduit sizes.
20. Any conflicts with the ductwork/plumbing/mechanical/electrical work shall be clouded by the EC on the AutoCAD shop drawing file.
21. EC shall request coordination meeting to resolve any conflicts as clouded on the coordinated shop drawings. EC shall provide clouded coordinated shop drawing at the coordination meeting. All conflicts that arise between the EC, MC, PC, and SM shall be resolved through and by the Owner's Representative.
22. The EC and/or the SM, PC, MC shall correct and complete the AutoCAD drawings depicting all resolutions.
23. When it is ascertained that no conflicts exist between the EC, MC, PC, and SM, the EC shall forward the final ductwork/plumbing/mechanical/electrical coordinated drawings (hard copy and electronic file) to the SC with transmittal and provide the Owner's Representative with a copy of the transmittal.
24. The SC shall (upon receipt of drawings from the EC) superimpose all sprinkler equipment, piping, hangers, and sprinkler heads as required by the contract documents and the appropriate codes.
25. The SC shall include elevations of piping and piping sizes.
26. Any conflicts with the ductwork/plumbing/mechanical/electrical/sprinkler work shall be clouded by the SC on the AutoCAD shop drawings.
27. The SC shall request coordination meeting to resolve any conflicts as clouded on the coordinated shop drawings. SC shall provide clouded coordinated shop drawing at the coordination meeting. All conflicts that arise between the SC, EC, MC, PC, and/or SM shall be resolved through and by the Owner's Representative.
28. The SC and/or EC, MC, PC, SM shall complete the AutoCAD drawings depicting all resolutions.
29. When it is ascertained that no conflicts exist between the SC, EC, MC, PC, and SM, the SC shall forward the final ductwork/plumbing/mechanical/electrical/sprinkler coordination

drawing to the MC with transmittal and provide the Owner's Representative with a copy of the transmittal.

30. Sign Off:
    a. The MC shall provide the final coordinated shop drawing to the Engineer and the Owner's Representative. The final coordinated shop drawing shall contain signatures from SM, PC, MC, EC, and SC on each sheet.
    b. Upon completion of the coordination process by all Contractors and Subcontractors as described above, they shall sign off on all drawings in ink indicating company, name, date of sign-off and signature of company representative.
    c. Each contractor signature shall certify that each Contractor has shown their respective work on the drawings and have resolved all points of conflict and interference with other Contractors and Subcontractors.

3.3 COORDINATION MEETINGS

A. During the coordination process, separate meetings apart from project meetings concerning the progress and schedules may be called by the Owner’s Representative when required or at the request of one or more of the coordinating Contractors.
   1. The Owner’s Representative shall contact the Contractors and make all required arrangements, e.g., time, place, etc.
   2. All Contractors shall place emphasis and importance on equipment purchases so as to not delay approvals, shop drawings, and the coordinated drawings.

3.4 SCHEDULE OF COORDINATED SHOP DRAWINGS

A. The MC and SM shall complete the ductwork shop drawings within 2 weeks after award of contract (or authorization to proceed).

B. Turn-around time for each Contractor shall be 2 weeks maximum.

3.5 "AS BUILT" DRAWINGS

A. At the completion of the project, “As Built” corrections shall be made to each AutoCAD drawing by each of the aforementioned Contractors and returned to the Owner’s Representative for the Owner’s permanent files and records. These “As Builts” do <u>not</u> remove the obligation of “As Builts” and record drawings as outlined under other sections of the specifications <u>unless</u> the Owner’s Representative elects to do so.

END OF SECTION

SECTION 21 05 00
BASIC FIRE PROTECTION MATERIALS AND METHODS

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the following basic materials and methods to complement other Division 21 Sections.
   1. Piping installation instructions common to most piping systems.
   2. Dielectric fittings.
   3. Mechanical sleeve seals.
   4. Sleeves.
   5. Escutcheons.
   6. Fire Stopping.
   7. Identifying devices and labels.
   8. Grout.
   9. Interior concrete housekeeping pads.
   10. Installation requirements common to equipment specification sections.
   11. Touch-up painting.
   12. Removals.
   13. Repairs.

B. Pipe, pipe fittings, and joining materials and methods are specified in Division 21 piping system sections.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. Existing: Condition present prior to award of this contract.

1.3 SUBMITTALS

A. Product Data: For all materials specified within this section

B. Fire Rated Penetration Listing Details: Submit Underwriters Laboratory, Inc., (UL) penetration listing details specific to the penetrations required by the project along with fire stopping material data.

C. Quality Control Submittals: Fire stopping certificates specified in Quality Assurance below.

1.4 QUALITY ASSURANCE

A. Fire Stopping: Fire stopping installer shall be certified by the fire stopping manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Protect piping, flanges, fittings, and piping specialties to prevent pipe end damage. Maintain end caps through shipping, storage, and handling.

B. Protect all stored materials from moisture and dirt. Elevate above grade and support to prevent sagging and bending. Do not exceed structural capacity of floor, if stored inside.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where identifying devices are to be 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. Dielectric Components:
      a. Watts Water Technologies, Inc.
      b. Grinnell Corp.; Grinnell Supply Sales Co.
      c. Victaulic Co. of America.
   2. Mechanical Sleeve Seals:
      a. Calpico, Inc.
      b. Metraflex Co.
      c. Proco Products, Inc.
      d. Thunderline/Link-Seal.
   3. Fire-Stopping Sealant:
      a. Dow Corning Corp.
      b. 3M Corp.
      c. Hilti Corp.
   4. Pipe Escutcheons:
      a. Fire Protection Products Inc.
      b. Argco.
      c. Bulk Industries Inc.
      d. BrassCraft.
   5. Identifying Devices and Labels:
      a. Seton Name Plate Corp.

b. Brady (W.H.) Co.
c. Craftsmark Identification Systems.

