

The contents of this Addendum alter and amend the drawings and specifications and take precedence over the related items therein. Bidders shall include the cost of all items in their Bids.

GENERAL INFORMATION

1. IMPORTANT: The Bid Tables for PennBid have been updated to better accommodate the multiple prime format; Bid Tables have been created for each prime contract. BIDDERS ARE ADVISED TO REVIEW AND DOWNLOAD UPDATED BID TABLES APPLICABLE TO THEIR GIVEN TRADE(S).
2. Bidders submitting for multiple prime contracts may do so by submitting on the applicable bid tables and uploading separate bid forms and required supporting documents for each prime contract BEING bid. Please clearly identify which contract each document applies to. BIDDERS MAY NOT QUALIFY THEIR BIDS AS CONTINGENT UPON AWARD OF OTHER CONTRACTS.
3. Minutes from the 9/18/24 Prebid meeting are attached to this Addendum.

REQUESTS FOR INFORMATION:

#12: The owner is to provide builders risk insurance. Please confirm how the contractor will be listed and if there will be a any waiver of subrogation in the contractor's favor.

A: *The Owner WILL procure a Builder's Risk policy. This policy shall include the interests of the Owner and Prime Contractors. Section 11.3 of the Supplementary Conditions to the Contract has been amended accordingly.*

#13: *[response to be provided in future addendum]*

#18: Section 011200-1.6.A.19 states that modernization scope for the existing elevator is as noted on the Architectural drawings and in Section 142400 "Hydraulic Elevators". However, Section 142400 is not included in the project manual. Will this section be made available? Or are bidders supposed to only work off of the drawings for the elevator scope?

A: *Elevator scope only outlined on Architectural Drawings and related work in MEP-FP drawings. Utilize scope provided. Scope adapted from recommendations provided by Reading Elevator Service. Contact: Bill Fodor, 610-372-4009, bfodor@readingelevator.com.*

#19: *[See response to RFI #12].*

#20: Paving section on civil drawing shows mill and overlay existing paving, architectural drawings show to sealcoat. Please clarify.

A: *Scope will be per Architectural Drawings and shall include removal of vegetation, installation of crack filler and new seal coat over entire parking surface.*

#21: There are 3 interior windows: Room 103 - IW01, Room 127/129 IW03, Room 229 - IW02. Do these windows get shades?

A: *No shades are specified for interior windows at this time.*

#22: Specification 122413 2.3E1 requires exposed headbox Specification 122413 2.3E3 requires a recessed pocket. There are no further notes as to which one is required at which window. Please clarify the requirement.

A: *Window shades to receive exposed headbox mounted between jambs at window head.*

- #23: Specification 122413 2.3D1 and 2.4B gives basic details for the shade fabric. There are many fabrics with a wide range of prices which meet these details. Can you please suggest a BOD fabric?
- A: *3% open, anti-microbial, 0.25 NRC. Basis of Design: Mechoshade, Urbanshade, SoHo 1600 series. Color as selected by Owner from manufacturer's full, non-custom range.*
- #24: Please confirm that you are requiring all the existing sprinkler heads to be removed and replaced with new ones.
- A: *Confirmed - all heads will be replaced, except for the attic sprinklers. The attic sprinkler piping and heads shall remain.*
- #25: 1- Please provide the as built drawings and hydraulic calculations of the existing fire sprinkler system installation. 2- Please provide a copy of the latest inspection report of the existing fire sprinkler system installation. 3- Please provide a flow test report of the water flows and pressures that exist to supply the fire sprinkler system.
- A: *As-built and hydraulic calculations are not available. Latest sprinkler testing was performed by Victory Fire Protection of Pottstown. That report will be included in next addendum. If flow and pressure report is available from Victory, it will also be provided at that time.*
- #26: 1- Please provide drawings showing any of the existing fire sprinkler system that is deficient, or that is in need of repair. 2- Is there an existing dry fire sprinkler system? If so please provide a specification for this.
- A: *There is no drawing depicting the extent of repair of existing fire sprinkler system. Bidders are encouraged to inspect existing conditions. There is an existing dry pipe sprinkler system serving the attic and that is to remain. There may be relocation of piping or heads required to accommodate new work. See Dry-Pipe Sprinkler spec section attached.*
- #27: Please confirm if sch 10 sprinkler piping is acceptable. The specs (211313) conflict with each other. The product section calls for sch 10 but the piping schedules call for sch 40
- A: *Sprinkler piping shall be schedule 40 steel pipe. In spec section 211313 delete line 2.2.C.*
- #28: Spec. 233113-6 2.6 D. talks of All SA,RA to be lined but Spec. 233113-8 3.6 talks of 1st 10' of SA,RA, what is intent? -Spec. 233300-4/5 2.4 B. talks of standard purchased vd's but C. talks of low leakage purchased vd's, which type is the intent? -Spec. 233300-5 2.5 B. talks of standard t.v's but C. talks of acoustical tv's which is the intent?
- A: *The first 10 feet after the air handling unit of SA and RA ducts must be lined. After the first 10 feet the contractor may line or wrap the ducts to achieve an R-6 insulation value. Provide standard volume dampers and provide standard turning vanes.*
- #29: Rooms 133 Armory and 134 Evidence Storage indicate a wire mesh partition, are these by owner or GC Prime as they are not listed under owner provided item and there is no specification? Please provide clarification or specification.
- A: *Specification provided as part of this Addendum. Partitions shall be floor to ceiling w/ 7' high doors. Dimensions shall be provided on updated drawings to be issued in next Addendum.*
- #30: Will you be separating the bid table for each trade? You are only able to submit one file under the bid table category and if you are bidding on multiple trades, you will need to submit more than one bid table. Not all categories on the bid table apply to each trade.

