



Office of General Services

DESIGN & CONSTRUCTION GROUP
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EMPIRE STATE PLAZA
ALBANY, NY 12242

ADDENDUM NO. 1 TO PROJECT NO. M3213

CONSTRUCTION, HVAC, PLUMBING, AND ELECTRICAL WORK REHABILITATE DISH ROOM, BUILDING 15 ATTICA CORRECTIONAL FACILITY 639 EXCHANGE STREET ROAD ATTICA, NY

February 18, 2026

NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual. Acknowledge receipt of this Addendum in the space provided on the Bid Form.

HVAC WORK SPECIFICATIONS

1. SECTION 230517 SLEEVES AND SLEEVE SEALS FOR HVAC PIPING: Add the accompanying Section (pages 230517 – 1 thru 230517 – 4) to the Project Manual.
2. SECTION 230518 ESCUTCHEONS FOR HVAC PIPING: Add the accompanying Section (pages 230518 – 1 thru 230518 – 2) to the Project Manual.
3. SECTION 230523 GENERAL DUTY VALVES FOR HVAC PIPING: Add the accompanying Section (pages 230523 – 1 thru 230523 – 6) to the Project Manual.
4. SECTION 230529 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 230529 – 1 thru 230529 -10) noted “Addendum 1.”
5. SECTION 230553 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 230553 -1 thru 230553-8) noted “Addendum 1.”
6. SECTION 230719 HVAC PIPING INSULATION: Add the accompanying Section (pages 230719 – 1 thru 230719 – 13) to the Project Manual.
7. SECTION 232213 STEAM AND CONDENSATE PIPING: Add the accompanying Section (pages 232213 – 1 thru 232213 – 9) to the Project Manual.

8. SECTION 232216 STEAM AND CONDENSATE HEATING PIPING SPECIALTIES: Add the accompanying Section (pages 232216 – 1 thru 232216 – 7) to the Project Manual.

APPENDIX – CONSTRUCTION WORK

9. SCHEDULE OF SUBMITTALS: Discard any previously issued Document and substitute the accompanying Document (pages 1 thru 3) noted “Addendum 1.”

APPENDIX – HVAC WORK

10. SCHEDULE OF SUBMITTALS: Discard any previously issued Document and substitute the accompanying Document (pages 1 thru 5) noted “Addendum 1.”

APPENDIX – PLUMBING WORK

11. SCHEDULE OF SUBMITTALS: Discard any previously issued Document and substitute the accompanying Document (pages 1 thru 6) noted “Addendum 1.”

APPENDIX – ELECTRICAL WORK

12. SCHEDULE OF SUBMITTALS: Discard any previously issued Document and substitute the accompanying Document (pages 1 thru 4) noted “Addendum 1.”

HVAC WORK DRAWINGS

13. Revised Drawing:
 - A. Drawing No. M-001, noted Addendum 01 dated 2/10/2026, accompanies this Addendum and supersedes the same numbered previously issued drawing.
 - B. Drawing No. M-500, noted Addendum 01 dated 2/10/2026, accompanies this Addendum and supersedes the same numbered previously issued drawing.
14. Addendum Drawing:
 - A. Drawing No. M-100 accompanies this Addendum and forms part of the Contract Documents.
 - B. Drawing No. M-400 accompanies this Addendum and forms part of the Contract Documents.
 - C. Drawing No. MD-100 accompanies this Addendum and forms part of the Contract Documents.

END OF ADDENDUM

Brady M. Sherlock, P.E.
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SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

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. Sleeves.
 - 2. Grout.
 - 3. Silicone sealants.

1.3 SUBMITTALS

- A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions
- B. Manufacturer's installation instructions shall be provided along with product data.
- C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
- D. Product Data: For each type of product.
- E. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel pipe sleeves within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.
 - 1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.
- F. Field quality-control reports.

PART 2 - PRODUCTS

2.1 SLEEVES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Advance Products & Systems, Inc.
 - 2. CALPICO, Inc.
 - 3. GPT; an EnPro Industries company.
 - 4. Approved equivalent.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated of cast or ductile iron and equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop collar.
- C. Steel Pipe Sleeves: ASTM A53/A53M, Type E, Grade B, Schedule 40, anti-corrosion coated, with plain ends and integral welded waterstop collar.

2.2 GROUT

- A. Description: Nonshrink, recommended for interior and exterior sealing openings in nonfire-rated walls or floors.
- B. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
- C. Design Mix: 5000-psi, 28-day compressive strength.
- D. Packaging: Premixed and factory packaged.

2.3 SILICONE SEALANTS

- A. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant, ASTM C920, Type S, Grade NS, Class 25, use NT.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Polymeric Systems, Inc.
 - b. Sherwin-Williams Company (The).
 - c. The Dow Chemical Company.
 - d. Approved equivalent.
- B. Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant;

ASTM C920, Type S, Grade P, Class 25, Uses T and NT. Grade P Pourable (self-leveling) formulation is for opening in floors and other horizontal surfaces that are not fire rated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. May National Associates, Inc.; a subsidiary of Sika Corporation.
 - b. W.R. Meadows, Inc.
 - c. Tremco CPG Inc.
 - d. Approved equivalent.

PART 3 - EXECUTION

3.1 SLEEVE INSTALLATION

- A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.
- B. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
 1. Permanent sleeves are not required for holes in slabs formed by molded-PE or -PP sleeves.
 2. 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 above finished floor level.
 3. Using grout, seal space outside of sleeves in slabs and walls without sleeve-seal system.
- C. Install sleeves for pipes passing through interior partitions.
 1. Cut sleeves to length for mounting flush with both surfaces.
 2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
 3. Seal annular space between sleeve and piping or piping insulation; use sealants appropriate for size, depth, and location of joint.

3.2 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 1. Leak Test: After allowing for a full cure, test sleeves and sleeve seals for leaks. Repair leaks and retest until no leaks exist.
- B. Sleeves and sleeve seals will be considered defective if they do not pass tests and inspections.

3.3 SLEEVE AND SLEEVE-SEAL SCHEDULE

A. Use sleeves and sleeve seals for the following piping-penetration applications:

1. Interior Partitions and concrete floors:

a. Piping Smaller Than NPS 6-inches: Steel pipe sleeves

END OF SECTION 230517

SECTION 230518 - ESCUTCHEONS FOR HVAC PIPING

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. Escutcheons.
2. Floor plates.

1.3 DEFINITIONS

- A. Existing Piping to Remain: Existing piping that is not to be removed and that is not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

- A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions
- B. Manufacturer's installation instructions shall be provided along with product data.
- C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
- D. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 1. BrassCraft Manufacturing Co.; a Masco company.
 2. Jones Stephens Corp.
 3. Mid-America Fittings, Inc.

4. Approved equivalent.

2.2 ESCUTCHEONS

- A. One-Piece, Stainless-Steel Type: With polished stainless-steel finish.
- B. Split-Plate, Stamped-Steel Type: With polished, chrome-plated finish; concealed hinge; and spring-clip fasteners.

2.3 FLOOR PLATES

- A. Split Floor Plates: Steel with concealed hinge.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.
- B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
 1. Escutcheons for New Piping and Relocated Existing Piping:
 - a. Insulated Piping: One-piece stainless steel with polished stainless-steel finish.
 2. Escutcheons for Existing Piping to Remain:
 - a. Insulated Piping: Split-plate, stamped steel with concealed hinge with polished, chrome-plated finish.
- C. Install floor plates for piping penetrations of equipment-room floors.
- D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.
 1. New Piping and Relocated Existing Piping: Split floor plate.
 2. Existing Piping to Remain: Split floor plate.

3.2 FIELD QUALITY CONTROL

- A. Using new materials, replace broken and damaged escutcheons and floor plates.

END OF SECTION 230518

SECTION 230523 - GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Gate valves.
2. Globe valves.
3. Check valves.

B. Related Sections:

1. Section 230529 - Hangers and Supports for HVAC Piping and Equipment: Product and installation requirements for pipe hangers and supports.
2. Section 230719 - HVAC Insulation: Product and installation requirements for insulation for valves.
3. Section 232213 - Steam and Condensate Heating Piping: Product and installation requirements for piping used in steam and steam condensate piping systems.
4. Section 232216 - Steam and Condensate Piping Specialties: Product and installation requirements for piping specialties used in steam and steam condensate, piping systems.

1.2 REFERENCES

A. ASTM International:

1. ASTM A216/A216M - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service.
2. ASTM D4101 - Standard Specification for Propylene Injection and Extrusion Materials.

B. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP 70 - Cast Iron Gate Valves, Flanged and Threaded Ends.
2. MSS SP 71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.
3. MSS SP 80 - Bronze Gate, Globe, Angle and Check Valves.
4. MSS SP 85 - Cast Iron Globe & Angle Valves, Flanged and Threaded.
5. MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

C. Underwriters Laboratories Inc.:

1. UL 842 - Valves for Flammable Fluids.

1.3 SUBMITTALS

- ##### A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

- B. Manufacturer's installation instructions shall be provided along with product data.
- C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
- D. Section 013300 - Submittal Procedures: Requirements for submittals.
- E. Product Data: Submit manufacturer's catalog information with valve data and ratings for each service.
- F. Manufacturer's Installation Instructions: Submit hanging and support methods, and joining procedures.
- G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of valves.
- C. Operation and Maintenance Data: Submit installation instructions, spare parts lists, exploded assembly views.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the New York State Department of Correctional Services standard.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum three years experience.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 013000 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- C. Provide temporary protective coating on cast iron and steel valves.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not install valves underground when bedding is wet or frozen.

1.10 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.
- B. Furnish five year manufacturer warranty for valves excluding packing.

1.11 EXTRA MATERIALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for extra materials.
- B. Furnish two packing kits for each size valve.

PART 2 - PRODUCTS

2.1 GATE VALVES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. American Valve, Inc.
 - 2. Apollo Valves; a part of Aalberts Integrated Piping Systems.
 - 3. Crane Fluid Systems; Crane Co.
 - 4. Jenkins Valves; a Crane Co. brand.
 - 5. KITZ Corporation.
 - 6. Lance Valves.
 - 7. Milwaukee Valve Company.
 - 8. Powell Valves.
 - 9. Red-White Valve Corp.
 - 10. Stockham; a Crane Co. brand.
 - 11. WATTS; A Watts Water Technologies Company.
 - 12. Approved equivalent.

- B. Furnish materials in accordance with the New York State Department of Correctional Services standards.
- C. GA-3 - 2 inches and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, Class 200, bronze body, bronze trim, union bonnet, rising stem, hand-wheel, solid wedge disc, stainless steel rings, threaded ends.
- D. GA-4 - 2-1/2 inches and Larger: MSS SP 70 “Cast Iron Gate Valves, Flanged and Threaded Ends”, Class 200, cast iron body, bronze trim, bolted bonnet, rising stem, hand-wheel, outside screw and yoke, solid wedge disc, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

2.2 GLOBE VALVES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. American Valve, Inc.
 - 2. Crane Fluid Systems; Crane Co.
 - 3. Hammond Valve.
 - 4. Milwaukee Valve Company.
 - 5. NIBCO INC.
 - 6. WATTS; A Watts Water Technologies Company.
 - 7. Approved equivalent.
- B. Furnish materials in accordance with the New York State Department of Correctional Services standards.
- C. GL-3 - 2 inches and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, Class 200, bronze body, bronze trim, union bonnet, rising stem, hand wheel, renewable stainless steel seat ring and disc, threaded ends.
- D. GL-4 - 2-1/2 inches and Larger: MSS SP 85 “Cast Iron Globe & Angle Valves, Flanged and Threaded”, Class 200, cast iron body, bronze trim, bolted bonnet, rising stem hand wheel, outside screw and yoke, flanged ends. Furnish chain-wheel operators for valves 6 inches and larger mounted over 8 feet above floor.

2.3 CHECK VALVES

- A. Horizontal Swing Check Valves:
- B. Manufacturers:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Milwaukee
 - b. Nibco
 - c. Watts
 - d. Approved equivalent.

2. Furnish materials in accordance with the New York State Department of Correctional Services standards.
3. CK-4 - 2 inches and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, Class 200, bronze body and cap, Y-pattern, bronze regrinding disc, threaded ends.
4. CK-5 - 2-1/2 inches and Larger: MSS SP 71 “Cast Iron Swing Check Valves, Flanged and Threaded Ends”, Class 250, cast iron body, bolted cap, bronze or cast iron disc, flanged ends.

C. Spring Loaded Check Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Milwaukee
 - b. Nibco
 - c. Stockham
 - d. Approved equivalent.
2. Furnish materials in accordance with the New York State Department of Correctional Services standards.
3. CK-7 - 2-1/2 inches and Larger: MSS SP 71 “Cast Iron Swing Check Valves, Flanged and Threaded Ends”, Class 200, globe style, cast iron body, bronze seat, center guided bronze disc, stainless steel spring and screws, flanged ends.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify piping system is ready for valve installation.

3.2 INSTALLATION

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
- C. Install 3/4 inch gate valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.
- D. Install valves with clearance for installation of insulation and allowing access.

- E. Provide access where valves and fittings are not accessible. Coordinate size and location of access doors with Section 083113.
- F. Refer to Section 230529 for pipe hangers.
- G. Refer to Section 230719 for insulation requirements for valves.
- H. For installation of valves in steam and steam condensate piping systems refer to Section 232213

3.3 VALVE APPLICATIONS

- A. Install shutoff and drain valves at locations indicated on Drawings in accordance with this Section.
- B. Install gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Install globe valves for throttling, bypass, or manual flow control services.
- D. Install spring loaded check valves on discharge of water pumps.
- E. Install gate valves in heating water systems for shut-off service.
- F. Install globe valves in heating water systems for throttling service.

3.4 SCHEDULES

- A. Valve Service:
 - 1. Steam:
 - a. Shut-off:
 - 1) GA-3
 - 2) GA-4
 - b. Throttling:
 - 1) GL-3
 - 2) GL-4

END OF SECTION 230523

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

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. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Metal framing systems.
4. Thermal-hanger shield inserts.
5. Fastener systems.
6. Equipment supports.

B. Related Requirements:

1. Section 055000 "Metal Fabrications" for structural-steel shapes and plates for equipment supports.
2. Section 233113 "Metal Ducts" for duct hangers and supports.

1.3 SUBMITTALS

- A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
- B. Manufacturer's installation instructions shall be provided along with product data.
- C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
- D. Product Data: For each type of product.
- E. Shop Drawings: Show fabrication and installation details and for the following; include Product Data for components:
 1. Trapeze pipe hangers.
 2. Metal framing systems.
 3. Pipe stands.
 4. Equipment supports.

- F. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Structural-Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code, Section IX.
- C. Regulatory Requirements:
 - 1. Comply with the applicable requirements of the ASME B31 Piping Codes.
 - 2. Unless otherwise shown or specified, comply with the requirements of the Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS) Standards SP-58, and SP-69.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

- A. Carbon-Steel Pipe Hangers and Supports:
 - 1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
 - 2. Galvanized Metallic Coatings: Pregalvanized, hot-dip galvanized, or electro-galvanized.
 - 3. Nonmetallic Coatings: Plastic coated, or epoxy powder-coated.
 - 4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
 - 5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

2.2 TRAPEZE PIPE HANGERS

- A. Description: MSS SP-58, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.3 METAL FRAMING SYSTEMS

- A. MFMA Manufacturer Metal Framing Systems:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. ABB (Electrification Products Division).
 - b. Flex-Strut Inc.