2.2 DIELECTRIC FITTINGS

A. General: Assembly or fitting with insulating material isolating joined dissimilar metals to prevent galvanic action and stop corrosion.

B. Description: Combination of copper alloy and ferrous; threaded, solder, plain, and weld-neck end types and matching piping system materials.

C. Insulating Material: Suitable for system fluid, pressure, and temperature.

D. Dielectric-Flange Kits: Field-assembled, companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers. Dielectric flange kit materials shall be compatible with system fluid, temperature, and pressure.

E. Dielectric Couplings: ARE NOT ALLOWED

F. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; and 300-psig (2070-kPa) minimum working pressure at 225 DegF (107 DegC). Coordinate end selection with piping system specifications.

2.3 MECHANICAL SLEEVE SEALS

A. Mechanical Sleeve Seals: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with stainless steel bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical isolation.

2.4 SLEEVES

A. General: The following materials are for wall, floor, slab, and roof penetrations.

B. Pipe:
1. Steel Sheet Metal: 0.0359-inch (0.9-mm) minimum thickness, galvanized, round tube closed with welded longitudinal joint.
2. Steel Pipe: ASTM A53, Type E, Grade A, Schedule 40, galvanized, and plain ends. Provide integral waterstop where indicated.
3. Cast Iron: Cast or fabricated pipe equivalent to ductile-iron pressure pipe with plain ends and integral waterstop.

2.5 ESCUTCHEONS

A. General: Manufactured wall, ceiling, and floor plates; deep-pattern type if required to conceal protruding fittings and sleeves.
1. ID: Closely fit around pipe, tube, and insulation of insulated piping.
2. OD: Completely cover opening.
3. Stamped Steel: One piece, with set screw and chrome-plated finish.
4. Stamped Steel: Split plate, with concealed hinge, set screw, and chrome-plated finish.

2.6 FIRE STOPPING

A. UL listed material specific to the UL penetration listing detail.

2.7 IDENTIFYING DEVICES AND LABELS

A. Equipment Nameplates: Metal nameplate with operational data engraved or die-stamped; permanently fastened to equipment. Name plate shall identify the manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data.

B. Stick on Pipe Markers: Manufacturer's standard preprinted, permanent adhesive, color-coded, pressure sensitive vinyl, complying with ASME A13.1.

C. Stick on Flow Marker: Manufacturer's standard preprinted, permanent adhesive, color-coded, pressure sensitive vinyl, 2-inch wide band, color coded complying with ASME A13.1.

D. Signs: Steel with vitreous enamel finish, lettering on contrasting background. Signs shall indicate all information required by NFPA 13. Signs shall include the following:

1. Valve signs: Control, drain, and test valves. Control valves shall identify the portion of the building served.
2. Hydraulic design information sign.
3. General information sign.

E. Piping: Piping shall be marked by the manufacturer along its length in accordance with the applicable NFPA standard.

2.8 GROUT

A. Non-Shrink, Non-Metallic Grout: ASTM C1107, Grade B, post-hardening, volume-adjusting, dry, non-staining, non-corrosive, non-gaseous, hydraulic-cement grout recommended for interior and exterior applications. Design mix shall be 5000-psig (34.5-MPa), 28-day compressive strength.

PART 3 – EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

A. General: Install piping as described below and as required by the applicable NFPA standard, version as adopted by the state code in affect at the time of the building permit.

B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.

C. Install components with pressure and temperature ratings equal to or greater than system operating pressure and temperature.

D. Install piping free of sags and bends. Install fittings for changes in direction and branch connections. Install fittings, couplings, and accessories according to manufacturer’s written instructions.

E. Install piping at parallel and perpendicular to building walls. Diagonal runs are prohibited, unless otherwise indicated. Locate groups of pipes parallel to each other, spaced to permit valve servicing.

F. In areas of exposed piping, install piping to maximize headroom. In areas with ceilings, install piping to maximize clearance between ceiling and pipe. Allow sufficient space for ceiling panel removal.

G. Install pipe escutcheons for pipe penetrations of walls, partitions, floors, and ceilings.

H. Install piping so that accessories are accessible for operation, maintenance, repair, and replacement.

I. Install piping with sufficient clearance to allow for expansion and contraction.

J. Sleeves are not required for core drilled holes through interior solid concrete walls and floors, above grade exterior solid concrete walls and existing underground solid concrete walls. Floors in mechanical equipment areas or other wet areas shall be provided with a sleeve with waterstop.

K. Install sleeves for pipes passing through walls, partitions, and slabs:
   1. Cut sleeves to length for mounting flush with both surfaces.
      a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches (50 mm) above finished floor level. In floors with waterstop, extend cast-iron sleeve fittings below floor slab as required to secure clamping ring.
   2. Build sleeves into new walls and slabs as walls and slabs are being constructed.
   3. Install sleeves in non-fired rated assemblies large enough to provide 1/2-inch (12.7-mm) annular clear space between sleeve and pipe or pipe insulation.
   4. Install sleeves in fire rated assemblies per ASTM E814 by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

L. Interior Wall and Floor Pipe Penetrations: Sleeves shall be steel pipe except steel sheet metal shall be used for gypsum wall penetrations.