A: *PennBid has been updated to permit multiple submissions. See General Note #1 above.*

#31: Demo notes on AD-101, north of the elevator, the fire extinguisher note is covering the other notes.

A: *Obscured keynotes are: 2.01.30 (existing Elevator machine to remain) and 2.41.10 (remove ceiling).*

#32: Who does condensate piping for HVAC Equipment? There is none shown on drawings.

A: *The MC is responsible for providing the condensate piping and pumps. This is described for various units in New Work Notes 2, 3, 4, 5, 6, and 7. The routing shall be determined by the MC and coordinated and shown on the coordination drawings as required in specification Section 23 05 02 paragraph 1.8.*

#33: Civil drawings show them as EP Henry, architectural notes call them out as concrete and brick. Structuralists say to refer to civil drawings. Please clarify what is required.

A: *Retaining wall shall be constructed from reinforced concrete and brick per the Architectural drawings. Structural and architectural details shall be provided in next Addendum. Disregard modular landscape retaining wall detail in Civil drawings.*

#34: Please provide details for fencing [metal mesh partitions] in the addition.

A: *See response to RFI #29.*

#35: *[response to be provided in future addendum]*

#36: The Building Permit for Lower Pottsgrove includes the other major trades will the owner be paying for the entire permit.

A: *Owner shall be responsible for General, HVAC, Electrical, Plumbing and Zoning permits. Any other permits (i.e. – L&I Elevator Permit) shall be the responsibility of the applicable Prime Contractor.*

#37: *[Administrative RFI, no Addendum response required]*

DRAWINGS: None.

SPECIFICATIONS

1. Section 007300 “Supplementary Conditions to the Contract”:

- a. **REVISED:** Paragraph 11.3 has been revised to reflect the Owner's obligation for providing a Builder's Risk insurance policy and the subrogation terms. The excerpt of the relevant section is attached to this addendum. The full revised copy shall be made part of the Project Manual.

2. Section 011200 “Multiple Contract Summary”:

- a. **DELETE** from Paragraph 1.6.A.19 “...drawings and in Section 142400 “Hydraulic Elevators.”

3. Section 102213 “Wire Mesh Partitions” attached to this Addendum and made part of the Project Manual.

4. **Section 122413 “Roller Window Shades”:**
 - a. **DELETE** paragraph 2.3.E.3.
5. **Section 211313 “Wet-Pipe Sprinkler Systems”:**
 - a. **DELETE** paragraph 2.2.C.
6. **Section 211316 “Dry-Pipe Sprinkler Systems”** attached to this Addendum and made part of the Project Manual.

REQUESTS FOR SUBSTITUTION: None.

END.
MG ARCHITECTS, LTD.

SOG/lev

Attachments:

- Pre-Bid Meeting Minutes
- Pre-Bid Meeting Sign-In sheets
- Specification section 007300 “Supplementary Conditions to the Contract (Rev. 1)”; Paragraph 11.3 excerpt.
- Specification section 102213 “Wire Mesh Partitions.”
- Specification section 211316 “Dry Pipe Sprinkler Systems.”

In Attendance:

Other Attendees as per Sign-In Sheet

Distribution (Via Addendum):

The following minutes are intended to provide a summary of the issues and topics discussed relevant to the Pre-Bid Conference for the Municipal Building and Police Station project for Lower Pottsgrove Township. All attendees are requested to review the information and notify Muhlenberg Greene Architects of any needed corrections or additions to these minutes. These Pre-Bid Meeting Minutes have been attached to Addendum #2 for the referenced Project and are to be considered part of the Bidding Documents.

Respectfully submitted,

MUHLENBERG GREENE ARCHITECTS, LTD.



Scott O. Graham, AIA, LEED AP BD+C
Principal

SOG/lev

Attachment:

- Sign-In Sheet

Alternates: Generator & Siding/Window replacement

Pending Items: Arch treatment of supplemental bracing, retaining wall design

I. INTRODUCTION

- A. Owner's Agent – Providence Consulting Associates, LLC
 - a. Chris Caggiano, President - PCA
- B. Architect – Muhlenberg Greene Architects
 - a. Scott O. Graham – MGA
- C. Officers of the Township were noted as attendance.