- c. MIRO Industries.
 - d. Approved equivalent.
2. Description: Shop- or field-fabricated, pipe-support assembly made of steel channels, accessories, fittings, and other components for supporting multiple parallel pipes.
 3. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 4. Channels: Continuous slotted stainless steel, Type 304 channel with inturred lips.
 5. Channel Width: Selected for applicable load criteria.
 6. Channel Nuts: Formed or stamped nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.
 7. Hanger Rods: Continuous-thread rod, nuts, and washer made of stainless steel.

2.4 THERMAL-HANGER SHIELD INSERTS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 1. Carpenter & Paterson, Inc.
 2. National Pipe Hanger Corporation.
 3. Piping Technology & Products, Inc.
 4. Approved equivalent.
- B. Insulation-Insert Material for Hot Piping: Water-repellent-treated, ASTM C533, Type I calcium silicate with 100-psi (688-kPa) minimum compressive strength.
- C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- E. Insert Length: Extend 2 inches (50 mm) beyond sheet metal shield for piping operating below ambient air temperature.

2.5 FASTENER SYSTEMS

- A. Mechanical-Expansion Anchors: Insert-wedge-type anchors for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Hilti, Inc.
 - b. ITW Ramset/Red Head; Illinois Tool Works, Inc.
 - c. MKT Fastening, LLC.
 - d. Approved equivalent.
 2. Indoor Applications: Zinc-coated steel.
 3. Outdoor Applications: Stainless steel.

2.6 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.7 MATERIALS

- A. Aluminum: ASTM B221 (ASTM B221M).
- B. Carbon Steel: ASTM A1011/A1011M.
- C. Structural Steel: ASTM A36/A36M, carbon-steel plates, shapes, and bars; galvanized.
- D. Stainless Steel: ASTM A240/A240M.
- E. Threaded Rods: Continuously threaded. Stainless steel for indoor applications . Mating nuts and washers of similar materials as rods.
- F. Grout: ASTM C1107/C1107M, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
 - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
 - 2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg)

3.2 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-58. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
 - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
 - 2. Field fabricate from ASTM A36/A36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

- C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled strut systems.
- D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- E. Space hangers or supports for horizontal piping on maximum center distances as listed below, except as otherwise specified, or noted on the Drawings.

PIPE MATERIAL	MAXIMUM SPACING (Feet)
Steel	12
Steel Tubing	8
Copper or Copper Alloy	12
Copper Tubing	8

1. 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.
 2. 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.
 3. For Branch Piping Runs and Runouts Over 5 feet In Length: Install a minimum of one hanger, and additional hangers if required by the hanger spacing schedules.
 4. Parallel Piping Runs: Where several pipe lines run parallel in the same plane and in close proximity to each other, trapeze hangers may be submitted for approval. Base hanger spacing for trapeze type hangers on the smallest size of pipe being supported. Design the entire hanger assembly based on a safety factor of five, for the ultimate strength of the material being used.
- F. Fastener System Installation:
 1. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
 - G. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
 - H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
 - I. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
 - J. Install lateral bracing with pipe hangers and supports to prevent swaying.
 - K. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
 - L. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

- M. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
- N. Insulated Piping:
1. Attach clamps and spacers to piping.
 - a. Piping Operating above Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
 - b. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
 2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
 3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
 - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
 4. Shield Dimensions for Pipe: Not less than the following:
 - a. NPS 1/4 to NPS 3-1/2 (DN 8 to DN 90): 12 inches long and 0.048 inch thick.
 - b. NPS 4 (DN 100): 12 inches long and 0.06 inch thick.
 - c. NPS 5 and NPS 6 (DN 125 and DN 150): 18 inches long and 0.06 inch thick.
 - d. NPS 8 to NPS 14 (DN 200 to DN 350): 24 inches long and 0.075 inch thick.
 5. Pipes NPS 8 (DN 200) and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.

Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.3 UPPER HANGER ATTACHMENTS

- A. General:
1. Secure upper hanger attachments to overhead structural steel, steel bar joists, or other suitable structural members.
 2. Do not attach hangers to steel decks that 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 Concrete Filled Steel Decks;
1. Existing Construction: Install welding studs (except at roof decks). Do not support a load in excess of 250 lbs from any single welded stud.
 2. Do not attach hangers to decks less than 2-1/2 inches thick.

- C. Attachment to Existing Cast-In-Place Concrete:
 - 1. For piping up to a maximum of 4 inches in size, secure hangers to overhead construction with self-drilling type expansion shields and machine bolts.
 - 2. Secure hangers to wall or floor construction with single unit expansion shields or self-drilling type expansion shields and machine bolts.
- D. Attachment to Cored Precast Concrete Decks (Flexicore, Dox Plank, Spancrete, etc.): Toggle bolts may be installed in cells for the support of piping up to a maximum of 2-1/2 inches in size.
- E. Attachment to Waffle Type Concrete Decks:
 - 1. New Construction: Install cast-in-place inserts.
 - 2. Existing Construction: Install machine bolt expansion anchors at highest practical point on side of web.

3.4 EQUIPMENT SUPPORTS

- A. Fabricate structural-steel stands to suspend equipment from structure overhead
- B. Grouting: Place grout under supports for equipment and make bearing surface smooth.
- C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.5 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with 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 no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.6 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches (40 mm)

3.7 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780/A780M.

3.8 HANGER AND SUPPORT SCHEDULE

- A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.
- B. Comply with MSS SP-58 for pipe-hanger selections and applications that are not specified in piping system Sections.
- C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.
- E. Use carbon-steel pipe hangers and supports, metal trapeze pipe hangers and metal framing systems and attachments for general service applications.
- F. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.
- G. Use padded hangers for piping that is subject to scratching.
- H. Use thermal-hanger shield inserts for insulated piping and tubing.
- I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 - 1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30 (DN 15 to DN 750).

2. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36 (DN 20 to DN 900), requiring clamp flexibility and up to 4 inches (100 mm) of insulation.
 3. Pipe Hangers (MSS Type 5): For suspension of pipes NPS 1/2 to NPS 4 (DN 15 to DN 100), to allow off-center closure for hanger installation before pipe erection.
 4. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36 (DN 100 to DN 900), with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
 5. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 (DN 65 to DN 900) if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
 6. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30 (DN 25 to DN 750), from two rods if longitudinal movement caused by expansion and contraction might occur.
 7. Adjustable Roller Hangers (MSS Type 43): For suspension of pipes NPS 2-1/2 to NPS 24 (DN 65 to DN 600), from single rod if horizontal movement caused by expansion and contraction might occur.
- J. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Clevises (MSS Type 14): For 120 to 450 deg F (49 to 232 deg C) piping installations.
 2. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
- K. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
 2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
 3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
 4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
 5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
 6. C-Clamps (MSS Type 23): For structural shapes.
 7. Top-Beam Clamps (MSS Type 25): For top of beams if hanger rod is required tangent to flange edge.
 8. Side-Beam Clamps (MSS Type 27): For bottom of steel I-beams.
 9. Steel-Beam Clamps with Eye Nuts (MSS Type 28): For attaching to bottom of steel I-beams for heavy loads.
 10. Linked-Steel Clamps with Eye Nuts (MSS Type 29): For attaching to bottom of steel I-beams for heavy loads, with link extensions.
 11. Malleable-Beam Clamps with Extension Pieces (MSS Type 30): For attaching to structural steel.
 12. Welded-Steel Brackets: For support of pipes from below or for suspending from above by using clip and rod. Use one of the following for indicated loads:

- a. Light (MSS Type 31): 750 lb (340 kg).
 - b. Medium (MSS Type 32): 1500 lb (680 kg).
 - c. Heavy (MSS Type 33): 3000 lb (1360 kg).
13. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
 14. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
 15. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.
- L. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
 2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
 3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- M. Comply with MSS SP-58 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.
- N. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.
- O. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 230529

SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

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. Equipment labels.
 - 2. Warning signs and labels.
 - 3. Pipe labels.
 - 4. Duct labels.
 - 5. Stencils.
 - 6. Valve tags.
 - 7. Warning tags.

1.3 SUBMITTALS

- A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions
- B. Manufacturer's installation instructions shall be provided along with product data.
- C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
- D. Product Data: For each type of product.
- E. Samples: For color, letter style, and graphic representation required for each identification material and device.
- F. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.
- G. Valve numbering scheme.
- H. Valve Schedules: For each piping system to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Metal Labels for Equipment:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Brady Corporation.
 - b. emedco.
 - c. Seton Identification Products; a Brady Corporation company.
 - d. Approved equivalent.
2. Material and Thickness: stainless steel, 0.025-inch or aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
3. Letter Color: Facility Standard
4. Background Color: Facility Standard
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
7. Fasteners: Stainless-steel rivets or self-tapping screws.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number, and identify Drawing numbers where equipment is indicated (plans, details, and schedules) and the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

2.2 WARNING SIGNS AND LABELS

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

1. Brady Corporation.
2. emedco.
3. Seton Identification Products; a Brady Corporation company.
4. Approved equivalent.

- B. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving 1/8 inch thick, and having predrilled holes for attachment hardware.
- C. Letter Color: Black .
- D. Background Color: Yellow.
- E. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- F. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- G. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
- H. Fasteners: Stainless-steel rivets or self-tapping screws.
- I. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- J. Label Content: Include caution and warning information plus emergency notification instructions.

2.3 PIPE LABELS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. Brady Corporation.
 - 2. emedco.
 - 3. Seton Identification Products; a Brady Corporation company.
 - 4. Approved equivalent.
- B. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction according to ASME A13.1.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.
 - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
 - 2. Lettering Size: Size letters according to ASME A13.1 for piping.

2.4 DUCT LABELS

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

1. Brady Corporation.
 2. emedco.
 3. Seton Identification Products; a Brady Corporation company.
 4. Approved equivalent.
- B. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
- C. Letter Color: Facility Standard
- D. Background Color: Facility Standard
- E. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
- F. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
- G. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
- H. Fasteners: Stainless-steel rivets or self-tapping screws.
- I. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.
- J. Duct Label Contents: Include identification of duct service using same designations or abbreviations as used on Drawings; also include duct size and an arrow indicating flow direction.
1. Flow-Direction Arrows: Integral with duct system service lettering to accommodate both directions or as separate unit on each duct label to indicate flow direction.

2.5 STENCILS

- A. Stencils for Ducts:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Brimar Industries, Inc.
 - b. Craftmark Pipe Markers.
 - c. Kolbi Pipe Marker Co.
 - d. Approved equivalent.
 2. Lettering Size: Minimum letter height of 1-1/4 inches for viewing distances up to 15 feet and proportionately larger lettering for greater viewing distances.
 3. Stencil Material: Aluminum.
 4. Stencil Paint: Exterior, gloss. Paint may be in pressurized spray-can form.
 5. Identification Paint: Exterior. Paint may be in pressurized spray-can form.

B. Stencils for Access Panels and Door Labels, Equipment Labels, and Similar Operational Instructions:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Brimar Industries, Inc.
 - b. Craftmark Pipe Markers.
 - c. Kolbi Pipe Marker Co.
 - d. Approved equivalent.
2. Lettering Size: Minimum letter height of 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.
3. Stencil Material: Aluminum.
4. Stencil Paint: Exterior, gloss. Paint may be in pressurized spray-can form.
5. Identification Paint: Exterior. Paint may be in pressurized spray-can form.

2.6 VALVE TAGS

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

1. Brady Corporation.
2. emedco.
3. Seton Identification Products; a Brady Corporation company.
4. Approved equivalent.

B. Description: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link chain.

C. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

2.7 VALVE SERVICE IDENTIFICATION CHART FRAMES

A. Type: Satin finished extruded aluminum frame with rigid clear plastic glazing, size to fit 8-1/2-by-11 inches valve chart.

2.8 WARNING TAGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. Brady Corporation.
 - 2. emedco.
 - 3. Seton Identification Products; a Brady Corporation company.
 - 4. Approved equivalent.
- B. Description: Preprinted or partially preprinted accident-prevention tags of plasticized card stock with matte finish suitable for writing.
 - 1. Size: 3 by 5-1/4 inches minimum Approximately 4 by 7 inches.
 - 2. Fasteners: Brass grommet and wire Reinforced grommet and wire or string.
 - 3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."
 - 4. Color: Safety-yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.

3.3 EQUIPMENT LABEL INSTALLATION

- A. Install or permanently fasten labels on each major item of mechanical equipment.
- B. Locate equipment labels where accessible and visible.

3.4 PIPE LABEL INSTALLATION

- A. Piping Color Coding: Painting of piping is specified in Section 099123 "Interior Painting.

- B. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
1. Near each valve and control device.
 2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
 3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.
 4. At access doors, manholes, and similar access points that permit view of concealed piping.
 5. Near major equipment items and other points of origination and termination.
 6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
 7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.
- C. Directional Flow Arrows: Arrows shall be used to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.
- D. Pipe Label Color Schedule:
- Refer to Department of Correctional Services Plant Operations Color Coding Chart.
1. Low-Pressure Steam Piping: Black letters on a safety-yellow background
 2. High-Pressure Steam Piping: Black letters on a safety-yellow background
 3. Steam Condensate Piping: Black letters on a safety-orange background

3.5 DUCT LABEL INSTALLATION

- A. Install plastic-laminated or self-adhesive duct labels with permanent adhesive on air ducts in the following color codes:
1. Blue: For cold-air supply ducts.
 2. Yellow: For hot-air supply ducts.
 3. Green: For exhaust-, outside-, relief-, return-, and mixed-air ducts.
- B. Stenciled Duct Label Option: Stenciled labels showing service and flow direction may be provided instead of plastic-laminated duct labels, at Installer's option.
- C. Locate labels near points where ducts enter into and exit from concealed spaces and at maximum intervals of 50 feet in each space where ducts are exposed or concealed by removable ceiling system.

3.6 VALVE-TAG INSTALLATION

- A. Install tags on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, shutoff valves, faucets, convenience and lawn-watering hose connections, and HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:
 - a. Low-Pressure Steam: 1-1/2 inches, round.
 - b. High-Pressure Steam: 1-1/2 inches, round.
 - c. Steam Condensate: 1-1/2 inches, round.

C. Valve Service Identification Charts:

1. Provide 2 framed valve charts for each piping system specified to be provided with valve identification tags. Type charts on 8-1/2-by-11 inches heavy white bond paper, indicating valve number, service, and location.
2. Hang framed charts at locations as directed.

3.7 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

END OF SECTION 230553

SECTION 230719 - HVAC PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes insulation for HVAC piping systems.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.
- B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products in accordance with ASTM E84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
 - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.5 COORDINATION

- A. Coordinate sizes and locations of supports, hangers, and insulation shields specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."
- B. Coordinate clearance requirements with piping Installer for piping insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.6 SCHEDULING

- A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.
- B. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS/INSULATION MATERIALS

- A. Comply with requirements in "Piping Insulation Schedule, General," "Indoor Piping Insulation Schedule," articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- C. Products that come into contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested in accordance with ASTM C871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable in accordance with ASTM C795.
- E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.
- F. Mineral-Fiber, Preformed Pipe: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C547.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. Knauf Insulation.
 - c. Manson Insulation Inc.
 - d. Approved equivalent.
 - 2. Preformed Pipe Insulation: Type I, Grade A, with factory-applied ASJ-SSL.
 - 3. 850 deg F (454 deg C).
 - 4. Factory fabricate shapes in accordance with ASTM C450 and ASTM C585.
 - 5. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

2.2 INSULATING CEMENTS

- A. Mineral-Fiber Insulating Cement: Comply with ASTM C195.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Ramco Insulation, Inc.
 - b. Foundry Services & Supplies
 - c. GLT Products
 - d. Approved equivalent.