M. Water Proof Floor and Roof Pipe Penetrations: For pipes penetrating floors and roofs with membrane waterproofing install stack sleeve fitting. Secure flashing between clamping flanges. Seal space outside of sleeve fittings with non-shrink, non-metallic grout. Provide Type S, Grade NS, Class 25, Use O, neutral-curing silicone sealant between sleeve and pipe.

N. Verify final equipment locations for roughing-in.

O. Piping Joint Construction: Join pipe and fittings as required by other Division 21 Sections and as follows:
   1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
   2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

P. Piping Connections: Make connections as required by other Division 21 Sections and as follows:
   1. Remake leaking joints using new materials.
   2. Install dielectric fittings to connect piping materials of dissimilar metals.

3.2 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to provide maximum possible headroom, if mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components, unless otherwise indicated.

C. Install fire protection equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting and without interference(s) to other installations.

3.3 FIRE STOPPING

A. Fire Stopping: At penetrations through fire rated walls, partitions, barriers, ceilings, roofs or floors, the fire rated integrity shall be maintained. Provide manufacturer's standard fire-stopping sealant, with accessory materials, having fire-resistance ratings indicated as established by testing identical assemblies per ASTM E814 by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

3.4 LABELING AND IDENTIFYING

A. Piping Systems: Install pipe markers on all piping of each system including sizes, fluid medium, and direction of flow arrows.
   1. Provide stick on markers. Install flow marker 360 degrees at each end of pipe marker.
   2. Markers shall be spaced a maximum of 25-foot intervals along each run. In addition to 25-foot intervals, provide markers at the following locations:
      a. Near each valve and control device.
      b. Near locations where pipes pass through walls, floors, ceilings, or enter non-accessible enclosures.
      c. At access doors, manholes, and similar access points that permit view of concealed piping.
      d. Near major equipment items and other points of origination or termination.
   3. Signs: Secure signs with corrosion resistant wire, chain, or other approved means.

3.5 TOUCH-UP PAINTING

A. Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

3.6 GROUTING

A. Install nonmetallic, non-shrink, grout for fire protection equipment base bearing surfaces, pump and other equipment base plates, and anchors. Mix and cure grout according to manufacturer's written instructions.

B. Clean surfaces that will come into contact with grout.

C. Provide forms as required for placement of grout.

D. Avoid air entrapment during placing of grout.

E. Place grout to provide smooth bearing surface for equipment base.

F. Place grout, completely filling equipment bases.

G. Place grout around anchors.

3.7 REMOVALS

A. Disconnect and remove work where indicated on the Contract Documents in its entirety.

B. Removal: Remove indicated equipment, piping, and associated components from Project site and dispose of in a legal manner. Provide Owner's right of first refusal for all equipment removed.

C. Where work is indicated to be abandoned in place, cut and remove pipe a minimum of 2 inches (50 mm) beyond the wall, floor, ceiling or roof. Patch surface to match existing finish of adjacent construction.

D. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational equipment indicated for relocation.

3.8 REPAIRS

A. If existing or new work is damaged or disturbed, remove damaged sections and install new products of equal capacity and quality.

END OF SECTION

SECTION 21 05 29
HANGERS, SUPPORTS, AND ANCHORS

PART 1 – GENERAL

1.1 SUMMARY

A. This section includes the following:
1. Horizontal-piping hangers and supports.
2. Vertical-piping clamps.
3. Hanger-rod attachments.
4. Building attachments.
5. Miscellaneous materials.
6. Anchors.
7. Equipment supports.

1.2 SUBMITTALS

A. Product data, including installation instructions for each type of support and anchor. Submit pipe hanger and support schedule showing Manufacturer's figure number, size, location, and features for each required pipe hanger and support.

B. Assembly-type shop drawings for each type of support and anchor indicating dimensions, weights, required clearances, and methods of assembly of components.

C. Details of trapeze hangers and upper attachments for piping 4 inches in diameter and over. Include the number and size of pipe lines to be supported on each type of trapeze hanger.

D. Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.

1.3 QUALITY ASSURANCE

A. NFPA Compliance: Hangers and supports shall comply with NFPA 13.

B. MSS Compliance: Provide hangers, supports, and components conforming to the latest requirements of MSS Standard Practices SP-58 and SP-69.

C. Qualify welding processes and welding operators according to AWS D1.1 "Structural Welding Code-Steel."
1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

D. Qualify welding processes and welding operators according to ASME "Boiler and Pressure Vessel Code," Section IX, "Welding and Brazing Qualifications."

E. Listing and Labeling: Provide hangers and supports that are listed and labeled as defined in NFPA 70, Article 100.
1. UL and FM Compliance: Hangers, supports, and components shall be UL listed and FM approved.

2. Listing and Labeling Agency Qualifications: A “Nationally Recognized Testing Laboratory” (NRTL) as defined in OSHA Regulation 1910.7.

PART 2 – PRODUCTS

2.1 MANUFACTURED UNITS

A. Hangers, Supports, and Components: Factory-fabricated according to MSS SP-58.
   1. Components include galvanized coatings where installed for piping and equipment that will not have a field-applied finish.
   2. Pipe attachments include nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing.

B. Mechanical-Anchor Fasteners: Insert-type attachments with pull-out and shear capacities appropriate for supported loads and building materials where used. Fasteners for fire protection systems include UL listing and FM approval.

2.2 PIPE HANGERS AND SUPPORTS

A. Pipe Hangers: Height adjustable standard duty clevis type, with cross bolt and nut. Pipe spreaders or spacers shall be used on cross bolts of clevis hangers when supporting piping 10 inches ips and larger.