II. BIDDING REQUIREMENTS

- 2.1 There will be Four (4) Prime contractors on this project, General, Plumbing, HVAC, and Electrical.
- 2.2 Bids are due **Friday, October 4, 2024 at 2:00pm**, on PennBid.
- 2.2 Please review the bidding requirements and instruction to bidders carefully and ensure all required information is provided. Incomplete bid packages will be disqualified.
- 2.3 Questions and requests for clarification or interpretations of the Bid Documents shall be made in writing via PenBid to the Architect no later than four (4) days prior to the bid due date. No verbal questions from bidders will be reviewed or accepted.
 - a. RFI's must be submitted via PennBid regardless of the Prime Contract being bid (Requests for Substitutions may be made via email to the Architect, but are not official until issued via Addendum. We will distribute them to our consultants, as required, and respond in writing to you. Any clarification or change to the Project Documents will be identified in an Addendum. If it is not identified in an Addendum, it is not an official change to the Project Documents, bidders are obligated to meet the scope of work indicated in the project documents and addenda.
 - b. Verbal responses from the Architect or its Consultants are not considered an official change to the contract requirements.
 - c. Bidders shall be required to acknowledge receipt of all issued Addenda as part of their bid package. Failure to acknowledge receipt of all Addenda MAY disqualify your bid, however, it WILL NOT absolve a bidder from meeting the project requirements set forth in each Addenda.

2.4 Any revisions to the Bid Proposal Forms will be provided by Addendum.

- a. A Non-Collusive Affidavit must accompany the Bid Proposal Form.
- b. Each Bid Proposal Form must be accompanied by security in the form of a certified check, certified bank treasurer's check, bank cashier's check, or bid bond provided in the bidding documents, in the amount of ten percent (10%) of the total amount of the Bid drawn to the order of the Lower Pottsgrove Township. Bonds must be submitted in duplicate - at least one (1) copy must be an original. Costs of bonds are to be included in contractor's Base Bid.
- c. All spaces provided on the Bid Form that apply to a particular contract must be filled in completely.
- d. Do not qualify any item or portion on the Bid Form.
- e. Voluntary alternates are not allowed and will disqualify the bid.
- f. Any Bid submitted which does not comply with these requirements may be rejected as non-conforming.
- g. Contractor Qualification Statements, using AIA Document A305, must also include a minimum of three references from recent projects, similar in scope to the contracted work planned for this project. The references must include direct contact information with an individual who was involved in the project cited and is familiar with your services.
- h. **Qualified Contractor Certification is required. This is not a Responsible Contractor ordinance. Certifications will be required of all Primes and their major subcontractors in order to protect the interests of the Township.**

2.5 Pennsylvania Prevailing Wage Rates are applicable to this Project. Certified payroll documents must be submitted **with** each payment application.

2.6 Payment and Performance Bonds are required. Costs of bonds are to be included in contractor's Base Bid.

2.7 Carefully review the Multiple Contract Summary for additional scopes of work, Allowances, or labor and materials that are to be included as part of the base bid. Any items not used will be credited back to the owner based on the unit prices provided. Each bidder is to provide all required unit prices listed under THEIR contract. Specific items are in addition to the scope of work identified and are only for use if needed as a result of unknown conditions. Unit Prices apply to these provisions. This additional work is to be included as a separate line item on the schedule of values.

2.8 Specific scope items with Unit Prices are noted as ADDITIONAL to the scope of work identified in the bid package. Each additional scope of work or unit prices is to be included on a separate line on of the Schedule of Values, but is NOT to be included in the base bid amount.

- 2.9 Carefully review the Summary of Work specification sections for items that are to be furnished by the owner and installed by the contractor.
- 2.10 Carefully review the scopes of work listed in the Summary of Multiple Contracts for items that are to be provided by a specific Prime Contractor and installed by another. For example, the curbs for new roof top units are to be provided by the HC and installed by the GC.
- 2.11 Carefully review the Quality Requirements, Multiple Contract Summary, and individual specification sections for responsibilities for Testing and Inspections.
- 2.12 Additional site visits may be scheduled for **September 25, 2024 between 1:00pm and 4:00pm, and September 26, 2024 between 9:00am and 12:00pm.** Contractors must schedule their visits through the Owner's Agent, and pre-registration is required prior to 5:00pm the day prior to the planned visit.

III. PROJECT SCHEDULE

- 3.1 Expected award of contract and issuing of the Notice to Proceed is **October 24, 2024.** Construction starting date is expected **November 25, 2024.**
- 3.2 Liquidated damages are included in the contract. The Notice to Proceed will initiate the preconstruction phase work, including the submission of Product Information and Shop Drawings thus providing ample time for delivery of products to the site. Particular attention is to be paid to long lead time items. Timely completion of the work is the responsibility of the contractors. Requests for time extension resulting from product lead times will not be approved.
- 3.3 A Pre-Construction Meeting will be scheduled once the contracts have been awarded. Please ensure that each prime contractor will have a representative available at that time.