2.3 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.
- B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Mon-Eco Industries, Inc.
 - d. Approved equivalent.
- C. ASJ Adhesive and FSK and PVDC Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A, for bonding insulation jacket lap seams and joints.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Mon-Eco Industries, Inc.
 - d. Approved equivalent.
- D. PVC Jacket Adhesive: Compatible with PVC jacket.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Johns Manville; a Berkshire Hathaway company.
 - b. P.I.C. Plastics, Inc.
 - c. Speedline Corporation.
 - d. Approved equivalent.

2.4 MASTICS AND COATINGS

- A. Materials shall be compatible with insulation materials, jackets, and substrates.
- B. Breather Mastic: Water based; suitable for indoor and outdoor use on above-ambient services.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Mon-Eco Industries, Inc.
 - d. Approved equivalent.
 - 2. Water-Vapor Permeance: ASTM E96/E96M, greater than 1.0 perm at manufacturer's recommended dry film thickness.
 - 3. Service Temperature Range: 0 to plus 180 deg F.
 - 4. Color: White.

2.5 LAGGING ADHESIVES

- A. Adhesives shall comply with MIL-A-3316C, Class I, Grade A, and shall be compatible with insulation materials, jackets, and substrates.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Vimasco Corporation.
 - d. Approved equivalent.
 - 2. Fire-resistant, water-based lagging adhesive and coating for use indoors to adhere fire-resistant lagging cloths over pipe insulation.
 - 3. Service Temperature Range: 20 to plus 180 deg F.
 - 4. Color: White.

2.6 SEALANTS

- A. Materials shall be as recommended by the insulation manufacturer and shall be compatible with insulation materials, jackets, and substrates.
- B. ASJ Flashing Sealants and PVDC and PVC Jacket Flashing Sealants:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

- a. Childers Brand; H. B. Fuller Construction Products.
 - b. Foster Brand; H. B. Fuller Construction Products.
 - c. Insultherm
 - d. Approved equivalent.
2. Fire- and water-resistant, flexible, elastomeric sealant.
 3. Service Temperature Range: Minus 40 to plus 250 deg F Minus 40 to plus 250 deg F (Minus 40 to plus 121 deg C).
 4. Color: White.

2.7 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C1136, Type I, unless otherwise indicated.
- B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Airex Manufacturing.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. P.I.C. Plastics, Inc.
 - d. Approved equivalent.
 2. Adhesive: As recommended by jacket material manufacturer.
 3. Color: Color-code jackets based on system. Color as selected by Director's Representative.
 4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.
 - a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

2.8 TAPES

- A. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. 3M Industrial Adhesives and Tapes Division.
 - b. Ideal Tape Co., Inc., an American Biltrite Company.
 - c. Johns Manville; a Berkshire Hathaway company.
 - d. Approved equivalent.

2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

2.9 SECUREMENTS

A. Bands:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. ITW Insulation Systems; Illinois Tool Works, Inc.
 - b. RPR Products, Inc.
 - c. McMaster Carr
 - d. Approved equivalent.
2. Stainless Steel: ASTM A240/A240M, Type 304; 0.015 inch (0.38 mm) thick, 1/2 inch wide with closed seal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of insulation application.
 1. Verify that systems to be insulated have been tested and are free of defects.
 2. Verify that surfaces to be insulated are clean and dry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
- B. Coordinate insulation installation with the tradesman installing heat tracing. Comply with requirements for heat tracing that apply to insulation.
- C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping, including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and of thicknesses required for each item of pipe system, as specified in insulation system schedules.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during storage, application, and finishing. Replace insulation materials that get wet.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
 - 1. Install insulation continuously through hangers and around anchor attachments.
 - 2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends attached to structure with vapor-barrier mastic.
 - 3. Install insert materials and insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
 - 4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Install insulation with factory-applied jackets as follows:
 - 1. Draw jacket tight and smooth.
 - 2. Cover circumferential joints with 3-inch wide strips, of same material as insulation jacket. Secure strips with adhesive and outward-clinching staples along both edges of strip, spaced 4 inches o.c.
 - 3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward-clinching staples along edge at 2 inches o.c.
 - 4. Cover joints and seams with tape, in accordance with insulation material manufacturer's written instructions, to maintain vapor seal.

5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
- M. Cut insulation in a manner to avoid compressing insulation more than 25 percent of its nominal thickness.
 - N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
 - O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches in similar fashion to butt joints.
 - P. For above-ambient services, do not install insulation to the following:
 1. Vibration-control devices.
 2. Testing agency labels and stamps.
 3. Nameplates and data plates.

3.4 PENETRATIONS

- A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.
 1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
 4. Seal jacket to roof flashing with flashing sealant.
- B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
 1. Seal penetrations with flashing sealant.
 2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
 3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
 4. Seal jacket to wall flashing with flashing sealant.
- C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

E. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials, except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, Mechanical Couplings, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, mechanical couplings, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation made from same material and density as that of adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation of same material and thickness as that used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation of same material, density, and thickness as that used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.
5. Insulate strainers using preformed fitting insulation of same material, density, and thickness as that used for adjacent pipe. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers, so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below-ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges, mechanical couplings, and unions using a section of oversized preformed pipe insulation to fit. Overlap adjoining pipe insulation by not less than 2 times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Stencil or label the outside insulation jacket of each union with the word "union" matching size and color of pipe labels.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below-ambient services and a breather mastic for above-ambient services. Reinforce the mastic with reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.

8. For services not specified to receive a field-applied jacket, except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing, using PVC tape.
- C. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.
 - D. Install removable insulation covers. Installation shall conform to the following:
 1. Make removable flange and union insulation from sectional pipe insulation of same thickness as that on adjoining pipe. Install same insulation jacket as that of adjoining pipe insulation.
 2. When flange and union covers are made from sectional pipe insulation, extend insulation from flanges or union at least 2 times the insulation thickness over adjacent pipe insulation on each side of flange or union. Secure flange cover in place with stainless steel or aluminum bands. Select band material compatible with insulation and jacket.
 3. Construct removable valve insulation covers in same manner as for flanges, except divide the two-part section on the vertical center line of valve body.
 4. When covers are made from block insulation, make two halves, each consisting of mitered blocks wired to stainless steel fabric. Secure this wire frame, with its attached insulation, to flanges with tie wire. Extend insulation at least 2 inches over adjacent pipe insulation on each side of valve. Fill space between flange or union cover and pipe insulation with insulating cement. Finish cover assembly with insulating cement applied in two coats. After first coat is dry, apply and trowel second coat to a smooth finish.
 5. Unless a PVC jacket is indicated in field-applied jacket schedules, finish exposed surfaces with a metal jacket.

3.6 INSTALLATION OF MINERAL-FIBER INSULATION

- A. Insulation Installation on Straight Pipes and Tubes:
 1. Secure each layer of preformed pipe insulation to pipe with wire or bands, and tighten bands without deforming insulation materials.
 2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
 3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward-clinched staples at 6-inches o.c.
 4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive, as recommended by insulation material manufacturer, and seal with vapor-barrier mastic and flashing sealant.
- B. Insulation Installation on Pipe Flanges:
 1. Install preformed pipe insulation to outer diameter of pipe flange.
 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.

3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as that of straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as that of straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

3.7 INSTALLATION OF FIELD-APPLIED JACKETS

E. Where PVC jackets are indicated and for horizontal applications, install with 1-inch1-inch (25-mm) overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

F. Where metal jackets are indicated, install with 2-inch2-inch (50-mm) overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless steel bands 12 inches12 inches (300 mm) o.c. and at end joints.

3.8 FINISHES

A. Insulation with ASJ, Glass-Cloth, or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Color: Final color as selected by Director's Representative. Vary first and second coats to allow visual inspection of the completed Work.

- C. Do not field paint aluminum or stainless-steel jackets.

3.9 FIELD QUALITY CONTROL

- A. Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections: Inspect pipe, fittings, strainers, and valves, randomly selected by Director's Representative, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, one location of threaded strainers, three locations of threaded valves for each pipe service defined in the "Piping Insulation Schedule, General" Article.
- D. All insulation applications will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

3.10 PIPING INSULATION SCHEDULE, GENERAL

- A. Insulation conductivity and thickness per pipe size shall comply with schedules in this Section or with requirements of authorities having jurisdiction, whichever is more stringent.
- B. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.
- C. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:
 - 1. Underground piping.
 - 2. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

3.11 INDOOR PIPING INSULATION SCHEDULE

- D. Steam and Steam Condensate, Boiler Blowdown, Vents, Drains, and Safety Relief Vents 350 Deg F and Below:
 - 1. NPS 3/4 (DN 20) and Smaller: Insulation shall be the following:
 - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 3.0 thick.
 - 2. NPS 1 to NPS 1-1/4 (DN 25) and Larger: Insulation shall be the following:
 - a. Mineral-Fiber, preformed Pipe Insulation, Type I: 4.0 inches thick.
 - 1. NPS 1-1/2 and Larger: Insulation shall be the following:
 - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 4-1/2 inches thick.
- E. Steam and Steam Condensate, Boiler Blowdown, Vents, Drains, and Safety Relief Vents Above 350 Deg F:

1. NPS 3/4 and Smaller: Insulation shall be the following:
 - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 4-1/2 inches thick.
2. NPS 1 and Larger: Insulation shall be the following:
 - a. Mineral-Fiber, Preformed Pipe Insulation, Type I: 5.0 inches thick.

END OF SECTION 230719

SECTION 232213 - STEAM AND CONDENSATE PIPING

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. Steel pipe and fittings.
- 2. Joining materials.

- B. Related Requirements:

- 1. Section 232216 "Steam and Condensate Heating Piping Specialties" for strainers, flash tanks, special-duty valves, steam traps, thermostatic air vents and vacuum breakers, and steam and condensate meters.

1.3 SUBMITTALS

- A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions

- B. Manufacturer's installation instructions shall be provided along with product data.

- C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

- D. Product Data: For each type of the following:

- 1. Steel pipe and fittings.
- 2. Joining materials.

- E. Submit an Environmental Product Declaration (EPD) from the manufacturer for steel pipe within this specification section, if available. A statement of the contractor's good faith effort to obtain the EPD shall be provided if not available.

- 1. Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services*.

- F. Delegated Design Submittal:
 - 1. Design calculations and detailed fabrication and assembly of pipe anchors and alignment guides, hangers and supports for multiple pipes, expansion joints and loops, and attachments of the same to the building structure.
 - 2. Locations of pipe anchors and alignment guides and expansion joints and loops.
 - 3. Locations of and details for penetrations, including sleeves and sleeve seals for exterior walls, floors, basement, and foundation walls.
 - 4. Locations of and details for penetration and firestopping for fire- and smoke-rated wall and floor and ceiling assemblies.
- G. Qualification Data: For Installer.
- H. Welding certificates.
- I. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications:
- B. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code - Steel."
- C. Pipe Welding: Qualify procedures and operators according to the following:
 - 1. ASME Compliance: Comply with ASME B31.1, "Power Piping," and ASME B31.9, "Building Services Piping," for materials, products, and installation.
 - 2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Components and installation shall be capable of withstanding the following minimum working pressures and temperatures unless otherwise indicated:
 - 1. MP Steam Piping: 80 PSIG
 - 2. LP Steam Piping: 40 PSIG
 - 3. Condensate Piping: 250 deg F
 - 4. Blowdown-Drain Piping: Equal to pressure of the piping system to which it is attached.
 - 5. Air-Vent and Vacuum-Breaker Piping: Equal to pressure of the piping system to which it is attached.
 - 6. Safety-Valve-Inlet and -Outlet Piping: Equal to pressure of the piping system to which it is attached.

2.2 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A53, black steel, plain ends, welded and seamless, Grade B, and Schedule as indicated in piping applications articles.
- B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125, 150, and 300 as indicated in piping applications articles.
- C. Malleable-Iron Threaded Fittings: ASME B16.3; Classes 150 and 300 as indicated in piping applications articles.
- D. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in piping applications articles.
- E. Cast-Iron Threaded Flanges and Flanged Fittings: ASME B16.1, Classes 125 and 250 as indicated in piping applications articles; raised ground face, and bolt holes spot faced.
- F. Wrought-Steel Fittings: ASTM A234, wall thickness to match adjoining pipe.
- G. Wrought-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 - 1. Material Group: 1.1.
 - 2. End Connections: Butt welding.
 - 3. Facings: Raised face.
- H. Steel Pipe Nipples: ASTM A733, made of ASTM A53, black steel of same Type, Grade, and Schedule as pipe in which installed.

2.3 JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
 - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.
 - a. Full-Face Type: For flat-face flanges.
 - b. Narrow-Face Type: For raised-face flanges.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel or stainless steel of type to match pipe unless otherwise indicated.
- C. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- D. Welding Materials: Comply with Section II, Part C, of ASME Boiler and Pressure Vessel Code for welding materials appropriate for wall thickness and for chemical analysis of pipe being welded.

PART 3 - EXECUTION

3.1 LP STEAM PIPING APPLICATIONS

- A. LP Steam Piping, NPS 3/4 and Smaller: Schedule 40 , Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- B. LP Steam Piping, NPS 1 through NPS 2: Schedule 40, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, threaded joints.
- C. LP Steam Piping, NPS 2-1/4 and larger: Schedule 40, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, butt welded joints.
- D. Condensate piping above grade, NPS 1 and smaller, shall be the following:
 - 1. Schedule 80, Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- E. Condensate piping above grade, NPS 1-1/4 and larger, shall be the following:
 - 1. Schedule 80, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, and welded joints.

3.2 HP STEAM PIPING APPLICATIONS

- A. HP Steam Piping, NPS 3/4 and Smaller: Schedule 40 , Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- B. HP Steam Piping, NPS 1 through NPS 2: Schedule 40, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, threaded joints.
- C. HP Steam Piping, NPS 2-1/4 and larger: Schedule 40, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, butt welded joints.
- D. Condensate piping above grade, NPS 1 and smaller, shall be the following:
 - 1. Schedule 80, Type S, Grade B, steel pipe; Class 125 cast-iron fittings; and threaded joints.
- E. Condensate piping above grade, NPS 1-1/4 and larger, shall be the following:
 - 1. Schedule 80, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, and welded joints.

3.3 ANCILLARY PIPING APPLICATIONS

- A. Blowdown-Drain Piping: Same materials and joining methods as for piping specified for the service in which blowdown drain is installed.
- B. Vacuum-Breaker Piping: Outlet, same as service where installed.

- C. Safety-Valve-Inlet and -Outlet Piping: Same materials and joining methods as for piping specified for the service in which safety valve is installed.

3.4 INSTALLATION OF PIPING

- A. 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.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless otherwise indicated.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Install piping to allow application of insulation.
- I. Select system components with pressure rating equal to or greater than system operating pressure.
- J. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- K. Install drains, consisting of a tee fitting, NPS 3/4 full port-ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- L. Install steam supply piping at a minimum uniform grade of 0.2 percent or 1/4 inch per 10 feet downward in direction of steam flow.
- M. Install condensate return piping at a minimum uniform grade of 0.4 percent or 1/2 inch per 10 feet downward in direction of condensate flow.
- N. Reduce pipe sizes using eccentric reducer fitting installed with level side down.
- O. Install branch connections to mains using tee fittings in main pipe, with the branch connected to top of main pipe.
- P. Install valves according to the following Sections or other Sections as needed:
 - 1. Section 230523.11 "Globe Valves for HVAC Piping."
 - 2. Section 230523.12 "Ball Valves for HVAC Piping."
 - 3. Section 230523.14 "Check Valves for HVAC Piping."