B. Adjustable Floor Rests and Base Flanges: Steel.

C. Hanger Rods: Galvanized, mild low carbon steel, fully threaded with two nuts at each end for positioning rod and hanger and locking each in place.

D. Riser Clamps: Malleable iron or steel.

E. Restraints, Anchors, and Supports for Grooved End Piping System: As recommended by the grooved-end fitting manufacturer.

2.3 FASTENERS

A. Sleeve Anchors (Group II, Type 3, Class 3): Molly’s Div./USM Corp. Parasleeve Series, Ramset’s Dynabolt Series, or Red Head/Phillips AN1405, HN-1614, FS-1411 Series.

B. Wedge Anchors (Zinc Plated, Group II, Type 4, Class 1): Hilti’s Kwik Bolt Series, Molly’s Div./USM Corp. Parabolt PB Series, Ramset’s Trubolt T Series, or Red Head/Phillips WS-3822.

C. Self-Drilling Anchors (Group III, Type 1): Ramset’s RD Series, or Red Head/Phillips Series S-14.

D. Non-Drilling Anchors (Group VIII, Type 1): Ramset’s Dynaset DS Series, Hilti’s HDI Series, or Red Head/Phillips J Series.

E. Stud Anchors (Group VIII, Type 2): Red Head/Phillips JS-38 Series.

F. Continuous Slotted Type Concrete Insert, Galvanized:
   1. Load Rating:
      a. 800 lbs/ft: Kindorf’s D-986.

b. 1500 lbs/ft: Kindorf's D-980.
c. 3000 lbs/ft: Hohmann & Barnard's Inc. Type CS-H.
d. 4500 lbs/ft: Hohmann & Barnard's Inc. Type CS-HD.

G. Threaded Type Concrete Insert: Galvanized ferrous castings, internally threaded to receive 3/4-inch diameter machine bolts.

H. Wedge Type Concrete Insert: Galvanized box-type ferrous castings, internally threaded to receive 3/4-inch bolts having special wedge shaped heads.

I. Bolts, Nuts, Washers, Lags, and Screws: Medium carbon steel; size and type to suit application; galvanized for high humidity locations, and treated wood; plain finish for other interior locations. Except where shown otherwise on the Drawings, furnish type, size, and grade required for proper installation of the Work.

2.4 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A36/A36M, steel plates, shapes, and bars, black and galvanized.

B. Bolts and Nuts: ASME B18.10 or ASTM A183, steel, hex-head, track bolts and nuts.

C. Washers: ASTM F844, steel, plain, flat washers.

D. Grout: ASTM C1107, Grade B, nonshrink, nonmetallic.
1. Characteristics include post-hardening, volume-adjusting, dry, hydraulic-cement-type grout that is nonstaining, noncorrosive, nongaseous and is recommended for both interior and exterior applications.
2. Design Mix: 5000-psi (34.5MPa), 28-day compressive strength.
3. Water: Potable.
4. Packaging: Premixed and factory-packaged.

PART 3 – EXECUTION

3.1 INSTALLATION OF HANGERS AND SUPPORTS

A. General: Install hangers, supports, clamps, and attachments to support piping properly from building structure; comply with MSS SP-58, SP-69 and SP-89, and NFPA 13.

B. Do not hang or support one pipe from another or from ductwork.

C. Size and space all hangers and upper hanger attachments in accordance with the requirements of NFPA 13 "Standard for the Installation of Sprinkler Systems."

D. For Directional Changes: Install a hanger or support close to the point of change of direction of all pipe runs in either a horizontal or vertical plane.

E. Size hanger rods in accordance with the requirements of NFPA 13 "Standard for the Installation of Sprinkler Systems."

F. For Concentrated Loads: Install additional hangers or supports, spaced as required and directed, at locations where concentrated loads such as in-line pumps, valves, fittings or accessories occur, to support the concentrated loads.

G. Secure hanger rods as follows: Install one nut under clevis, angle or steel member; one nut on top of clevis, angle or steel member; one nut inside insert or on top of upper hanger attachment and one nut and washer against insert or on lower side of upper hanger attachment. A total of four nuts are required for each road, two at upper hanger attachment and two at hanger.

H. Vertical Piping:

1. Support vertical risers of piping systems, by means of heavy duty hangers installed close to base of pipe risers, and by riser clamps with extension arms at intermediate floors, with the distance between clamps not to exceed 25 feet unless otherwise specified. Support pipe risers in vertical shafts equivalent to the aforementioned. Install riser clamps above floor slabs with the extension arms resting on floor slabs.
2. Floor Supports: Install adjustable yoke rests with base flanges for the support of piping unless otherwise indicated on the Drawings. Install supports in a manner, which will not be detrimental to the building structure.

I. Install building attachments within concrete or to structural steel. Install additional attachments at concentrated loads, including valves, flanges and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten insert to forms. Install reinforcing bars through openings at top of inserts.

J. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

K. All hangers and supports shall be installed in a manner that provides the proper system drainage in accordance with the requirements of NFPA 13 “Standard for the Installation of Sprinkler Systems.”

3.2 UPPER HANGER ATTACHMENTS

A. General:

1. In all cases, secure upper hanger attachments to overhead structural steel, steel bar joists, or other suitable structural members.
2. Do not attach hangers to steel decks which are not to receive concrete fill.
3. Do not attach hangers to precast concrete plank decks less than 2-3/4 inches thick.
4. Do not use flat bars or bent rods as upper hanger attachments.