IV. MISCELLANEOUS ISSUES

- 4.1 Project coordination is as described in the Project manual and is to be provided under the GC contract. The project coordinator shall maintain communication and coordinate with the other Primes, Architect and Owner's Agent(s).
- 4.2 Each prime contractor shall comply with all applicable provisions of Pennsylvania's Public Work Employment Verification Act and will be required of all contractors' employees and their subcontractors.
- 4.3 Compliance with OSHA Regulations and Safety Requirements will be the responsibility of each prime contractor.
- 4.4 Prime Contractors must provide insurance according to the limits outlined in the Project Manual. See Supplementary Conditions.
- 4.5 Work sequences and storage of materials must be reviewed and approved by the Project Coordinator and Architect before commencing the work or storing materials.
- 4.6 MGA will submit for the building permit application. General building permits shall be issued and paid for by Owner. Each prime contractor is responsible for securing and paying for any other permits, and any other fees required by the local authority and should contact the reviewing agency to determine the approximate permit fee. Permit fees are to be included in your bid.
- 4.7 The Township is a tax-exempt entity, if a contractor is claiming sales tax on an item, documentation must be provided showing the item is indeed subject to sales tax.
- 4.8 Substitution requests are to be made to the architect no later than 10 days prior to bids being due. Specifications indicate requirements for substitution requests. Email submission per the guidelines set forth in Addendum #1 is acceptable.
- 4.9 Certified Payrolls must be included with each pay application. Pay application pencil copies should be submitted one week prior to month's end to allow for review and comment.
- 4.10 Primes are required to provide English-speaking superintendents.
- 4.11 The building is a smoke-free environment. See specifications for additional restrictions on alcohol, drug and tobacco use.

V. QUESTIONS/ANSWER

An opportunity to ask questions was provided with the acknowledgement that questions must be submitted in writing to receive formal responses. Contractors were advised to refer to the Addenda for any further clarification for answers to questions raised during the Pre-Bid Conference.

The question and answer session was concluded, and the Contractors could freely review the work areas within the site.

The above minutes are a summary in accordance with the author's understanding. Anyone requesting revisions or corrections must notify this office, in writing, within three (3) days of receipt of these minutes.

End of Minutes

9/18/24 Lower POTTSGROVE MUNICIPAL BUILDING

<u>Name</u>	<u>Company</u>	<u>EMAIL ADDRESS</u>
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- .7 Asbestos and/or Lead Abatement. If Contractor (or applicable Subcontractors) will perform or retain others to perform abatement services; Asbestos and/or Lead Abatement Liability Insurance with limits of Ten Million Dollars (\$10,000,000) Each Occurrence and Ten Million Dollars (\$10,000,000) Aggregate when Work includes asbestos and/or lead abatement activities.

11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 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. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

11.1.3.1 The cancellation notice on the Certificate of Insurance, ACORD Form 25S, shall be revised to read 'Should any of the above-described policies be canceled before the expiration date thereof, the issuing company will mail 30 days' written notice to the certificate holder named to the left.' In addition to ACORD Form 25S, AIA Document G715 shall also be completed, in full, and submitted.

11.1.3.2 The Contractor shall provide insurance coverage for portions of the work stored off the site after written approval of the Owner at the value established in the approval, and also for portions of the work in transit.

11.1.3.3 Certificates of Insurance shall be issued in duplicate.

11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations. If coverage is written on a "claims made" basis, Contractor warrants the purchase of an extended reporting period of not less than two (2) years.

11.1.5 The Contractor shall purchase insurance from a company having an A. M. Best & Co. rating of 'A' or better.

11.1.6 The Contractor shall provide an endorsement from his insurance carrier (in addition to Certificate required above) to the Owner within two weeks after execution of the Agreement stating that this subparagraph has been complied with. The endorsement shall obligate the insurance carrier to give the Owner thirty (30) days' notice of cancellations of the insurance coverage(s).

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

11.3 PROPERTY INSURANCE

11.3.1 The Owner and Prime Contractor waive all rights against (1) each other; (2) the Architect and Architect's consultants; (3) and Separate Contractors, if any, and any of their agents and employees for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement, or other property insurance applicable to the Project, except such rights as they have to the proceeds of such insurance. The Owner or Prime Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants and Separate Contractors. The policies of the insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This

waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds shall be obtained from a company lawfully authorized to do business in the Commonwealth of Pennsylvania and have Best's ratings of 'A' or better; and the cost of the bonds shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum.

11.4.1.1 The Contractor shall deliver the required bonds to the Owner not later than three days following the date Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

11.4.1.2 The Contractor shall require the attorney who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the Power of Attorney.

11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished."

12.1 Delete Subparagraph 12.2.2.1

12.2 Delete Subparagraph 12.2.2.3

12.3 Replace Subparagraph 12.2.5 with the following:

"12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents, the enforcement of Contractor's obligations under the Contract or claims by the Owner arising from or relating to latent defects or Work that does not conform to the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work."

13.1 Replace Subparagraph 13.1 with the following:

"13.1 The Contract shall be governed by the laws of the Commonwealth of Pennsylvania and within the jurisdiction of either the Montgomery County Courts or Federal District Court for the Eastern District of Pennsylvania."

13.2 Delete Subparagraph 13.2.2

13.3 Add to Article 13 of General Conditions the following paragraphs 13.6 through 13.12:

SECTION 102213 - WIRE MESH PARTITIONS

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. Heavy-duty wire mesh partitions.
- B. Related Requirements:
 - 1. Section 087100 "Door Hardware" for interchangeable core lock cylinders.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. Wire mesh partitions.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Indicate clearances required for operation of doors.
- C. Samples: Manufacturer's standard color sheets, showing full range of available colors for units with factory-applied color finishes.
- D. Delegated Design Submittals: For wire mesh partitions indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Acorn Wire & Iron Works; 130A Standard Duty Wire Mesh or a comparable product by one of the following:

1. Kenco Wire & Iron Products Inc.
2. Newark Wire Works Inc.
3. SpaceGuard Products.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design wire mesh units.
- B. Structural Performance: Wire mesh units to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 1. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m) at any location on a panel.
 2. Total load of 200 lbf (0.89 kN) applied uniformly over each panel.
 3. Concentrated load and total load need not be assumed to act concurrently.
- C. Regulatory Requirements: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC A117.1 for doors and gates designated as accessible.