4. Section 230523.15 "Gate Valves for HVAC Piping."

- Q. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.
- R. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.
- S. Install shutoff valve immediately upstream of each dielectric fitting.
- T. Install strainers on supply side of control valves, pressure-reducing valves, traps, and elsewhere as indicated. Install NPS 3/4 nipple and full port ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2.
- U. Comply with requirements in Section 230516 "Expansion Fittings and Loops for HVAC Piping" for installation of expansion loops, expansion joints, anchors, and pipe alignment guides.
- V. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for identifying piping.
- W. Install drip legs at low points and natural drainage points such as ends of mains, bottoms of risers, and ahead of pressure regulators, and control valves.
 - 1. On straight runs with no natural drainage points, install drip legs at intervals not exceeding 75 feet.
 - 2. Size drip legs same size as main. In steam mains NPS 6 and larger, drip leg size can be reduced, but to no less than NPS 4.
- X. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- Y. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 230517 "Sleeves and Sleeve Seals for HVAC Piping."
- Z. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230518 "Escutcheons for HVAC Piping."

3.5 INSTALLATION OF STEAM AND CONDENSATE PIPING SPECIALTIES

- A. Comply with requirements in Section 232216 "Steam and Condensate Heating Piping Specialties" for installation requirements for strainers, flash tanks, special-duty valves, steam traps, thermostatic air vents and vacuum breakers, and steam and condensate meters.

3.6 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements in Section 230529 "Hangers and Supports for HVAC Piping and Equipment" for installation of hangers, supports, and anchor devices.
- B. Install the following pipe attachments:

1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet long.
 2. Adjustable roller hangers and spring hangers for individual horizontal piping 20 feet or longer.
 3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
 4. Spring hangers to support vertical runs.
- C. Install hangers for steel steam supply piping and steel steam condensate piping, with maximum horizontal spacing and minimum rod diameters shall be in accordance with Section 230529 "Hangers and Supports for HVAC Piping and Equipment, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- D. Support horizontal piping within 12 inches of each fitting.
- E. Support vertical runs of steel steam supply piping and steel steam condensate piping to comply with MSS SP-58, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- F. Interval of Support
1. Piping shall be supported at distances not exceeding the spacing specified in Table below, or in accordance with ANSI/MSS SP-58.

PIPING MATERIAL	MAXIMUM HORIZONTAL SPACING (feet)	MAXIMUM VERTICAL SPACING (feet)
Steel tubing	8	10
Steel pipe	12	15

3.7 PIPE JOINT CONSTRUCTION

- A. Ream ends of pipes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. 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 unless dry seal threading is specified.
 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
- E. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

3.8 TERMINAL EQUIPMENT CONNECTIONS

- A. Size for supply and return piping connections shall be the same as or larger than equipment connections.
- B. Install traps and control valves in accessible locations close to connected equipment.
- C. Install bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- D. Install vacuum breakers downstream from control valve, close to coil inlet connection.
- E. Install a drip leg at coil outlet.

3.9 FIELD QUALITY CONTROL

- A. Prepare steam and condensate piping according to ASME B31.1, "Power Piping," and ASME B31.9, "Building Services Piping," and as follows:
 - 1. Leave joints, including welds, uninsulated and exposed for examination during test.
 - 2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
 - 3. Flush system with clean water. Clean strainers.
 - 4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
- B. Weld Testing:
 - 1. Non-Destructive Examination of Piping Welds:
 - a. Perform radiographic examination of 50 percent of the first 10 welds made and 10 percent of all additional welds made. The Director's Representative reserves the right to identify individual welds for which the radiographic examination shall be performed. All welds shall be visually inspected by the Director's Representative. The Director's Representative reserves the right to require testing on additional welds up to 100 percent if greater than 25 percent of the examined welds fail the inspection.
 - b. An approved independent testing firm regularly engaged in radiographic testing shall perform the radiographic examination of pipe joint welds. All radiographs shall be reviewed and interpreted by an ASNT Certified Level III radiographer, employed by the testing firm, who shall sign the reading report.
 - c. Comply with ASME B31.1. Furnish a set of films showing each weld inspected, a reading report evaluating the quality of each weld, and a location plan showing the physical location where each weld is to be found in the completed project. The Director's Representative and the CxA shall be given a copy of all reports to be maintained as part of the project records and shall review all inspection records.
 - d. Defective Welds: Replace and reinspect defective welds. Repairing defective welds by adding weld material over the defect or by peening are prohibited. Welders

responsible for defective welds shall be requalified prior to resuming work on the project.

C. Perform the following tests and inspections:

1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
2. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength.
3. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.

D. Prepare test and inspection reports.

END OF SECTION 232213

SECTION 232216 - STEAM AND CONDENSATE HEATING PIPING SPECIALTIES

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. Strainers.
 - 2. Stop-check valves.
 - 3. Steam safety valves.
 - 4. Pressure-reducing valves.
 - 5. Steam traps.
 - 6. Thermostatic air vents and vacuum breakers.

1.3 ACTION SUBMITTALS

- A. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions
- B. Manufacturer's installation instructions shall be provided along with product data.
- C. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
- D. Product Data: For each type of product
 - 1. Strainer.
 - 2. Valve.
 - 3. Steam trap.
 - 4. Air vent and vacuum breaker.
 - 5. Connector.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For valves, safety valves, pressure-reducing valves, steam traps, air vents, vacuum breakers, and meters to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Pipe Welding: Qualify procedures and operators according to the following:

1. ASME Compliance: Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp flash tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressures and temperatures unless otherwise indicated:

1. HP Steam Piping: 80 PSIG
2. LP Steam Piping: 40 PSIG
3. Condensate Piping: 250 deg F.
4. Blowdown-Drain Piping: Equal to pressure of the piping system to which it is attached.
5. Air-Vent and Vacuum-Breaker Piping: Equal to pressure of the piping system to which it is attached.
6. Safety-Valve-Inlet and -Outlet Piping: Equal to pressure of the piping system to which it is attached.

2.2 STRAINERS

A. Y-Pattern Strainers, Cast Iron:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Keckley Company.
 - b. Mueller Steam Specialty; A WATTS Brand.
 - c. Titan Flow Control, Inc.
 - d. Approved equivalent.
2. Body: ASTM A126, Class B cast iron, with bolted cover and bottom drain connection.
3. End Connections: Threaded ends for strainers NPS 2 and smaller; flanged ends for strainers NPS 2-1/2 and larger.
4. Strainer Screen: Stainless steel, 40 -mesh strainer or perforated stainless-steel basket.
5. Tapped blowoff plug.
6. Rating: 250-psig working steam pressure.

B. Basket Strainers:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Keckley Company.
 - b. Mueller Steam Specialty; A WATTS Brand.
 - c. Titan Flow Control, Inc.
 - d. Approved equivalent.
2. Body: ASTM A126, Class B cast iron, with bolted cover and bottom drain connection.
3. End Connections: Threaded ends for strainers NPS 2 and smaller; flanged ends for strainers NPS 2-1/2 and larger.
4. Strainer Screen: Stainless steel, 20 mesh strainer and perforated stainless steel basket with 50 percent free area.
5. Rating: 250-psig working steam pressure.

2.3 STOP-CHECK VALVES

A. Stop-Check Valves:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Crane; a Crane brand.
 - b. Jenkins Valves.
 - c. Lunkenheimer Valves.
 - d. Approved equivalent.
2. Body and Bonnet: Malleable iron.
3. End Connections: Flanged.
4. Disc: Cylindrical with removable liner and machined seat.
5. Stem: Brass alloy.
6. Operator: Outside screw and yoke with cast-iron handwheel.
7. Packing: PTFE-impregnated packing with two-piece packing gland assembly.
8. Pressure Class: 250.

2.4 STEAM SAFETY VALVES

A. Bronze Steam Safety Valves: ASME labeled.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Armstrong International, Inc.
 - b. Kunkle Valve.
 - c. Spirax Sarco Limited.
 - d. Approved equivalent.

2. Disc Material: Forged copper alloy.
3. End Connections: Threaded inlet and outlet.
4. Spring: Fully enclosed steel spring with adjustable pressure range and positive shutoff; factory set and sealed.
5. Pressure Class: 250.
6. Drip-Pan Elbow: Cast iron and having threaded inlet and outlet, with threads complying with ASME B1.20.1.
7. Size and Capacity: As required for equipment according to ASME Boiler and Pressure Vessel Code.

2.5 PRESSURE-REDUCING VALVES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 1. Armstrong International, Inc.
 2. Hoffman Specialty.
 3. Spence Engineering Company, Inc.
 4. Approved equivalent.
- B. ASME labeled.
- C. Size, Capacity, and Pressure Rating: Factory set for inlet and outlet pressures indicated.
- D. Description: Pilot-actuated diaphragm type, with adjustable pressure range and positive shutoff.
- E. Body: Cast iron.
- F. End Connections: Threaded connections for valves NPS 2 and smaller and flanged connections for valves NPS 2-1/2 and larger.
- G. Trim: Hardened stainless steel.
- H. Head and Seat: Replaceable, main head stem guide fitted with flushing and pressure-arresting device cover over pilot diaphragm.
- I. Gaskets: Non-asbestos materials.

2.6 STEAM TRAPS

- A. Float and Thermostatic Steam Traps, Cast Iron:
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Armstrong International, Inc.
 - b. Hoffman Specialty.
 - c. Spirax Sarco Limited.

- d. Approved equivalent.
- 2. Body and Bolted Cap: ASTM A126 cast iron.
- 3. End Connections: Threaded.
- 4. Float Mechanism: Replaceable, stainless steel.
- 5. Seat: Hardened stainless steel.
- 6. Trap Type: Balanced pressure.
- 7. Thermostatic Bellows: Stainless steel or monel.
- 8. Thermostatic air vent capable of withstanding 45 deg F of superheat and resisting water hammer without sustaining damage.
- 9. Vacuum Breaker: Thermostatic with phosphor bronze bellows, and stainless steel cage, valve, and seat.
- 10. Maximum Operating Pressure: 125 psig.

2.7 THERMOSTATIC AIR VENTS AND VACUUM BREAKERS

A. Thermostatic Air Vents:

- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Armstrong International, Inc.
 - b. Hoffman Specialty.
 - c. Spirax Sarco Limited.
 - d. Approved equivalent.
- 2. Body: Cast iron, bronze, or stainless steel.
- 3. End Connections: Threaded.
- 4. Float, Valve, and Seat: Stainless steel.
- 5. Thermostatic Element: Phosphor bronze bellows in a stainless steel cage.
- 6. Pressure Rating: 125 psig
- 7. Maximum Temperature Rating: 350 deg F

B. Vacuum Breakers:

- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Armstrong International, Inc.
 - b. Hoffman Specialty.
 - c. Spirax Sarco Limited.
 - d. Approved equivalent.
- 2. Body: Cast iron, bronze, or stainless steel.
- 3. End Connections: Threaded.
- 4. Sealing Ball, Retainer, Spring, and Screen: Stainless steel.
- 5. O-Ring Seal: Ethylene propylene rubber.
- 6. Pressure Rating: 125 psig

1. Maximum Temperature Rating: 350 deg F.

PART 3 - EXECUTION

3.1 VALVE APPLICATIONS

- A. Install shutoff duty valves at branch connections to steam supply mains, at steam supply connections to equipment, and at the outlet of steam traps.
- B. Install safety valves on pressure-reducing stations and elsewhere as required by ASME Boiler and Pressure Vessel Code. Install safety-valve discharge piping, without valves, to nearest floor drain or as indicated on Drawings. Comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1, for installation requirements.

3.2 INSTALLATION OF PIPING

- A. Install piping to permit valve servicing.
- B. Install drains, consisting of a tee fitting, NPS 3/4 full-port ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- C. Install valves according to Section 230523.11 "Globe Valves for HVAC Piping," Section 230523.12 "Ball Valves for HVAC Piping," Section 230523.13 "Butterfly Valves for HVAC Piping," Section 230523.14 "Check Valves for HVAC Piping," and Section 230523.15 "Gate Valves for HVAC Piping."
- D. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment and elsewhere as indicated.
- E. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.
- F. Install shutoff valve immediately upstream of each dielectric fitting.
- G. Install strainers on supply side of control valves, pressure-reducing valves, traps, and elsewhere as indicated. Install NPS 3/4 nipple and full-port ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2.

3.3 INSTALLATION OF STEAM TRAPS

- A. Install steam traps in accessible locations as close as possible to connected equipment.
- B. Install full-port ball valve, strainer, and union upstream from trap; install union, check valve, and full-port ball valve downstream from trap unless otherwise indicated.

3.4 INSTALLATION OF PRESSURE-REDUCING VALVES

- A. Install pressure-reducing valves in accessible location for maintenance and inspection.
- B. Install bypass piping around pressure-reducing valves, with globe valve equal in size to area of pressure-reducing valve seat ring, unless otherwise indicated.
- C. Install gate valves on both sides of pressure-reducing valves.
- D. Install unions or flanges on both sides of pressure-reducing valves having threaded- or flanged-end connections, respectively.
- E. Install pressure gages on low-pressure side of pressure-reducing valves after the bypass connection according to Section 230519 "Meters and Gages for HVAC Piping."
- F. Install strainers upstream for pressure-reducing valve.
- G. Install safety valve downstream from pressure-reducing valve station.

3.5 INSTALLATION OF SAFETY VALVES

- A. Install safety valves according to ASME B31.1, "Power Piping," and ASME B31.9, "Building Services Piping."
- B. Pipe safety-valve discharge without valves to atmosphere outside the building.
- C. Install drip-pan elbow fitting adjacent to safety valve and pipe drain connection to nearest floor drain.
- D. Install exhaust head with drain to waste, on vents equal to or larger than NPS 2-1/2.

3.6 TERMINAL EQUIPMENT CONNECTIONS

- A. Install traps and control valves in accessible locations close to connected equipment.
- B. Install bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- C. Install vacuum breakers downstream from control valve, close to coil inlet connection.