B. Attachment to Steel Frame Construction: Provide intermediate structural steel members where required by pipe support spacing. Select steel members for use as intermediate supports based on a minimum safety factor of five.

1. Do not use drive-on beam clamps.
2. Do not support piping over 4 inches in size from steel bar joists. Secure upper hanger attachments to steel bar joists at panel points of joists.
3. Do not drill holes in main structural steel members.
4. “C” clamp type of upper hanger attachments with restraining straps may be used as upper hanger attachments.

C. Attachment to Wood Construction: Secure hangers to the sides (only) of wood members, by means of malleable iron side beam connectors, or malleable iron or steel side beam brackets. Do not secure hanger attachments to nailing strips resting on top of steel beams.

3.3 METAL FABRICATION

A. Cut, drill, and fit miscellaneous metal fabrications for pipe anchors and equipment supports. Install and align fabricated anchors in indicated locations.

B. Touch-Up Painting: Immediately after erection of anchors and supports, clean field welds and abraded areas of shop paint and paint exposed areas with same material as used for shop painting to comply with SSPC-PA-1 requirements for touch-up of field-painted surfaces.

1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

C. Ferrous Metals: Clean galvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structure Painting Council.

1. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.

D. Galvanized Surfaces: Clean galvanized surfaces with non-petroleum based solvents so that the surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

E. Fit exposed connections together to form hairline joints. Field-weld connections that cannot be shop-welded because of shipping size limitations.

F. Field Welding: Comply with AWS D1.1 procedures for manual shielded metal-arc welding, appearance and quality of welds, methods used in correcting welding work, and the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so that no roughness shows after finishing, and so that contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

END OF SECTION

SECTION 21 13 13
WET-PIPE SPRINKLER SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. This Section specifies automatic sprinkler systems for buildings and structures. Materials and equipment specified in this Section include: pipe, fittings, sprinklers, specialties, and accessories.

B. Products furnished but not installed include sprinkler head cabinet with spare sprinkler heads. Furnish to the Owner's maintenance personnel.

C. The design documents (drawings and specifications) for the sprinkler system to be installed in this project identify performance requirements and design intent only. The sprinkler contractor is responsible for hydraulically designing, furnishing, and installing a complete and code compliant system.

D. The design documents (drawings and specifications) for the sprinkler system to be provided by this contract identify performance requirements and system layout intent. Sprinkler head locations identified have been coordinated with the reflected ceiling plans and shall be followed as much as practical. Deviations of layouts and routings will require coordination with other trades and will require approval of the owner's architects and engineers. Contractor will be required to provide any and all additional piping, sprinkler heads, etc., as required for a complete and code compliant system. Pipe sizes indicated on the drawing are for reference only. Actual pipe sizes shall be determined by the sprinkler contractor's hydraulic calculations and design. The contractor will be required to provide all labor and materials necessary for complete and code compliant systems.

1.2 DEFINITIONS

A. Other definitions for fire protection systems are listed in NFPA Standards 13 and 24.

B. Working Plans as used in this Section means those documents (including drawings and calculations) prepared pursuant to the requirements contained in NFPA 13 for obtaining approval of the authority having jurisdiction.

1.3 SYSTEM DESCRIPTION

A. Fire protection system is a "wet-pipe" system. The "wet pipe" system employs automatic sprinklers attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers opened by fire.

1.4 SUBMITTALS

A. Product Data for each type of pipe, fitting, sprinkler, piping specialty, fire protection specialty, and fire department connection.

B. Shop Drawings prepared in accordance with NFPA 13 identified as "Working Plans," including hydraulic calculations where applicable, and which have been approved by the authority having jurisdiction.

C. Maintenance Data for each type sprinkler, piping specialty and fire protection specialty, for inclusion in Operating and Maintenance manual.

D. Test Reports and Certificates include “Contractor’s Material and Test Certificate for Aboveground Piping” and “Contractor’s Material and Test Certificate for Underground Piping” as described in NFPA 13.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installation and alterations of fire protection piping, equipment, specialties, and accessories, and repair and servicing of equipment shall be performed only by a qualified installer. The term qualified means experienced in such work (experienced shall mean having a minimum of 5 previous projects similar in size and scope to this project), familiar with all precautions required, and has complied with all the requirements of the authority having jurisdiction. Upon request, submit evidence of such qualifications to the Owner’s Representative.

B. Regulatory Requirements: Comply with the requirements of NFPA 13 - Standard for the Installation of Sprinkler Systems.

C. UL and FM Compliance: Fire protection system materials and components shall be Underwriter’s Laboratories listed and labeled.

1.6 EXTRA MATERIALS

A. Valve Wrenches: Furnish to Owner, 2 valve wrenches for each type of sprinkler head installed.

B. Sprinkler Heads and Cabinets: Furnish extra sprinkler heads of each style included in the project as required by NFPA 13.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide fire protection system products from one of the following:
   1. Grooved Mechanical Fittings and Couplings:
      a. Victaulic Company
      b. Grinnell
      c. Anvil International
   2. Flexible Sprinkler Hose Fittings:
      a. Viking Corp.
      b. Flexhead Industries
      c. Victaulic Company
   3. Sprinklers:
      a. Tyco Fire Products
      b. Reliable Automatic Sprinkler Co., Inc.
      c. Viking Corp.
      d. Victaulic Company

2.2 PIPE AND TUBING MATERIALS

A. General: Refer to Part 3 Article “PIPE APPLICATIONS” for identification of systems where the below specified pipe and fitting materials are used.