2.3 HEAVY-DUTY WIRE MESH PARTITIONS

- A. Mesh:
 1. 0.192-inch- (4.9-mm-) diameter, intermediate-crimp steel wire woven into 2-inch (50-mm) diamond mesh.
- B. Vertical and Horizontal Panel Framing: 1-1/2-by-3/4-by-1/8-inch (38-by-19-by-3.2-mm) cold-rolled steel channels; with holes for 3/8-inch- (9.5-mm-) diameter bolts not more than 12 inches (300 mm) o.c.
- C. Horizontal Panel Stiffeners: Two cold-rolled steel channels, 1 by 1/2 by 1/8 inch (25 by 13 by 3.2 mm), bolted or riveted toe to toe through mesh.
- D. Top Capping Bars: 3-by-1-inch (76-by-25-mm) steel channels.
- E. Posts for 90-Degree Corners: 1-1/2-by-1-1/2-by-1/8-inch (38-by-38-by-3.2-mm) steel angles or tubes or 2-by-2-by-0.075-inch (50-by-50-by-1.9-mm) cold-rolled steel angles or tubes, with holes for 3/8-inch- (9.5-mm-) diameter bolts aligning with bolt holes in vertical framing; with 1/4-inch (6.4-mm) steel base plates.
- F. Posts for Other-Than-90-Degree Corners: 2-inch- (50-mm) OD by 1/8-inch (3.2-mm) steel pipe or round tube, with holes for 3/8-inch- (9.5-mm-) diameter bolts aligning with bolt holes in vertical framing; with 1/4-inch (6.4-mm) steel base plates.
- G. Adjustable Corner Posts: Two 1-1/2-by-3/4-by-1/8-inch (38-by-19-by-3.2-mm) cold-rolled, steel channels or 2-by-2-by-0.075-inch (50-by-50-by-1.9-mm) steel tubes connected by steel hinges at 36 inches (900 mm) o.c. attached to posts; with 1/4-inch- (6-mm-) diameter bolt holes aligning with bolt holes in vertical framing; with 1/4-inch (6.4-mm) steel base plates.
- H. Line Posts: 3-inch-by-4.1-lb (76-mm-by-1.9-kg) or 3-1/2-by-1-1/4-by-1/8-inch (89-by-32-by-3.2-mm) steel channels; with 1/4-inch (6.4-mm) steel base plates.

- I. Three- and Four-way Intersection Posts: 2-by-2-by-0.075-inch (50-by-50-by-1.9-mm) steel tubes, with holes for 3/8-inch- (9.5-mm-) diameter bolts aligned for bolting to adjacent panels; with 1/4-inch (6.4-mm) steel base plates.
- J. Floor Shoes: Metal, not less than 2 inches (50 mm) high; sized to suit vertical framing, drilled for attachment to floor, and with setscrews for leveling adjustment.
- K. Swinging Doors: Fabricated from same mesh as partitions, with framing fabricated from 1-1/2-by-3/4-by-1/8-inch (38-by-19-by-3.2-mm) steel channels, banded with 1-1/2-by-1/8-inch (38-by-3.2-mm) flat steel bar cover plates on four sides, and with 1/8-inch- (3.2-mm-) thick angle strike bar and cover on strike jamb.
 - 1. Hinges: Full-surface type, 3-1/2-by-3-1/2-inch (89-by-89-mm) steel, three per door; bolted, riveted, or welded to door and jamb framing.
 - 2. Cylinder Lock: Mortise type with cylinder specified in Section 087100 "Door Hardware; operated by key outside and recessed turn knob inside; mounted in lower section of door.
 - 3. Bolt: Mounted in, securing upper section of door.
 - 4. Shelf: Fabricated from 0.097-inch- (2.5-mm-) thick, steel sheet, [12 inches (300 mm)] [18 inches (450 mm)] deep by full width of door less 4 inches (102 mm); with corners rounded and edges finished smooth; mounted on top of lower section of door and braced with manufacturer's standard brackets.
- L. Accessories:
 - 1. Sheet Metal Base: 0.060-inch- (1.5-mm-) thick, steel sheet.
 - 2. Adjustable Filler Panels: 0.060-inch- (1.5-mm-) thick, steel sheet; capable of filling openings from 2 to 12 inches (50 to 300 mm).
 - 3. Wall Clips: Manufacturer's standard, cold-rolled steel sheet.
- M. Finish: Powder-coated finish unless otherwise indicated.
 - 1. Color: As selected by Architect from manufacturer's full range.