END OF SECTION 232216



SCHEDULE OF SUBMITTALS	
PROJECT NO.: M3213	
FACILITY: Attica Correctional Facility	
CONTRACTOR: Construction	
PROJECT MANAGER: Reving Ibrahim	
DESIGN CONSULTANT: Stantec Consulting Services, Inc.	
ENGINEER-IN-CHARGE:	
<p style="text-align: center;">LEGEND</p> <p>PACK: SUBMITTAL PACKAGE</p> <p>SD: SHOP DRAWINGS</p> <p>PD: PRODUCT DATA</p> <p>EPD: ENVIRONMENTAL PRODUCT DECLARATION</p> <p>SAM: SAMPLES</p> <p>QCS: QUALITY CONTROL SUBMITTALS</p> <p>LEED: LEED SUBMITTALS</p> <p>CCS: CONTRACT CLOSEOUT SUBMITTALS</p> <p><u>SUBMITTAL REVIEW RESPONSIBILITY:</u> F: OGS FIELD OFFICE F/O: OGS FIELD OFFICE / OFFICE (ALBANY) D: CONSULTANT / DESIGNER S: OGS SCHEDULING DEPARTMENT RSM: Regional Safety Manager</p>	<p style="text-align: center;"><u>INSTRUCTIONS TO THE CONTRACTOR</u></p> <ol style="list-style-type: none"> Refer to Section 013300 Submittals of the Project Manual for general requirements regarding submittals and to Section 017716 - CONTRACT CLOSEOUT for project closeout submittals. Refer to Sections of the specifications indicated herein for details of the requirements for each submittal listed. Indicate in the rows (spaces) following each item: <ol style="list-style-type: none"> Critical submittals and long lead items (mark with an 'X'). Some critical submittals may already be identified by the design team. Confirm that these are critical submittals. The date the item will be submitted, and date approval is required (allow at least 3 weeks), and the date delivery of the material or equipment is necessary for completion of the work in accordance with the Progress Schedule. The date entered for the submittal is the last date a substitution will be considered. Proposed substitutions must be made prior to the date entered if more than one substitution is to be submitted for approval. Spaces which contain N/A do not require dates. An example of a Submittal Transmittal (BDC-42) can be located at: http://www.ogs.ny.gov/BU/DC/forms/ContractorConstForms.asp Submit Contract Closeout Submittals (CCS) prior to final inspection. <p style="text-align: center;"><u>INSTRUCTIONS TO THE CONSULTANT / DESIGNER</u></p> <ol style="list-style-type: none"> Cut and paste required information from each Division (Div.X) tab and place in the S.O.S. tab. Delete Division (Div.X) tabs after the S.O.S. tab has been in-filled. Indicate F, F/O or D in column E. Items in Div.1 have defaults that can be modified as necessary. Indicate items that are critical submittals in column F. <p><u>Note:</u> The following list of submittals is furnished for your convenience in scheduling submittals. The list is not warranted to be complete and does not take precedence over the contract documents. Enter additional submittals, as required and modify this schedule to the specific project. This S.O.S. will be used to populate the submittals website log.</p>


SCHEDULE OF SUBMITTALS
PROJECT NO.: M3213

SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)			
Spec Section	Sub Section	Type	Description	F	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:	
				F/O					
				D					
				S					
007213				GENERAL CONDITIONS					
007213		PD	ARTICLE 6: Designate in writing competent supervision and/or management representatives as required - include contact number in case of an emergency after work hours, including weekends and holidays (see 011000 Summary of Work)	F					
007213		PD	ARTICLE 8: Permits and licenses	F					
011100				SAFETY					
011100		QCS	Site Specific Safety Plan	RSM					
011100		QCS	Employee Safety Orientation Training and						
013113				PROJECT SCHEDULE					
013300				SUBMITTALS					
013300		PD	Schedule of Submittals Acknowledgement	F	X				
013300		QCS	Submittal Coordinator Qualifications	F/O	X				
017419				CONSTRUCTION WASTE MANAGEMENT					
017419		LEED	Construction Waste Management Plan	F/O					
017419		PD	In conjunction with payment applications, contractors	F					
017419		PD	Calculations and supporting documentation to	F					
017716				CONTRACT CLOSEOUT					
017716		CCS	Project Record Documents	F					
017716		CCS	Operation and Maintenance	F					
017716		CCS	Warranties	F					
017716		CCS	Spare Parts and Maintenance Materials	F					
028304				HANDLING OF LEAD CONTAINING MATERIALS					
028304		QCS	Lead Handling Worker's Qualifications Data						
028304		QCS	Lead Handling Detailed Work Plan						
028304		QCS	Lead Handling Waste Transporter Permit						
028304		QCS	Operation and Maintenance Data						
028304		CCS	Assessment Report compiled by a testing lab						
028304		CCS	Disposal Site Receipts						
055000				METAL FABRICATIONS					
055000		SD	Full detailed drawings of shop fabricated metal fabrications; SS tube reinforcements and mounting plates.						
055000		PD	Slotted Steel Channel for Ceiling Support						
055000		QCS	Mill Certificates: Signed by stainless steel manufacturers, certifying that products furnished comply with requirements.						
055000		QCS	Welding Certificates						
061053				MISCELLANEOUS ROUGH CARPENTRY					
061053		PD	Wood-Preservative-Treated Materials						
061053		PD	Fire-Retardant-Treated Materials						
061053		PD	Dimension Lumber Framing						
061600				SHEATHING					

SCHEDULE OF SUBMITTALS

PROJECT NO.: M3213

SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)		
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:
061600		PD	Preservative-Treated Plywood					
061600		PD	Fire-Retardant-Treated Plywood					
061600		PD	Roof Sheathing					
061600		QCS	Evaluation Reports - Wood-preservative-treated plywood					
061600		QCS	Evaluation Reports - Fire-retardant-treated plywood					
070150			MODIFICATIONS TO EXISTING WARRANTIED ROOF SYSTEM					
070150		PACK	Submit the product data and quality control submittals specified below at the same time in one complete package					
070150		PD	All materials required for the the Work of this Section					
070150		QCS	Applicator's Certification					
070150		QCS	Material Certification					
070150		QCS	Warranty Certification					
072119			FOAMED-IN-PLACE INSULATION					
072119		PD	Closed-Cell Spray Polyurethane Foam Insulation and Ignition Barrier Coating					
072119		QCS	Qualification Statements: For Installer.					
093500			CHEMICAL-RESISTANT TILING					
093500		PD	Chemical-Resistant Tile Products					
093500		PD	Waterproof Membrane					
093500		PD	Setting Materials					
093500		PD	Grout Materials					
093500		PD	Mixing Mortars and Grout					
093500		SAM	For each type of tile.					
093500		QCS	Qualification Data: For Installer.					
093500		QCS	Product Certificates					
093500		QCS	Product Test Reports					
095324			SUSPENDED METAL PANEL SYSTEM					
095324		PD	Suspended Metal Panel Ceiling System and Accessories					
095324		QCS	Contractor's Qualifications					
095324		SD	Shop Drawings					
095324		SAM	Samples of System Components					
099123			INTERIOR PAINTING (MPI STANDARDS)					
099123		PD	Paint Materials					
099123		QCS	Contractor's Qualifications					
099123		QCS	Certification of Volatile Organic Compounds					



Office of General Services

Design and Construction
 Division of Construction, 35th Floor, Corning Tower
 The Governor Nelson A. Rockefeller Empire State Plaza
 Albany, New York 12242
 Phone: (518) 474-0331 FAX: (518) 474-8201

SCHEDULE OF SUBMITTALS

PROJECT NO.: M3213

FACILITY: Attica Correctional Facility

CONTRACTOR: HVAC

PROJECT MANAGER: Reving Ibrahim

DESIGN CONSULTANT: Stantec Consulting Services, Inc.

ENGINEER-IN-CHARGE:

LEGEND

PACK: SUBMITTAL PACKAGE

SD: SHOP DRAWINGS

PD: PRODUCT DATA

EPD: ENVIRONMENTAL PRODUCT
DECLARATION

SAM: SAMPLES

QCS: QUALITY CONTROL SUBMITTALS

LEED: LEED SUBMITTALS

CCS: CONTRACT CLOSEOUT SUBMITTALS

SUBMITTAL REVIEW RESPONSIBILITY:

F: OGS FIELD OFFICE

F/O: OGS FIELD OFFICE / OFFICE
(ALBANY)

D: CONSULTANT / DESIGNER

S: OGS SCHEDULING DEPARTMENT

RSM: Regional Safety Manager

INSTRUCTIONS TO THE CONTRACTOR

1. Refer to **Section 013300 Submittals** of the Project Manual for general requirements regarding submittals and to **Section 017716 - CONTRACT CLOSEOUT** for project closeout submittals.
2. Refer to Sections of the specifications indicated herein for details of the requirements for each submittal listed.
3. Indicate in the rows (spaces) following each item:
 - a. Critical submittals and long lead items (mark with an 'X'). Some critical submittals may already be identified by the design team. Confirm that these are critical submittals.
 - b. The date the item will be submitted, and date approval is required (allow at least 3 weeks), and the date delivery of the material or equipment is necessary for completion of the work in accordance with the Progress Schedule. The date entered for the submittal is the last date a substitution will be considered. Proposed substitutions must be made prior to the date entered if more than one substitution is to be submitted for approval. Spaces which contain N/A do not require dates.
4. An example of a Submittal Transmittal (BDC-42) can be located at: <http://www.ogs.ny.gov/BU/DC/forms/ContractorConstForms.asp>
5. Submit Contract Closeout Submittals (CCS) prior to final inspection.

INSTRUCTIONS TO THE CONSULTANT / DESIGNER

1. Cut and paste required information from each Division (Div.X) tab and place in the S.O.S. tab.
2. Delete Division (Div.X) tabs after the S.O.S. tab has been in-filled.
3. Indicate F, F/O or D in column E. Items in Div.1 have defaults that can be modified as necessary.
4. Indicate items that are critical submittals in column F.

Note:



Office of General Services

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SCHEDULE OF SUBMITTALS

PROJECT NO.: M3213

The following list of submittals is furnished for your convenience in scheduling submittals. The list is not warranted to be complete and does not take precedence over the contract documents. Enter additional submittals, as required and modify this schedule to the specific project. This S.O.S. will be used to populate the submittals website log.



SCHEDULE OF SUBMITTALS								
PROJECT NO.: M3213								
SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)		
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:
007213			GENERAL CONDITIONS					
007213		PD	ARTICLE 6: Designate in writing competent supervision and/or management representatives as required - include contact number in case of an emergency after work hours, including weekends and holidays (see 011000 Summary of Work)	F				
007213		PD	ARTICLE 8: Permits and licenses	F				
011100			SAFETY					
011100		QCS	Site Specific Safety Plan	RSM				
011100		QCS	Employee Safety Orientation Training and	RSM				
013113			PROJECT SCHEDULE					
013300			SUBMITTALS					
013300		PD	Schedule of Submittals Acknowledgement	F	X			
013300		QCS	Submittal Coordinator Qualifications	F/O	X			
017419			CONSTRUCTION WASTE MANAGEMENT					
017419		LEED	Construction Waste Management Plan	F/O				
017419		PD	In conjunction with payment applications, contractors	F				
017419		PD	Calculations and supporting documentation to	F				
017716			CONTRACT CLOSEOUT					
017716		CCS	Project Record Documents	F				
017716		CCS	Operation and Maintenance	F				
017716		CCS	Warranties	F				
017716		CCS	Spare Parts and Maintenance Materials	F				
230517			SLEEVES AND SLEEVE SEALS FOR HVAC PIPING					
230517		PD	Sleeves					
230517		PD	Grout					
230517		PD	Silicone Sealants					
230517		EPD	Environmental Product Declaration					
230517		QCS	Field Quality-Control Reports					
230518			ESCUTCHEONS FOR HVAC PIPING					
230518		PD	Escutcheons					
230518		PD	Floor Plates					
230523			GENERAL-DUTY VALVES FOR HVAC PIPING					
230523		PD	Gate Valves					
230523		PD	Globe Valves					
230523		PD	Check Valves					
230523		QCS	Manufacturer's Certificate					
230523		CCS	Project Record Documents	F				
230523		CCS	Operation and Maintenance Data	F				

SCHEDULE OF SUBMITTALS

PROJECT NO.: M3213

SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)		
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:
230529 HANGERS AND SUPPORTS FOR HVAC PIPING								
230529		SD	Shop Drawings: Show fabrication and installation	F				
230529		PD	Trapeze Pipe Hangers	F				
230529		PD	Metal Framing Systems	F				
230529		PD	Pipe Stands	F				
230529		PD	Equipment Supports	F				
230529		QCS	Welding Certificates	F				
230553 IDENTIFICATION FOR HVAC PIPING AND								
230553		PD	Equipment Labels	F				
230553		PD	Warning Signs and Labels	F				
230553		PD	Pipe Labels	F				
230553		PD	Duct Labels	F				
230553		PD	Stencils	F				
230553		PD	Valve Tags	F				
230553		PD	Valve Service Identification Chart Frames	F				
230553		PD	Warning Tags	F				
230553		QCS	Equipment Label Schedule	F				
230553		QCS	Valve Numbering Scheme	F				
230553		QCS	Valve Schedule	F				
230593 TESTING, ADJUSTING, AND BALANCING FOR								
230593		QCS	Qualification Data	F				
230593		QCS	Certified TAB Reports	F				
230593		QCS	Sample Report Forms	F				
230719 HVAC PIPING INSULATION								
230719		PD	Insulation Materials					
230719		PD	Insulating Cements					
230719		PD	Adhesives					
230719		PD	Mastics and Coatings					
230719		PD	Lagging Adhesives					
230719		PD	Sealants					
230719		PD	Factory-Applied Jackets					
230719		PD	Field-Applied Reinforcing Mesh					
230719		PD	Field-Applied Cloths					
230719		PD	Field-Applied Jackets					
230719		PD	Tapes					
230719		PD	Securements					
230719		QCS	Qualification Data: For qualified Installer.					
230719		QCS	Field Quality-Control Reports					
230800 COMMISSIONING OF HVAC								
230800		QCS	Draft Forms	F				
230800		QCS	Test Reports	F				
230800		QCS	Field Reports	F				
230800		CCS	Project Record Documents	F				
230800		CCS	Operation and Maintenance Data	F				
232213 STEAM AND CONDENSATE PIPING								
232213		PD	Steel Pipe and Fittings					
232213		PD	Joining Materials					
232213		EPD	Environmental Product Declaration					
232213		QCS	Delegated Design Submittal					
232213		QCS	Qualification Data: For Installer					

SCHEDULE OF SUBMITTALS

PROJECT NO.: M3213

SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)		
Spec Section	Sub Section	Type	Description			Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:
				F	Mark "X" for all that apply			
				F/O				
				D				
				S				
232213		QCS	Welding Certificates					
232213		QCS	Field Quality-Control Reports					
232216			STEAM AND CONDENSATE HEATING PIPING SPECIALTIES					
232216		PD	Strainer					
232216		PD	Valve					
232216		PD	Steam Trap					
232216		PD	Air Vent and Vacuum Breaker					
232216		CCS	Operation and Maintenance Data	F				
233113			METAL DUCTS					
233113		SD	Full detailed drawings of metal ducts.	F				
233113		PD	Liners and Adhesives	F				
233113		PD	Sealants and Gaskets	F				
233113		QCS	Welding Certificates	F				
233113		QCS	Field Quality-Control Reports	F				
233300			AIR DUCT ACCESSORIES					
233300		SD	Full detailed drawings for duct accessories.	F				
233300		SD	Coordination Drawings	F				
233300		PD	Backdraft and Pressure Relief Dampers	F				
233300		PD	Manual Volume Dampers	F				
233300		PD	Control Dampers	F				
233300		PD	Flange Connectors	F				
233300		PD	Duct-Mounted Access Doors	F				
233300		PD	Duct Access Panel Assemblies	F				
233300		PD	Flexible Connectors	F				
233300		PD	Duct Security Bars	F				
233300		PD	Duct Accessory Hardware	F				
233300		QCS	Source Quality-Control Reports	F				
233300		QCS	Maintenance Material Submittals	F				
233300		CCS	Operation and Maintenance Data	F				
233400			HVAC FANS					
233400		SD	Shop Drawings: Indicate size and configuration of fan assembly, mountings, weights, ductwork and accessory connections	F				
233400		PD	Propeller Fans	F				
233400		QCS	Manufacturer's Certificate	F				
233400		CCS	Operation and Maintenance Data	F				
233416			CENTRIFUGAL HVAC FANS					
233416		SD	Full detailed drawings of centrifugal HVAC fans.	F				
233416		SD	Coordination Drawings	F				
233416		PD	Square In-Line Centrifugal Fans	F				
233416		PD	Motors	F				
233416		QCS	Field Quality-Control Reports	F				
233416		QCS	Maintenance Material Submittals	F				
233416		CCS	Operation and Maintenance Data	F				
233723			HVAC GRAVITY VENTILATORS					
233723		SD	Full detailed drawings for gravity ventilators.	F				
233723		SD	Coordination Drawings	F				
233723		PD	Louvered-Penthouse Ventilators	F				
233723		QCS	Welding Certificates	F				



Office of General Services

Design and Construction
 Division of Construction, 35th Floor, Corning Tower
 The Governor Nelson A. Rockefeller Empire State Plaza
 Albany, New York 12242
 Phone: (518) 474-0331 FAX: (518) 474-8201

SCHEDULE OF SUBMITTALS

PROJECT NO.: M3213

FACILITY: Attica Correctional Facility

CONTRACTOR: Plumbing

PROJECT MANAGER: Reving Ibrahim

DESIGN CONSULTANT: Stantec Consulting Services, Inc.