B. Steel Pipe:
   1. ASTM A795, seamless, black steel and galvanized pipe, plain ends.
   2. ASTM A53, seamless, black steel pipe, plain ends.
   3. ASTM A135, electric resistance welded steel pipe.

2.3 FITTINGS

A. Cast-Iron Threaded Fittings: ANSI B16.4, Class 125 and 250, standard pattern, for threaded joints. Threads shall conform to ANSI B1.20.1.

B. Malleable-Iron Threaded Fittings: ANSI B16.3, Class 150 and 300, standard pattern, for threaded joints. Threads shall conform to ANSI B1.20.1.

C. Buttwelding Steel Fittings: ANSI B16.25.

D. Steel Fittings: ASTM A234, seamless or welded, for welded joints (moderate and elevated temperatures).

E. Grooved Mechanical Fittings: ASTM A536, Grade 65-45-12 ductile iron; ASTM A47 Grade 32510 malleable iron; or ASTM A53, Type F or Types E or S, Grade B fabricated steel fittings with grooves or shoulders designed to accept grooved end couplings.

F. Grooved Mechanical Couplings: Consist of ductile or malleable iron housing, a synthetic rubber gasket of a central cavity pressure-responsive design; with nuts, bolts, locking pin, locking toggle, or lugs to secure roll-grooved pipe and fittings.

G. Flexible Sprinkler Hose Fittings: Fittings shall conform to NFPA 13. FM approved pursuant to FM 1637 Approval Standard for Flexible Sprinkler Hose Fittings for fire protection service. UL listed pursuant UL 2443 Standard for Flexible Sprinkler with Fittings for Fire Protection Service. Flexible hose assembly and end fittings shall be type 304 stainless steel. 175 psi maximum rated pressure. Fully-welded, non-mechanical fittings.

2.4 JOINING MATERIALS

A. Gasket Materials: Thickness, material, and type suitable for fluid or gas to be handled, and design temperatures and pressures.

2.5 GENERAL DUTY VALVES

2.6 AUTOMATIC SPRINKLERS

A. Sprinkler Heads: glass bulb type, and style as indicated or required by the application. Unless otherwise indicated, provide heads with nominal 1/2-inch discharge orifice for “Ordinary” temperature range.

B. Sprinkler Head Finishes: Provide heads with the following finishes:
   1. Upright, Pendent, and Sidewall Styles: White Polyester in finish spaces with white escutcheon ring, Black pendant sprinkler with black escutcheon in specified locations , rough bronze finish for heads in unfinished spaces and not exposed to view. Concealed Style: Rough brass, with Brushed Brass cover plate.

C. Sprinkler Head Cabinet and Wrench: finished steel cabinet, suitable for wall mounting, with hinged cover and space for 6 spare sprinkler heads plus sprinkler head wrench. Provide a separate cabinet for each style sprinkler head on the project.

PART 3 – EXECUTION

3.1 PIPE APPLICATIONS

A. Provide Schedule 40 black steel pipe with threaded joints and fittings for piping 1-1/2 inches and smaller.

B. Provide Schedule 10 black steel pipe with roll grooved ends and grooved mechanical fittings and couplings for piping 2 inches and larger.

3.2 PIPING INSTALLATIONS

A. Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of piping systems. So far as practical, install piping as indicated.
   1. Deviations from approved "Working Plans" for sprinkler piping, require written approval of the authority having jurisdiction. Written approval shall be on file with the Owner's Representative prior to deviating for the approved "Working Plans."

B. Install sprinkler piping to provide for system drainage in accordance with NFPA 13.

C. Use approved fittings to make all changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

D. Hangers and Supports:
   1. Comply with the requirements of NFPA 13. Hanger and support spacing and locations for piping joined with grooved mechanical couplings shall be in accordance with the grooved mechanical coupling manufacturer's written instructions, for rigid systems.

E. Provide protection from damage where subject to earthquake in accordance with NFPA 13.

3.3 PIPE JOINT CONSTRUCTION

A. Threaded Joints: conform to ANSI B1.20.1, tapered pipe threads for field cut threads. Join pipe, fittings, and valves as follows:
   1. Note the internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
   2. Align threads at point of assembly.
   3. Apply appropriate tape or thread compound to the external pipe threads.
   4. Assemble joint to appropriate thread depth. When using a wrench on valves place the wrench on the valve end into which the pipe is being threaded.
   5. Damaged Threads: Do not use pipe with threads which are corroded, or damaged. If a weld opens during cutting or threading operations, that portion of pipe shall not be used.