2.4 MATERIALS

- A. Steel Wire: ASTM A510/A510M.
- B. Steel Plates, Channels, Angles, and Bars: ASTM A36/A36M.
- C. Steel Sheet: Cold-rolled steel sheet, ASTM A1008/A1008M, Commercial Steel (CS), Type B.
- D. Steel Pipe: ASTM A53/A53M, Schedule 40, unless another weight is indicated or required by structural loads.
- E. Steel Tubing: ASTM A500/A500M, cold-formed structural-steel tubing or ASTM A513/A513M, Type 5, mandrel-drawn mechanical tubing.
- F. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with G60 (Z180) zinc (galvanized) or A60 (ZF180) zinc-iron-alloy (galvannealed) coating designation.
- G. Panel-to-Panel Fasteners: Manufacturer's standard steel bolts, nuts, and washers.

- H. Post-Installed Anchors: Capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.
 - 1. Material for Interior Locations: Carbon-steel components are zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
- I. Power-Driven Fasteners: ICC-ES AC70.
- J. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer, complying with MPI#79.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

2.5 FABRICATION

- A. General: Fabricate wire mesh items from components of sizes not less than those indicated. Use larger-sized components as recommended by wire mesh item manufacturer. Furnish bolts, hardware, and accessories required for complete installation with manufacturer's standard finishes.
 - 1. Fabricate wire mesh items to be readily disassembled.
 - 2. Welding: Weld corner joints of framing and grind smooth, leaving no evidence of joint.
- B. Standard-Duty Wire Mesh Partitions: Fabricate wire mesh partitions with cutouts for pipes, ducts, beams, and other items indicated. Finish edges of cutouts to provide a neat, protective edge.
 - 1. Mesh: Weld mesh to framing.
 - 2. Framing: Fabricate framing with mortise-and-tenon corner construction.
 - a. Provide horizontal stiffeners as indicated or, if not indicated, as required by panel height and as recommended by wire mesh partition manufacturer. Weld horizontal stiffeners to vertical framing.
 - b. Fabricate three- and four-way intersections using intersection posts.
 - c. Fabricate partition and door framing with slotted holes for connecting adjacent panels.
 - 3. Fabricate wire mesh partitions with bottom horizontal framing flush with finished floor.
 - 4. Doors: Align bottom of door with bottom of adjacent panels.
 - a. For doors that do not extend full height of partition, provide transom over door, fabricated from same mesh and framing as partition panels.
 - 5. Hardware Preparation: Mortise, reinforce, drill, and tap doors and framing as required to install hardware including cylinders with removable cores.

2.6 STEEL AND IRON FINISHES

- A. Shop Priming: Apply shop primer to uncoated surfaces of wire mesh units unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRE MESH PARTITIONS

- A. Anchor wire mesh partitions to floor with 3/8-inch- (9.5-mm-) diameter, postinstalled expansion anchors at 12 inches (300 mm) o.c. through anchor clips located at each post and corner. Shim anchor clips as required to achieve level and plumb installation.
 - 1. Anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if indicated on Shop Drawings.
- B. Anchor wire mesh partitions to walls at 12 inches (305 mm) o.c. through back corner panel framing and as follows:
 - 1. For concrete and solid masonry anchorage, use expansion anchors.
 - 2. For hollow masonry anchorage, use toggle bolts.
 - 3. For steel-framed gypsum board assemblies, fasten brackets directly to steel framing or concealed reinforcements using self-tapping screws of size and type required to support structural loads.
- C. Secure top capping bars to top framing channels with 1/4-inch- (6-mm-) diameter, "U" bolts spaced not more than 28 inches (700 mm) o.c.
- D. Provide line posts at locations indicated or, if not indicated, as follows:
 - 1. On each side of sliding-door openings.
 - 2. For partitions that are 7 to 9 ft. (2.1 to 2.7 m) high, spaced at 15 to 20 ft. (4.6 to 6.1 m) o.c.
 - 3. For partitions that are 10 to 12 ft. (3.0 to 3.7 m) high, located between every other panel.
 - 4. For partitions that are more than 12 ft. (3.7 m) high, located between each panel.
- E. Where standard-width wire mesh partition panels do not fill entire length of run, provide adjustable filler panels to fill openings.
- F. Install doors complete with door hardware.
- G. Bolt accessories to wire mesh partition framing.

3.2 REPAIR

- A. Repair Painting:
 - 1. Wire brush and clean rust spots, welds, and abraded areas immediately after installation, and apply repair paint with same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.
 - a. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

3.3 ADJUSTING

- A. Adjust doors to operate smoothly and easily, without binding or warping. Adjust hardware to function smoothly. Verify that latches and locks engage accurately and securely without forcing or binding.

END OF SECTION 102213

SECTION 211316 - DRY-PIPE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipes, fittings, and specialties.
 - 2. Specialty valves.
 - 3. Sprinkler specialty pipe fittings.
 - 4. Sprinklers.
 - 5. Alarm devices.
 - 6. Pressure gauges.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For dry-pipe sprinkler systems.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include diagrams for power, signal, and control wiring.
- C. Delegated-Design Submittal: For dry-pipe sprinkler systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Sprinkler systems, drawn to scale, on which items of other systems and equipment are shown and coordinated with each other, using input from installers of the items involved.
- B. Design Data:
 - 1. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
- C. Field Test Reports: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."
- D. Field quality-control reports.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.
 - a. Engineering Responsibility: Preparation of working plans, calculations, and field test reports by a qualified professional engineer.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTIONS

- A. Dry-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing compressed air or nitrogen. Opening of sprinklers releases compressed air or nitrogen and permits water pressure to open dry-pipe valve. Water then flows into piping and discharges from opened sprinklers.