ENGINEER-IN-CHARGE:

LEGEND

PACK: SUBMITTAL PACKAGE

SD: SHOP DRAWINGS

PD: PRODUCT DATA

EPD: ENVIRONMENTAL PRODUCT
DECLARATION

SAM: SAMPLES

QCS: QUALITY CONTROL SUBMITTALS

LEED: LEED SUBMITTALS

CCS: CONTRACT CLOSEOUT SUBMITTALS

SUBMITTAL REVIEW RESPONSIBILITY:

F: OGS FIELD OFFICE

F/O: OGS FIELD OFFICE / OFFICE
(ALBANY)

D: CONSULTANT / DESIGNER

S: OGS SCHEDULING DEPARTMENT

RSM: Regional Safety Manager

INSTRUCTIONS TO THE CONTRACTOR

1. Refer to **Section 013300 Submittals** of the Project Manual for general requirements regarding submittals and to **Section 017716 - CONTRACT CLOSEOUT** for project closeout submittals.
2. Refer to Sections of the specifications indicated herein for details of the requirements for each submittal listed.
3. Indicate in the rows (spaces) following each item:
 - a. Critical submittals and long lead items (mark with an 'X'). Some critical submittals may already be identified by the design team. Confirm that these are critical submittals.
 - b. The date the item will be submitted, and date approval is required (allow at least 3 weeks), and the date delivery of the material or equipment is necessary for completion of the work in accordance with the Progress Schedule. The date entered for the submittal is the last date a substitution will be considered. Proposed substitutions must be made prior to the date entered if more than one substitution is to be submitted for approval. Spaces which contain N/A do not require dates.
4. An example of a Submittal Transmittal (BDC-42) can be located at: <http://www.ogs.ny.gov/BU/DC/forms/ContractorConstForms.asp>
5. Submit Contract Closeout Submittals (CCS) prior to final inspection.

INSTRUCTIONS TO THE CONSULTANT / DESIGNER

1. Cut and paste required information from each Division (Div.X) tab and place in the S.O.S. tab.
2. Delete Division (Div.X) tabs after the S.O.S. tab has been in-filled.
3. Indicate F, F/O or D in column E. Items in Div.1 have defaults that can be modified as necessary.
4. Indicate items that are critical submittals in column F.

Note:



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SCHEDULE OF SUBMITTALS

PROJECT NO.: M3213

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SCHEDULE OF SUBMITTALS										
PROJECT NO.: M3213										
SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)				
Spec Section	Sub Section	Type	Description	F	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:		
				F/O						
				D						
				S						
007213			GENERAL CONDITIONS							
007213		PD	ARTICLE 6: Designate in writing competent supervision and/or management representatives as required - include contact number in case of an emergency after work hours, including weekends and holidays (see 011000 Summary of Work)	F						
007213		PD	ARTICLE 8: Permits and licenses	F						
011100			SAFETY							
011100		QCS	Site Specific Safety Plan	RSM						
011100		QCS	Employee Safety Orientation Training and							
013113			PROJECT SCHEDULE							
013300			SUBMITTALS							
013300		PD	Schedule of Submittals Acknowledgement	F	X					
013300		QCS	Submittal Coordinator Qualifications	F/O	X					
017419			CONSTRUCTION WASTE MANAGEMENT							
017419		LEED	Construction Waste Management Plan	F/O						
017419		PD	In conjunction with payment applications, contractors	F						
017419		PD	Calculations and supporting documentation to	F						
017716			CONTRACT CLOSEOUT							
017716		CCS	Project Record Documents	F						
017716		CCS	Operation and Maintenance	F						
017716		CCS	Warranties	F						
017716		CCS	Spare Parts and Maintenance Materials	F						
220518			ESCUTCHEONS FOR PLUMBING PIPING							
220518		PD	Escutcheons							
220518		PD	Floor Plates							
220523			GENERAL-DUTY VALVES FOR PLUMBING PIPING							
220523		PD	Gate Valves							
220523		PD	Ball Valves							
220523		PD	Plug Valves							
220523		PD	Butterfly Valves							
220523		PD	Check Valves							
220523		CCS	Project Record Documents	F						
220523		CCS	Operation and Maintenance Data	F						
220529			HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT							
220529		PD	Metal Pipe Hangers and Supports							
220529		PD	Thermal Hanger-Shield Inserts							
220529		PD	Fastener Systems							
220529		PD	Pipe Stands							
220529		PD	Pipe-Positioning Systems							

SCHEDULE OF SUBMITTALS											
PROJECT NO.: M3213											
SUBMITTALS FOR APPROVAL						Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)			
Spec Section	Sub Section	Type	Description	F	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:			
				F/O							
				D							
				S							
220529		PD	Equipment Supports								
220529		QCS	Welding Certificates								
220553			IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT								
220553		PD	Equipment Labels								
220553		PD	Warning Signs and Labels								
220553		PD	Pipe Labels								
220553		PD	Stencils								
220553		PD	Valve Tags								
220553		PD	Warning Tags								
220553		QCS	Equipment Label Schedule								
220553		QCS	Valve Numbering Scheme								
220553		QCS	Valve Schedules								
220719			PLUMBING PIPING INSULATION								
220719		SD	Plans, elevations, sections, details, and attachments to other work.								
220719		PD	Jackets (both factory and field applied, if any)								
220719		PD	Insulation Materials								
220719		PD	Insulation Cements								
220719		PD	Adhesives								
220719		PD	Mastics and Coatings								
220719		PD	Lagging Adhesives								
220719		PD	Sealants								
220719		PD	Tapes								
220719		PD	Securements								
220719		PD	Protective Shielding Guards								
220719		QCS	Qualification Data: For qualified Installer.								
220719		QCS	Material Test Reports								
220719		QCS	Field Quality-Control Reports								
220800			COMMISIONING OF PLUMBING								
220800		QCS	Qualification Data: For plumbing testing technician.								
220800		QCS	Construction Checklist								
220800		QCS	Test Equipment and Instruments								
221116			DOMESTIC WATER PIPING								
221116		SD	Coordination Drawings								
221116		PD	Copper tube and fittings								
221116		PD	Joining Materials								
221116		PD	Encasement for Piping								
221116		PD	Transition Fittings								
221116		PD	Dielectric fittings.								
221116		QCS	System Purgng and Disinfecting Activities Report								
221116		QCS	Field Quality-Control Reports								
221119			DOMESTIC WATER PIPING SPECIALTIES								
221119		SD	Full detailed drawings for domestic water piping specialties.								

SCHEDULE OF SUBMITTALS

PROJECT NO.: M3213

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Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:
221119		PD	Vacuum Breakers					
221119		QCS	Test and Inspection Reports					
221119		QCS	Field Quality-Control Reports					
221119		CCS	Operation and Maintenance Data	F				
221316			SANITARY WASTE AND VENT PIPING					
221316		SD	For hubless, single-stack drainage system. Include plans, elevations, sections, and details.					
221316		PD	Hub-and-Spigot, Cast-Iron Soil Pipe and Fittings					
221316		PD	Hubless, Cast-Iron Soil Pipe and Fittings					
221316		PD	Galvanized-Steel Pipe and Fittings					
221316		PD	Stainless-Steel Drainage Pipe and Fittings					
221316		PD	Ductile-Iron Pipe and Fittings					
221316		PD	Copper Tube and Fittings					
221316		PD	Transition Couplings					
221316		PD	Dielectric Fittings					
221316		PD	Encasement for Underground Metal Piping					
221316		EPD	Environmental Product Declaration					
221316		QCS	Field Quality-Control Reports					
221319			SANITARY WASTE PIPING SPECIALTIES					
221319		SD	Show fabrication and installation details for frost-resistant vent terminals.					
221319		PD	Backwater Valves					
221319		PD	Cleanouts					
221319		PD	Air-Admittance Valves					
221319		PD	Miscellaneous Sanitary Drainage Piping Specialties					
221319		QCS	Field Quality-Control Reports					
221319		CCS	Operation and Maintenance Data	F				
221319.13			SANITARY DRAINS					
221319.13		PD	Floor Drains					
221319.13		PD	Floor Sinks					
221323			SANITARY WASTE INTERCEPTORS					
221323		SD	Full detailed drawings for each type and size of interceptor indicated.					
221323		SD	Coordination Drawings					
221323		PD	Grease Interceptor					
221323		CCS	Operation and Maintenance Data	F				
221329			SANITARY SEWERAGE PUMPS					
221329		SD	Full detailed drawings of pumps.					
221329		PD	Packaged, Submersible Sewage-Pump Units					
221329		PD	Motors					
221329		CCS	Operation and Maintenance Data	F				
224216.16			COMMERCIAL SINKS					
224216.16		SD	Coordination Drawings					
224216.16		PD	Kitchen/Utility Sinks					

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PROJECT NO.: M3213

SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)		
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:
224216.16		PD	Manually Operated Sink Faucets					
224216.16		PD	Supply Fittings					
224216.16		PD	Waste Fittings					
224216.16		PD	Sink Supports					
224216.16		PD	Grout					
224216.16		QCS	Maintenance Material Submittals					
224216.16		CCS	Operation and Maintenance Data					



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SCHEDULE OF SUBMITTALS	
PROJECT NO.: M3213	
FACILITY: Attica Correctional Facility	
CONTRACTOR: Electrical	
PROJECT MANAGER: Reving Ibrahim	
DESIGN CONSULTANT: Stantec Consulting Services, Inc.	
ENGINEER-IN-CHARGE:	
<p style="text-align: center;">LEGEND</p> <p>PACK: SUBMITTAL PACKAGE</p> <p>SD: SHOP DRAWINGS</p> <p>PD: PRODUCT DATA</p> <p>EPD: ENVIRONMENTAL PRODUCT DECLARATION</p> <p>SAM: SAMPLES</p> <p>QCS: QUALITY CONTROL SUBMITTALS</p> <p>LEED: LEED SUBMITTALS</p> <p>CCS: CONTRACT CLOSEOUT SUBMITTALS</p> <p><u>SUBMITTAL REVIEW RESPONSIBILITY:</u> F: OGS FIELD OFFICE F/O: OGS FIELD OFFICE / OFFICE (ALBANY) D: CONSULTANT / DESIGNER S: OGS SCHEDULING DEPARTMENT RSM: Regional Safety Manager</p>	<p style="text-align: center;"><u>INSTRUCTIONS TO THE CONTRACTOR</u></p> <ol style="list-style-type: none"> Refer to Section 013300 Submittals of the Project Manual for general requirements regarding submittals and to Section 017716 - CONTRACT CLOSEOUT for project closeout submittals. Refer to Sections of the specifications indicated herein for details of the requirements for each submittal listed. Indicate in the rows (spaces) following each item: <ol style="list-style-type: none"> Critical submittals and long lead items (mark with an 'X'). Some critical submittals may already be identified by the design team. Confirm that these are critical submittals. The date the item will be submitted, and date approval is required (allow at least 3 weeks), and the date delivery of the material or equipment is necessary for completion of the work in accordance with the Progress Schedule. The date entered for the submittal is the last date a substitution will be considered. Proposed substitutions must be made prior to the date entered if more than one substitution is to be submitted for approval. Spaces which contain N/A do not require dates. An example of a Submittal Transmittal (BDC-42) can be located at: http://www.ogs.ny.gov/BU/DC/forms/ContractorConstForms.asp Submit Contract Closeout Submittals (CCS) prior to final inspection. <p style="text-align: center;"><u>INSTRUCTIONS TO THE CONSULTANT / DESIGNER</u></p> <ol style="list-style-type: none"> Cut and paste required information from each Division (Div.X) tab and place in the S.O.S. tab. Delete Division (Div.X) tabs after the S.O.S. tab has been in-filled. Indicate F, F/O or D in column E. Items in Div.1 have defaults that can be modified as necessary. Indicate items that are critical submittals in column F. <p><u>Note:</u> The following list of submittals is furnished for your convenience in scheduling submittals. The list is not warranted to be complete and does not take precedence over the contract documents. Enter additional submittals, as required and modify this schedule to the specific project. This S.O.S. will be used to populate the submittals website log.</p>


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PROJECT NO.: M3213

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				F/O						
				D						
				S						
007213				GENERAL CONDITIONS						
007213		PD	ARTICLE 6: Designate in writing competent	F						
007213		PD	ARTICLE 8: Permits and licenses	F						
011100				SAFETY						
011100		QCS	Site Specific Safety Plan	RSM						
011100		QCS	Employee Safety Orientation Training and							
013113				PROJECT SCHEDULE						
013300				SUBMITTALS						
013300		PD	Schedule of Submittals Acknowledgement	F	X					
013300		QCS	Submittal Coordinator Qualifications	F/O	X					
017716				CONTRACT CLOSEOUT						
017716		CCS	Project Record Documents	F						
017716		CCS	Operation and Maintenance	F						
017716		CCS	Warranties	F						
017716		CCS	Spare Parts and Maintenance Materials	F						
260519				LOW-VOLTAGE ELECTRICAL POWER						
260519		PD	Copper Building Wire							
260519		PD	Connectors and Splices							
260519		PD	Product Schedule: Indicate type, use, location, and							
260519		QCS	Qualification Data: For [testing agency]							
260529				HANGERS AND SUPPORTS FOR ELECTRICAL						
260529		PD	Slotted Support Systems, Hardware, and Accessories							
260529		PD	Clamps							
260529		PD	Hangers							
260529		PD	Sockets							
260529		PD	Eye Nuts							
260529		PD	Fasteners							
260529		PD	Anchors							
260529		PD	Saddles							
260529		PD	Brackets							
260533				RACEWAYS AND BOXES FOR ELECTRICAL						
260533		SD	Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections and attachment details							
260533		PD	Metal Conduits and Fittings							
260533		PD	Boxes, Enclosures, and Cabinets							
260533		PD	Nameplates and Tags							
260544				SLEEVES AND SLEEVE SEALS FOR ELECTRICAL						
260544		PD	Round Sleeves							
260544		PD	Grout							
260544		PD	Pourable Sealants							
260544		PD	Foam Sealants							
262726				WIRING DEVICES						
262726		SD	Shop Drawings: List of legends and description of							
262726		PD	Standard-Grade Receptacles, 125 V, 20A							
262726		PD	GFCI Receptacles, 125V, 20A							
262726		PD	Tamper-resistant Duplex GFCI receptacles, 125V,							
262726		PD	Corrosion Resistant Receptacles							