B. Mechanical Grooved Joints: roll grooves on pipe ends dimensionally compatible with the couplings.

C. End Treatment: After cutting pipe lengths, remove burrs and fins from pipe ends.

3.4 SPRINKLER HEAD INSTALLATIONS

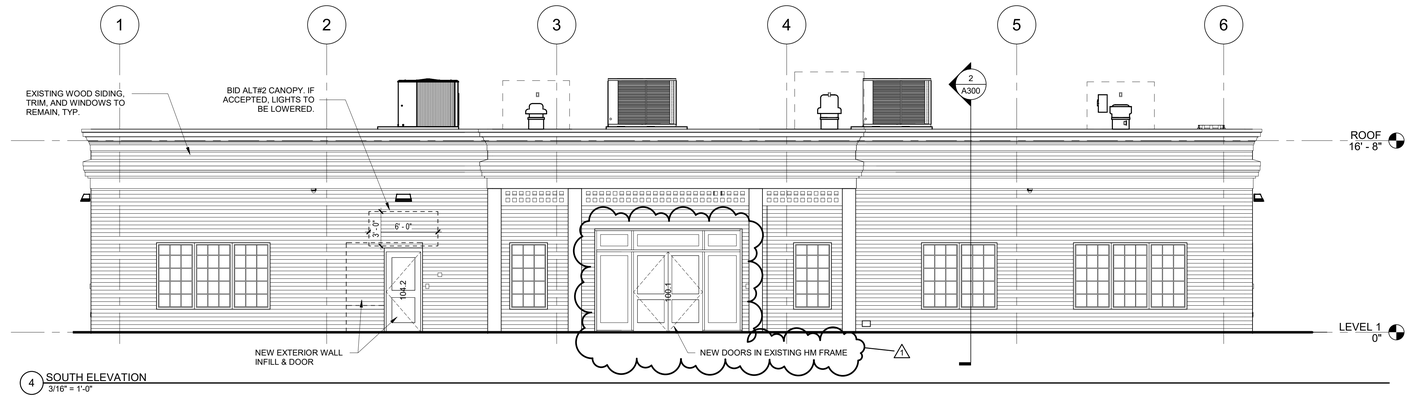
A. Use proper tools to prevent damage during installations.

3.5 FIELD QUALITY CONTROL

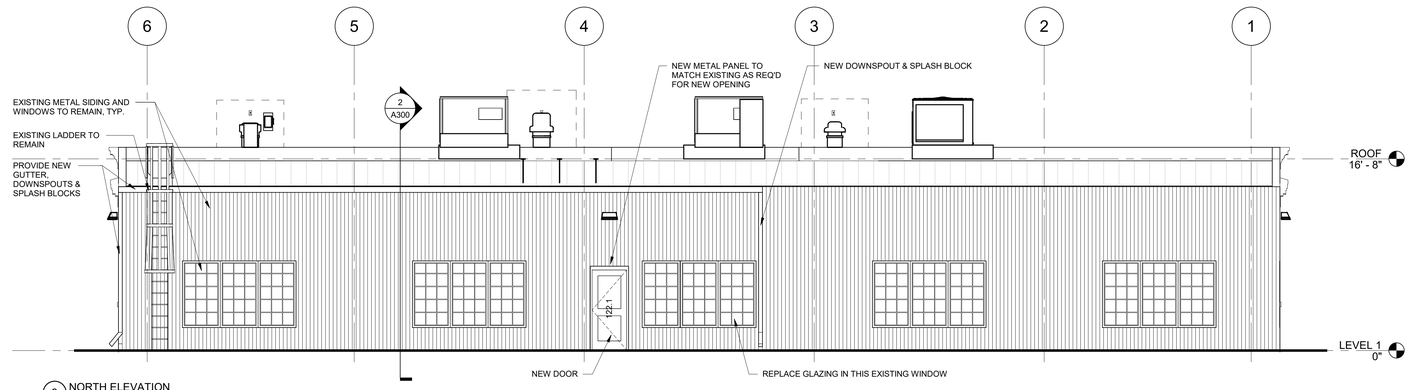
A. Flush, test, and inspect sprinkler piping systems in accordance with NFPA 13.

B. Replace piping system components which do not pass the test procedures specified, and retest repaired portion of the system.