2.2 PERFORMANCE 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. Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with NFPA 13.
- C. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.
- D. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design dry-pipe sprinkler systems.
- E. Sprinkler system design shall be approved by authorities having jurisdiction.
 1. Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping, valves, and backflow preventers.
 2. Sprinkler Occupancy Hazard Classifications:
 - a. Automobile Parking Areas: Ordinary Hazard, Group 1.
 - b. Building Service Areas: Ordinary Hazard, Group 1.
 - c. Electrical Equipment Rooms: Ordinary Hazard, Group 1.
 - d. Elevator Machine Room and Hoistway: Ordinary Hazard, Group 1.
 - e. General Storage Areas: Ordinary Hazard, Group 1.
 - f. Mechanical Equipment Rooms: Ordinary Hazard, Group 1.
 - g. Office and Public Areas: Light Hazard.
 3. Minimum Density for Automatic-Sprinkler Piping Design:
 - a. Light-Hazard Occupancy: 0.10 gpm over 1500-sq. ft. area.
 - b. Ordinary-Hazard, Group 1 Occupancy: 0.15 gpm over 1500-sq. ft. area.
 - c. Ordinary-Hazard, Group 2 Occupancy: 0.20 gpm over 1500-sq. ft. area.

4. Maximum protection area per sprinkler according to UL listing.

2.3 STEEL PIPE AND FITTINGS

- A. Schedule 40, Galvanized-Steel Pipe: ASTM A53/A53M, Type E, Grade B. Pipe ends may be factory or field formed to match joining method.
- B. Galvanized-Steel Pipe Nipples: ASTM A733, made of ASTM A53/A53M, standard-weight, seamless steel pipe with threaded ends.
- C. Galvanized-Steel Couplings: ASTM A865/A865M, threaded.
- D. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- E. Malleable- or Ductile-Iron Unions: UL 860.
- F. Cast-Iron Flanges: ASME B16.1, Class 125.
- G. Plain-End-Pipe Fittings: UL 213, ductile-iron body with retainer lugs that require one-quarter turn or screwed retainer pin to secure pipe in fitting.
- H. Grooved-Joint, Steel-Pipe Appurtenances:
 1. Pressure Rating: 175-psig minimum.
 2. Galvanized, Grooved-End Fittings for Steel Piping: ASTM A47/A47M, malleable-iron casting or ASTM A536, ductile-iron casting, with dimensions matching steel pipe.
 3. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213 rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

2.4 SPECIALTY VALVES

- A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
- B. Specialty Valves Pressure Rating: 175-psig minimum.
- C. Body Material: Cast or ductile iron.
- D. Size: Same as connected piping.
- E. End Connections: Flanged or grooved.
- F. Dry-Pipe Valves:
 1. Standard: UL 260.
 2. Design: Differential-pressure type.
 3. Include UL 1486, quick-opening devices, trim sets for air supply, drain, priming level, alarm connections, ball drip valves, pressure gages, priming chamber attachment, and fill-line attachment.
 4. Air-Pressure Maintenance Device:
 - a. Standard: UL 260.
 - b. Type: Automatic device to maintain minimum air pressure in piping.
 - c. Include shutoff valves to permit servicing without shutting down sprinkler piping, bypass valve for quick filling, pressure regulator or switch to maintain pressure,

strainer, pressure ratings with 14- to 60-psig adjustable range, and 175-psig outlet pressure.

- G. Automatic (Ball Drip) Drain Valves:
 - 1. Standard: UL 1726.
 - 2. Pressure Rating: 175-psig minimum.
 - 3. Type: Automatic draining, ball check.
 - 4. Size: NPS 3/4.
 - 5. End Connections: Threaded.

2.5 SPRINKLER PIPING SPECIALTIES

- A. General Requirements for Dry-Pipe System Fittings: UL listed for dry-pipe service.
- B. Branch Outlet Fittings:
 - 1. Standard: UL 213.
 - 2. Pressure Rating: 175-psig minimum.
 - 3. Body Material: Ductile-iron housing with EPDM seals and bolts and nuts.
 - 4. Type: Mechanical-tee and -cross fittings.
 - 5. Configurations: Snap-on and strapless, ductile-iron housing with branch outlets.
 - 6. Size: Of dimension to fit onto sprinkler main and with outlet connections as required to match connected branch piping.
 - 7. Branch Outlets: Grooved, plain-end pipe, or threaded.
- C. Flow Detection and Test Assemblies:
 - 1. Standard: UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
 - 2. Pressure Rating: 175-psig minimum.
 - 3. Body Material: Cast- or ductile-iron housing with orifice, sight glass, and integral test valve.
 - 4. Size: Same as connected piping.
 - 5. Inlet and Outlet: Threaded.
- D. Branch Line Testers:
 - 1. Standard: UL 199.
 - 2. Pressure Rating: 175-psig minimum.
 - 3. Body Material: Brass.
 - 4. Size: Same as connected piping.
 - 5. Inlet: Threaded.
 - 6. Drain Outlet: Threaded and capped.
 - 7. Branch Outlet: Threaded, for sprinkler.
- E. Sprinkler Inspector's Test Fittings:
 - 1. Standard: UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."
 - 2. Pressure Rating: 175-psig minimum.
 - 3. Body Material: Cast- or ductile-iron housing with sight glass.
 - 4. Size: Same as connected piping.
 - 5. Inlet and Outlet: Threaded.
- F. Adjustable Drop Nipples:
 - 1. Standard: UL 1474.
 - 2. Pressure Rating: 250-psig minimum.
 - 3. Body Material: Steel pipe with EPDM O-ring seals.
 - 4. Size: Same as connected piping.
 - 5. Length: Adjustable.