SCHEDULE OF SUBMITTALS									
PROJECT NO.: M3213									
SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)			
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:	
262726		PD	Toggle Switches, 120/277 V, 20 A						
262726		QCS	Field Quality Control Reports						
262726		CCS	Operation and Maintenance Data						
262726		CCS	Maintenance Material Submittals: Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.						
262813			FUSES						
262813		PD	Fuses Rated 600V or Less						
262813		CCS	Maintenance Materials: Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.	F					
262816			ENCLOSED SWITCHES AND CIRCUIT BREAKERS						
262816		SD	Shop Drawings: For enclosed switches and circuit breakers.						
262816		PD	Fusible Switches						
262816		PD	NonFusible Switches						
262816		PD	Enclosures						
262816		QCS	Qualification Data: For qualified testing agency						
262816		QCS	Field Quality Control Reports						
262816		CCS	Operation and Maintenance Data	F					
262816		CCS	Maintenance Material Submittals: Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.	F					
265119			LED INTERIOR LIGHTING						
265119		SD	Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:						
265119		SD	Coordination Drawings: Luminaires.						
265119		SD	Coordination Drawings: Suspended ceiling components.						
265119		PD	Product Schedule: For luminaires and lamps						
265119		PD	Recessed, Linear						
265119		PD	Materials						
265119		PD	Metal Finishes						
265119		PD	Luminaire Support						
265119		QCS	Qualification Data: For testing laboratory providing photometric data for luminaires.						
265119		CCS	Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.	F					
265119		CCS	Maintenance Materials Submittals: Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.	F					
265213			EMERGENCY AND EXIT LIGHTING						

SCHEDULE OF SUBMITTALS								
PROJECT NO.: M3213								
SUBMITTALS FOR APPROVAL				Send to:	Critical Submittals	Contractor's Projected Dates Allow at least 4 weeks for Approval (allows time for any resubmission)		
Spec Section	Sub Section	Type	Description	F F/O D S	Mark "X" for all that apply	Projected Transmittal Date:	Projected Approval Date:	Projected Delivery Date:
265213		SD	Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:					
265213		SD	Coordination Drawings: Luminaires.					
265213		SD	Coordination Drawings: Suspended ceiling components.					
265213		PD	Emergency Lighting					
265213		PD	Luminaire Support Components					
265213		SAM	Samples for Initial Selection: For each type of luminaire with factory-applied finishes.					
265213		SAM	Samples for Verification: For each type of luminaire					
265213		QCS	Qualification Data: For testing laboratory providing photometric data for luminaires.					
265213		QCS	Product Test Reports: For each luminaire for tests performed by [manufacturer and witnessed by a qualified testing agency] [a qualified testing agency].					
265213		CCS	Operation and Maintenance Data: For luminaires and lighting systems to include in emergency, operation, and maintenance manuals.	F				
265213		CCS	Maintenance Materials Submittals: Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.	F				

FAN SCHEDULE

DESIGNATION	LOCATION	AREA SERVED	SERVICE	CONFIGURATION	DRIVE TYPE	AIRFLOW (CFM)	E.S.P. (IN-WC)	BHP	RPM	MHP	ELECTRICAL DATA											REMARKS						
											VOLTS	PH	Hz	FLA	MCA	SCCR Ka	STARTER		EMER. POWER (Y/N)	FILTER	ENERGY FEI		SONES	DIMENSIONS LxWxH	WEIGHT (LBS)	MANUFACTURER	MODEL	
																	BY M.C. OR MANUF.	CONTROLLER										ENCLOSURE TYPE
EF-1	DISHWASHING 101	DISHWASHING 101	EXHAUST	INLINE	BELT	1200	0.5	0.29	1450	1/2	208	POLY	60	2.4	3	5	MANUF.	INTERLOCKED OPERATION	NEMA 1	NO	N/A	N/A	10.5	21x19x32	93	GREENHECK	BSQ-120	1,2
SF-1	DISHWASHING 101	DISHWASHING 101	SUPPLY	WALL MOUNT	INLINE	500	0.25	0.07	577	1/4	120	1	60	3.8	4.8	5	E.C.	INTERLOCKED OPERATION	NEMA 1	NO	MERV 8	N/A	6.0	64x38x38	75	GREENHECK	AER-24-02-0605-VG	1,2,3,4

NOTES:
 1. PROVIDE FACTORY MOUNTING AND VIBRATION ISOLATION KIT.
 2. INSTALLATION MUST MEET ALL LOCAL GOVERNING CODES AND THE NEC.
 3. PROVIDE 90 DEGREE WEATHERHOOD.
 4. PROVIDE SPEED CONTROLLER FOR BALANCING ONLY.

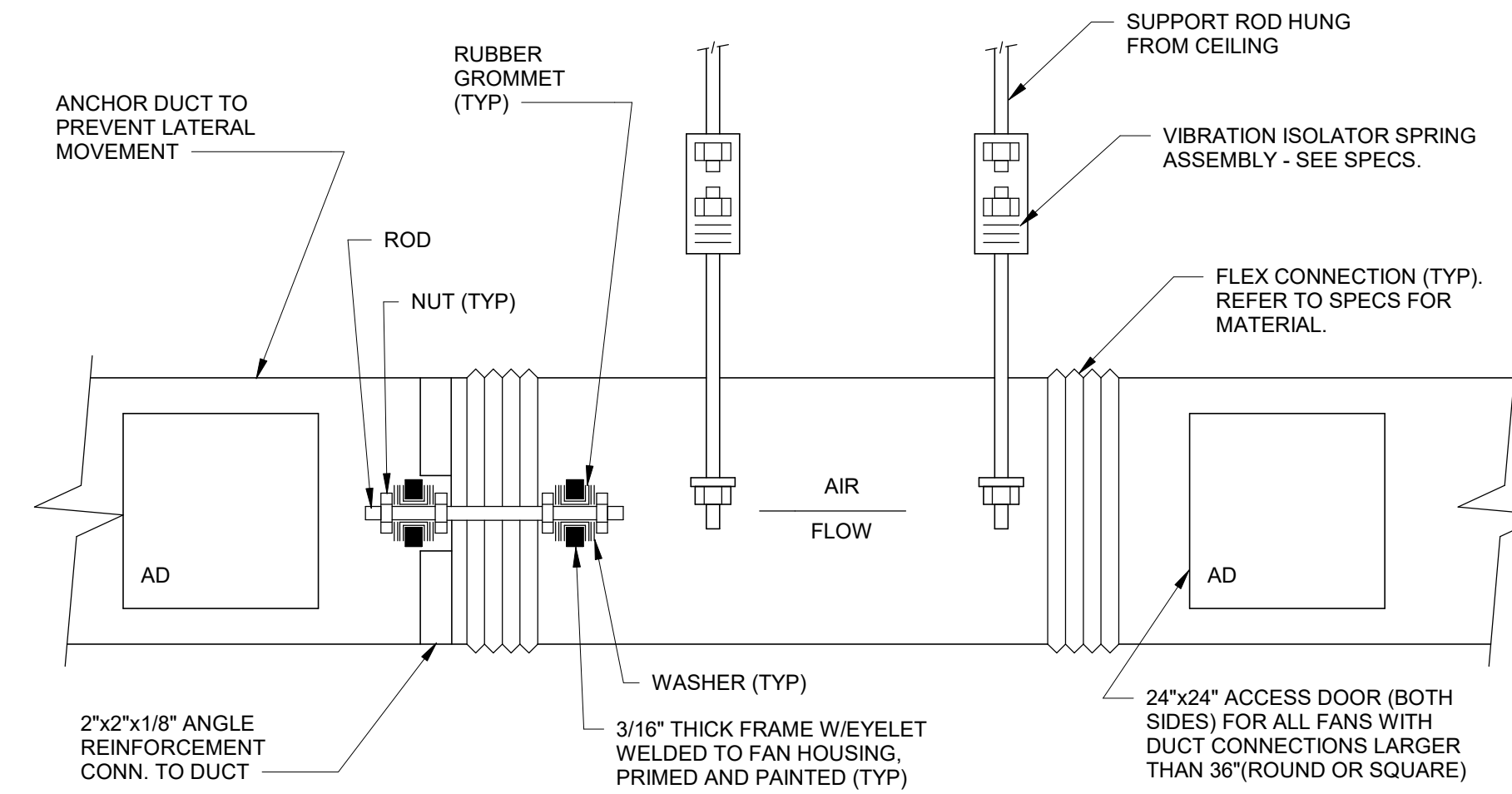
LOUVERED PENTHOUSE GRAVITY VENTILATOR

DESIGNATION	LOCATION	SERVICE	OVERALL DIMENSIONS LXWXH	THROAT DIMENSIONS LXW	WEIGHT (LBS)	MANUFACTURER	MODEL	REMARKS
LP-1	ROOF	EF-1	30X30X24	16X16	49	GREENHECK	WRH-16X16	SEE NOTES

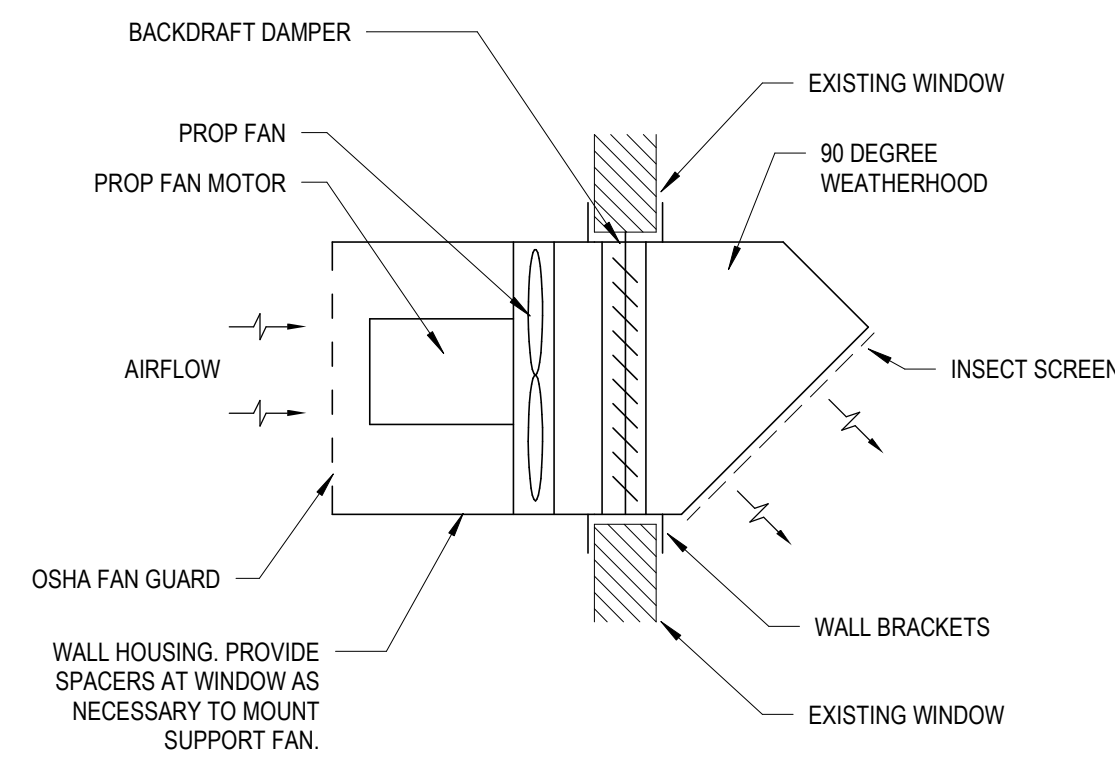
NOTES:
 1. PROVIDE BIRD SCREEN.
 2. PROVIDE PRE-MANUFACTURER ROOF CURB FOR PITCHED ROOF, GREENHECK MODEL GPFVP. H-CONTRACTOR TO FIELD MEASURE ROOF PITCH AND PROVIDE TO EQUIPMENT MANUFACTURER.
 3. PROVIDE MOTORIZED DAMPER.

PIPE INSULATION SCHEDULE

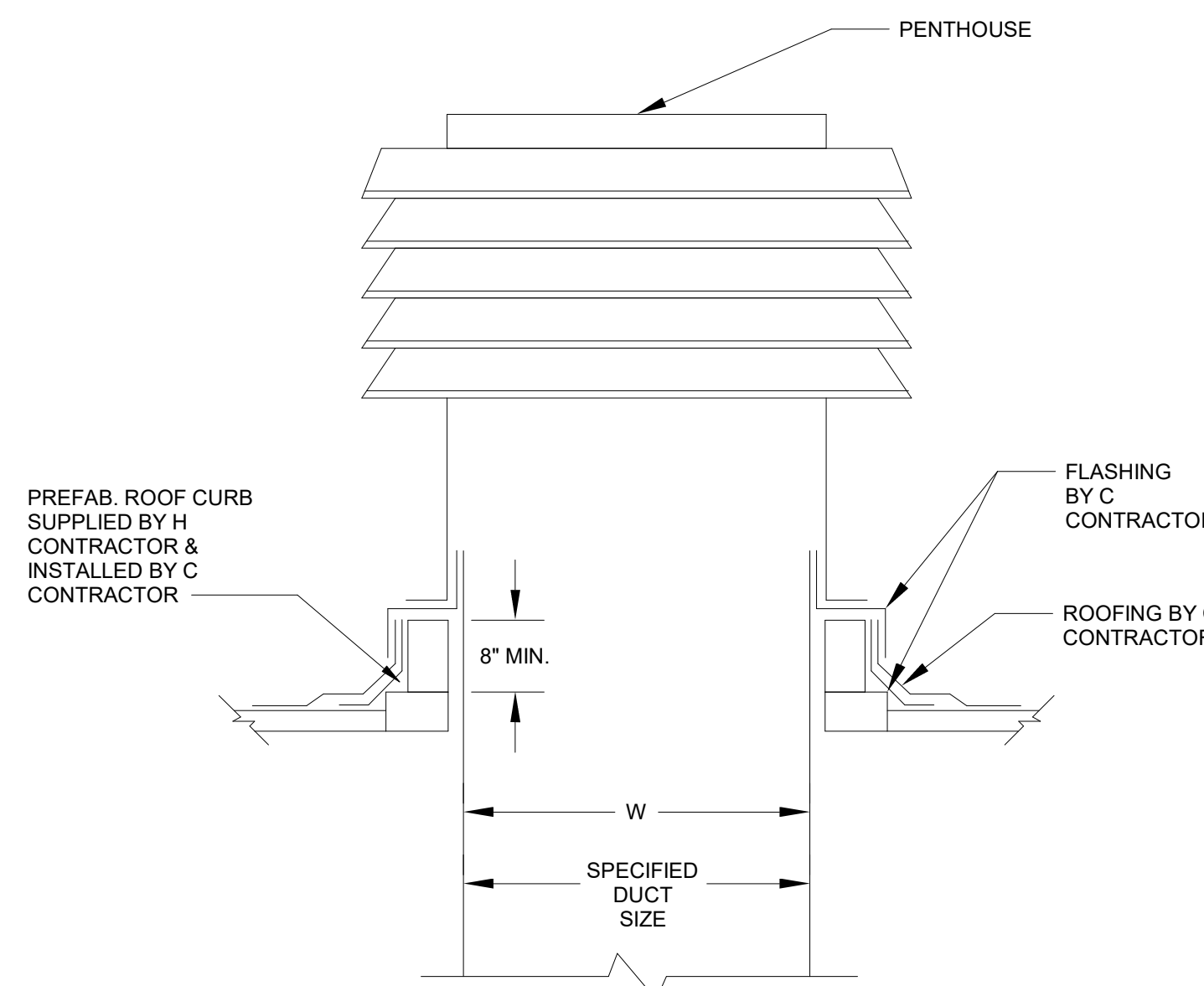
FLUID OPERATING TEMPERATURE RANGE (F)	INSULATION CONDUCTIVITY		NOMINAL PIPE DIAMETER (IN.)				
	CONDUCTIVITY (in BTU-in/h per ft ² F)	Mean Rating Temperature (F)	INSULATION THICKNESS REQUIRED (in.)				
			<1	1 TO < 1.5	1.5 TO < 4.0	4 TO < 8	8 AND LARGER
STEAM AND STEAM CONDENSATE >350	0.32-0.34	250	4.5	5.0	5.0	5.0	5.0
STEAM AND STEAM CONDENSATE <350	0.32-0.34	250	3.0	4.0	4.5	4.5	4.5
COLD CONDENSATE 40-105	0.21-0.27	75	0.5	0.5	1.0	1.0	1.0
COLD CONDENSATE <40	0.20-0.26	50	0.5	1.0	1.0	1.0	1.5



1 INLINE FAN
 M-500 NOT TO SCALE



3 PROP FAN DETAIL
 M-500 NOT TO SCALE



2 LOUVERED PENTHOUSE
 M-500 NOT TO SCALE



WARNING:
 THE ALTERATION OF THIS MATERIAL IN ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, I.E. ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT, FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS "A" MISDEMEANOR.