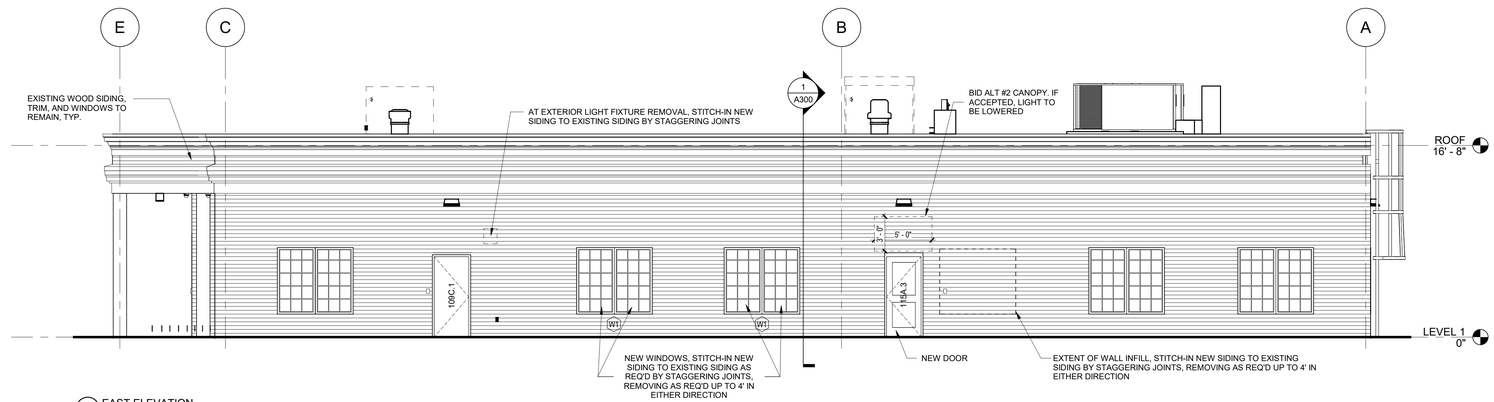
END OF SECTION



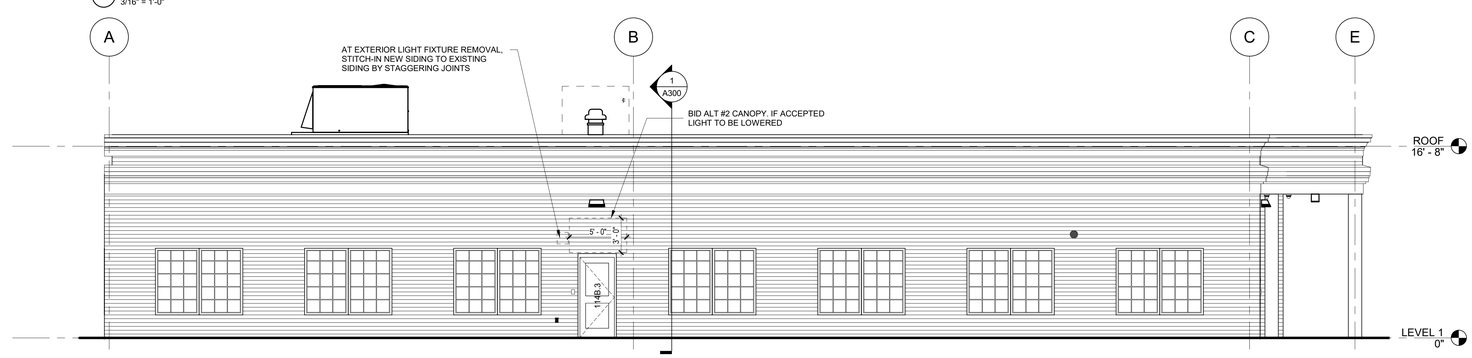
4 SOUTH ELEVATION
3/16" = 1'-0"



3 NORTH ELEVATION
3/16" = 1'-0"



1 EAST ELEVATION
3/16" = 1'-0"



2 WEST ELEVATION
3/16" = 1'-0"

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No.	Date	Description
1	4/15/2022	Addendum #1

Revision Schedule

LICENSED ARCHITECT Robert R. Curtis 3002 STATE OF MAINE

JOB NO. 057699

DRWN. CHK
Checker

SCALE:

ISSUE
4/7/2022
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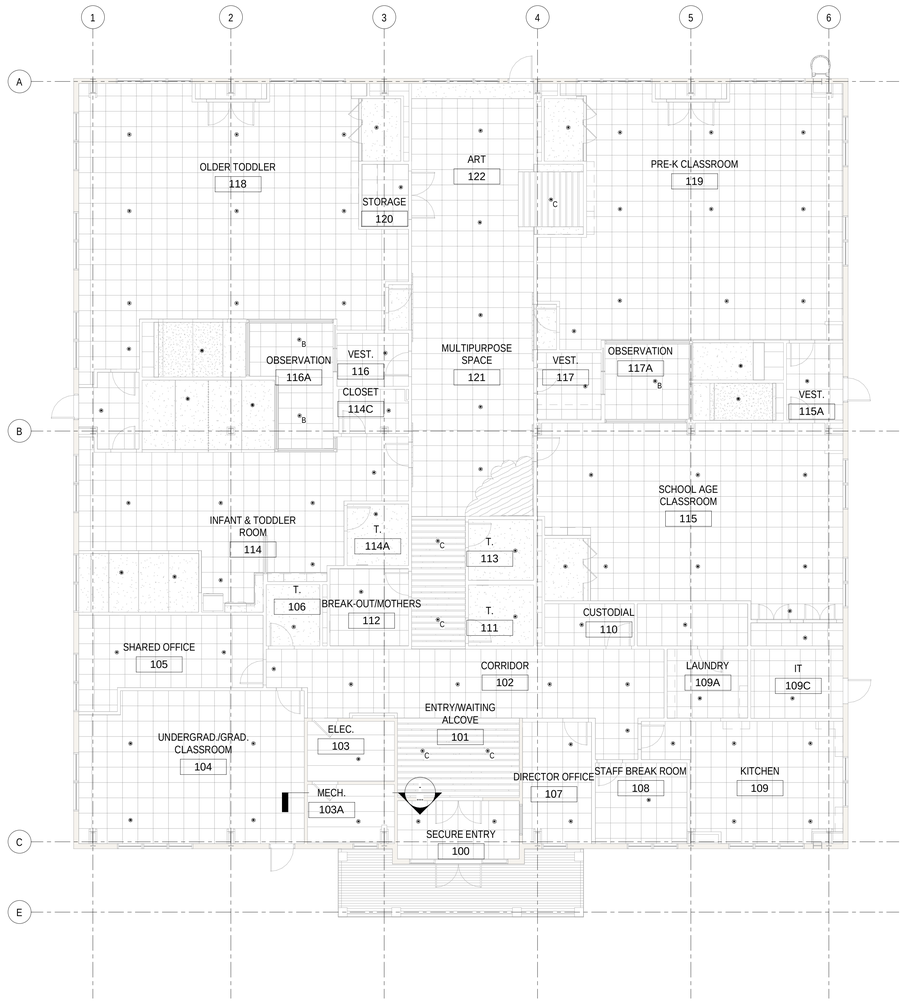
TITLE
EXTERIOR ELEVATIONS

SHEET
A200

SPRINKLER LEGEND

- SEMI RECESSED SPRINKLER WHITE WITH WHITE TRIM RING
- B SEMI RECESSED SPRINKLER BLACK WITH BLACK TRIM RING
- C CONCEALED SPRINKLER WITH BRUSHED BRASS COVER PLATE



1 FIRE PROTECTION CEILING PLAN

1/8" = 1'-0"

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DRWN. JRA CHK. JAL

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TITLE FIRE PROTECTION PLAN

SHEET F-100