6. Inlet and Outlet: Threaded.

G. Flexible Sprinkler Hose Fittings:

1. Standard: UL 1474.
2. Type: Flexible hose for connection to sprinkler, and with bracket for connection to ceiling grid.
3. Pressure Rating: 175-psig minimum.
4. Size: Same as connected piping, for sprinkler.

2.6 SPRINKLERS

A. Listed in UL's "Fire Protection Equipment Directory" or FM Global's "Approval Guide."

B. Pressure Rating for Automatic Sprinklers: 175-psig minimum.

C. Automatic Sprinklers with Heat-Responsive Element:

1. Sprinklers in attic shall be upright type sprinkler heads.
2. Nonresidential Applications: UL 199.
3. Characteristics: Nominal 1/2-inch orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.

2.7 PRESSURE GAUGES

A. Standard: UL 393.

B. Dial Size: 3-1/2- to 4-1/2-inch diameter.

C. Pressure Gauge Range: 0- to 250-psig minimum.

D. Label: Include "WATER" or "AIR/WATER" label on dial face.

E. Air System Piping Gauge: Include retard feature and "AIR" or "AIR/WATER" label on dial face.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated on approved working plans.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.
2. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

B. Piping Standard: Comply with NFPA 13 requirements for installation of sprinkler piping.

- C. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- D. Install unions adjacent to each valve in pipes NPS 2 and smaller.
- E. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.
- F. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.
- G. Install sprinkler piping with drains for complete system drainage.
- H. Install sprinkler control valves, test assemblies, and drain risers adjacent to standpipes when sprinkler piping is connected to standpipes.
- I. Install automatic (ball drip) drain valves to drain piping between fire department connections and check valves. Drain to floor drain or to outside building.
- J. Install alarm devices in piping systems.
- K. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements in NFPA 13. In seismic-rated areas, refer to Section 210548 "Vibration and Seismic Controls for Fire-Suppression Piping and Equipment."
- L. Install pressure gauges on riser or feed main, at each sprinkler test connection, and at top of each standpipe. Include pressure gauges with connection not less than NPS 1/4 and with soft-metal seated globe valve, arranged for draining pipe between gauge and valve. Install gauges to permit removal and install where they are not subject to freezing.
- M. Drain dry-pipe sprinkler piping.
- N. Pressurize and check dry-pipe sprinkler system piping and air compressors.
- O. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 210517 "Sleeves and Sleeve Seals for Fire-Suppression Piping."
- P. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 210518 "Escutcheons for Fire-Suppression Piping."

3.2 JOINT CONSTRUCTION

- A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.
- B. Install unions adjacent to each valve in pipes NPS 2 and smaller.
- C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.
- D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

- E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- F. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9.
- G. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- H. Twist-Locked Joints: Insert plain end of steel pipe into plain-end-pipe fitting. Rotate retainer lugs one-quarter turn or tighten retainer pin.
- I. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.
- J. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.3 VALVE AND SPECIALTIES INSTALLATION

- A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.
- B. Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.
- C. Install check valve in each water-supply connection. Install backflow preventers instead of check valves in potable-water-supply sources.
- D. Specialty Valves:
 - 1. Install valves in vertical position for proper direction of flow, in main supply to system.
 - 2. Install dry-pipe and deluge valves with trim sets for air supply, drain, priming level, alarm connections, ball drip valves, pressure gauges, priming chamber attachment, and fill-line attachment.
 - a. Install air-pressure maintenance device with shutoff valves to permit servicing without shutting down sprinkler system; bypass valve for quick system filling; pressure regulator or switch to maintain system pressure; strainer; pressure ratings with 14- to 60-psig adjustable range; and 175-psig maximum inlet pressure.
 - b. Install compressed-air-supply piping from building's compressed-air piping system.

3.4 IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

- B. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections.
 - 1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 - 3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
 - 4. Energize circuits to electrical equipment and devices.
 - 5. Start and run air compressors.
 - 6. Coordinate with fire-alarm tests. Operate as required.
 - 7. Verify that equipment hose threads are same as local fire department equipment.
- B. Sprinkler piping system will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.6 CLEANING

- A. Clean dirt and debris from sprinklers.
- B. Only sprinklers with their original factory finish are acceptable. Remove and replace any sprinklers that are painted or have any other finish than their original factory finish.

END OF SECTION 211316