REGISTRATION EXPIRES: 3/31/2027

CONTRACT:	HVAC
TITLE:	REHABILITATE DISHWASHING ROOM
LOCATION:	ATTICA CORRECTIONAL FACILITY 639 EXCHANGE STREET RD ATTICA, NY 14011-9647
CLIENT:	DEPARTMENT OF CORRECTIONS AND COMMUNITY SUPERVISION

MARK	DATE	DESCRIPTION
2	2026.02.10	ADDENDUM 01
1	2025.12.05	FINAL BID SUBMISSION

PROJECT NUMBER: **M3213 - H**

DESIGNED BY: KM

DRAWN BY: MB

FIELD CHECK: GS

APPROVED: GS

SHEET TITLE:
MECHANICAL DETAILS AND SCHEDULES

DRAWING NUMBER:
M-500

SHEET 22 of 31



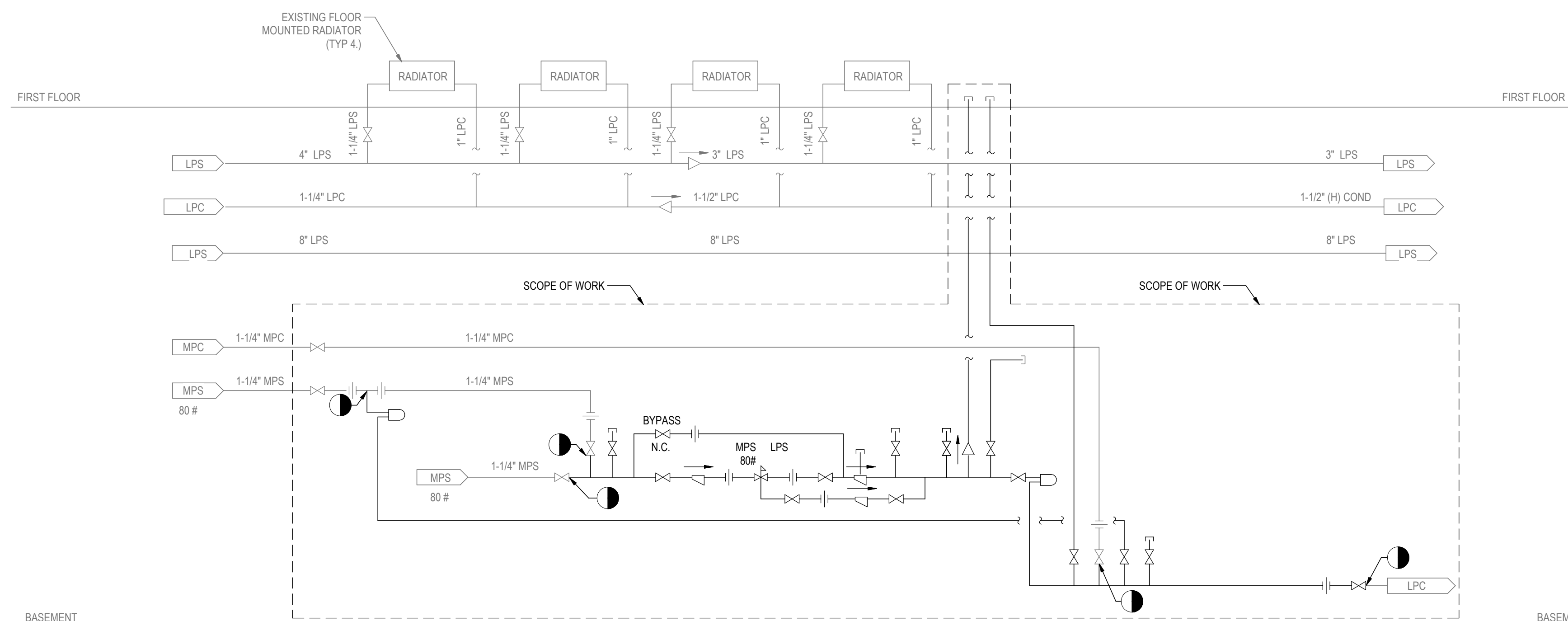
61 Commercial Street Suite 100
Rochester, NY 14614-1009
www.stantec.com

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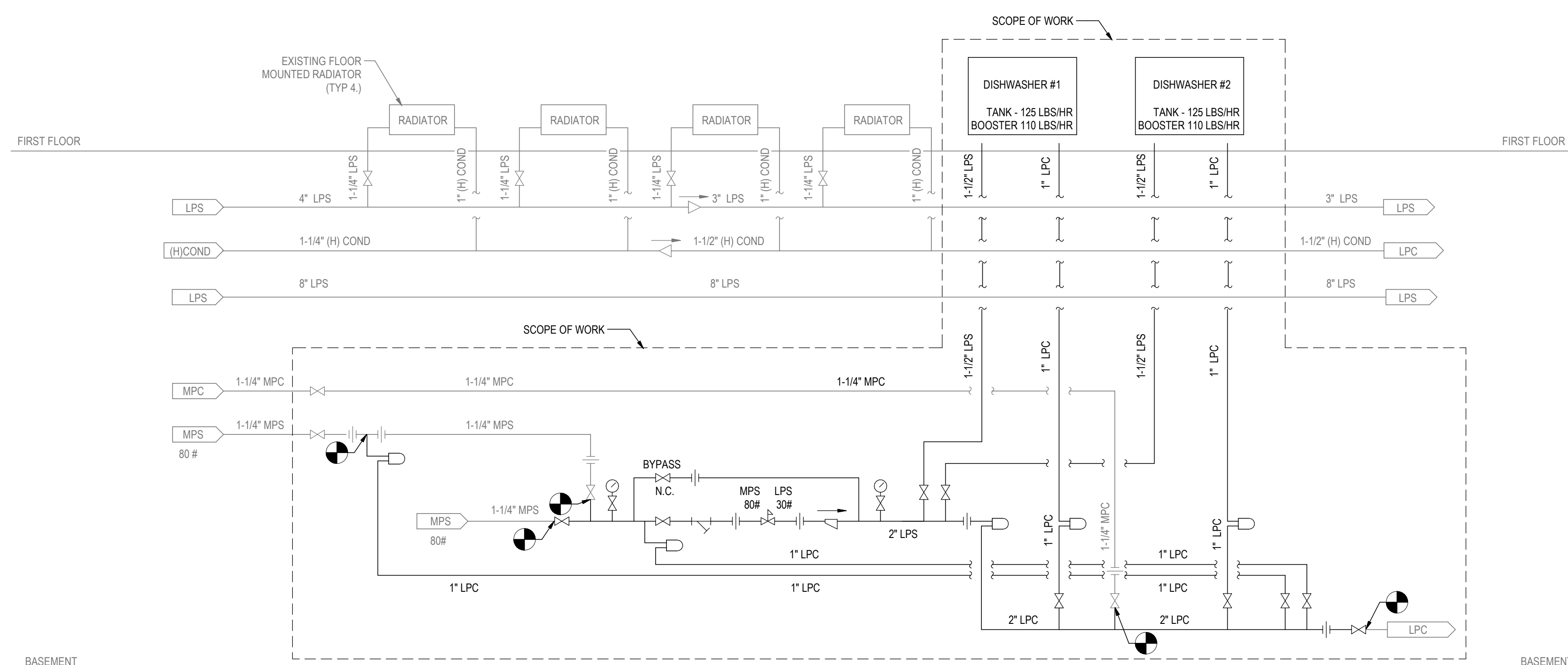


REGISTRATION EXPIRES: 3/31/2027

CONTRACT: HVAC
TITLE: REHABILITATE DISHWASHER ROOM
LOCATION: ATTICA CORRECTIONAL FACILITY
639 EXCHANGE STREET RD
ATTICA, NY 14011-9647
CLIENT: DEPARTMENT OF CORRECTIONS AND COMMUNITY SUPERVISION



1 PARTIAL STEAM FLOW DIAGRAM - REMOVALS
M-400 NO SCALE



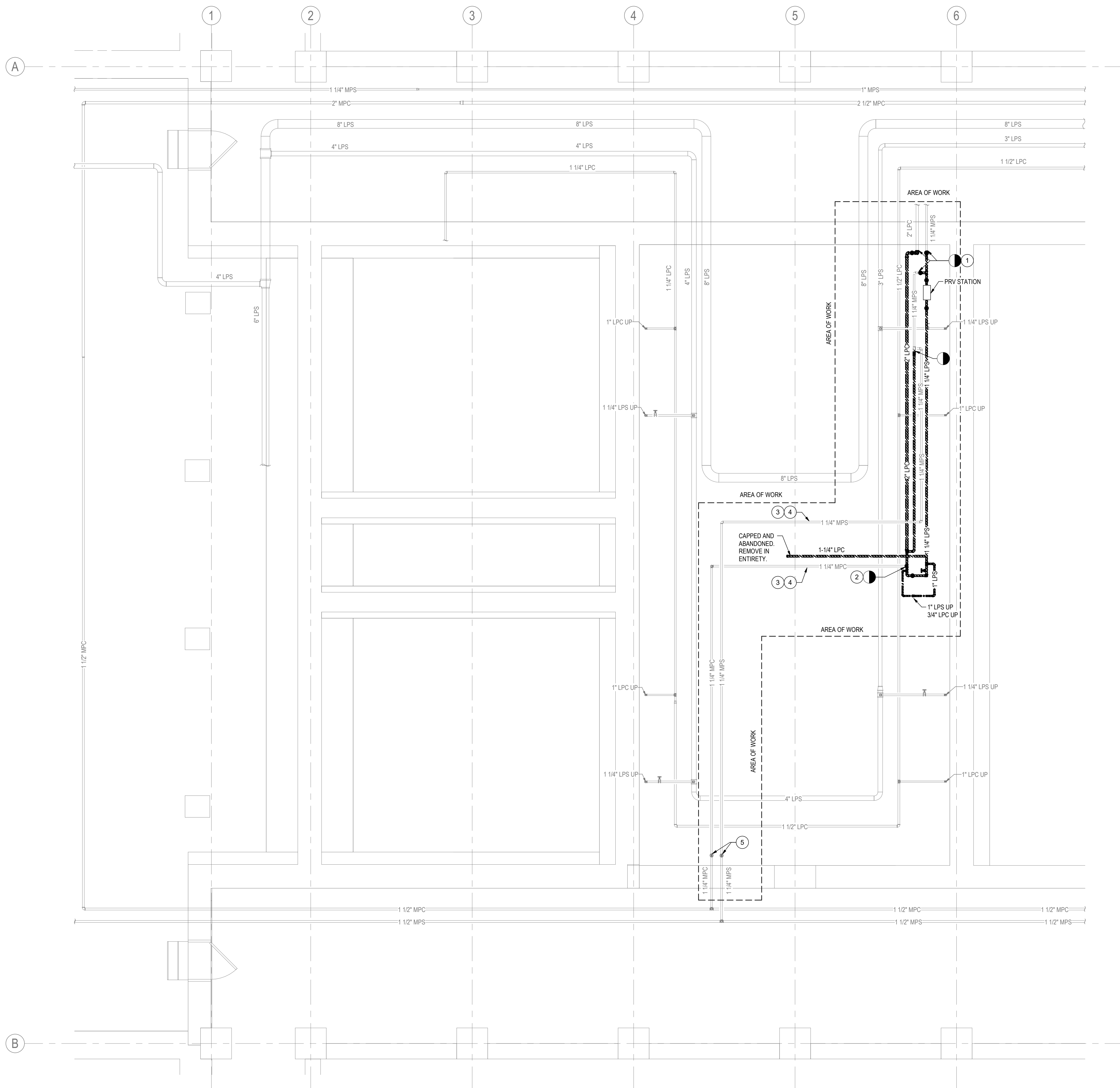
2 PARTIAL STEAM FLOW DIAGRAM - NEW WORK
M-400 NO SCALE

MARK	DATE	DESCRIPTION
2	2026.02.10	ADDENDUM 01
1	2025.12.05	FINAL BID SUBMISSION

PROJECT NUMBER: **M3213 - H**
DESIGNED BY: KM
DRAWN BY: MB
FIELD CHECK: GS
APPROVED: GS

SHEET TITLE:
MECHANICAL FLOW DIAGRAMS

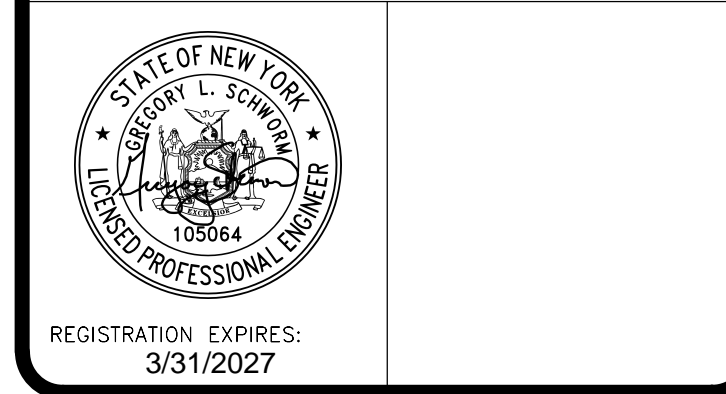
DRAWING NUMBER:
M-400



KEYNOTES

1. REMOVE EXISTING STEAM AND CONDENSATE PIPING, FITTINGS, VALVES, AND APPURTENANCES BACK TO VALVES INDICATED. TEMPORARILY CAP PIPING IN PREPARATION FOR RECONNECTION.
2. REMOVE EXISTING MEDIUM PRESSURE CONDENSATE PIPING BACK TO VALVE IN VERTICAL. EXISTING MEDIUM PRESSURE CONDENSATE TO RECONNECT UNDER NEW WORK. REFER TO DRAWING M-100. TEMPORARILY CAP PIPING IN PREPARATION FOR RECONNECTION.
3. PROVIDE A \$/LF COST TO RESUPPORT EXISTING MEDIUM PRESSURE SUPPLY AND MEDIUM PRESSURE CONDENSATE PIPING.
4. PROVIDE A \$/LF COST TO REMOVE AND RE-INSULATE EXISTING MEDIUM PRESSURE SUPPLY AND MEDIUM PRESSURE CONDENSATE PIPING.
5. MEDIUM PRESSURE SUPPLY AND CONDENSATE PIPE ISOLATION VALVES. ACTUATE TO THE CLOSED POSITION TO PERFORM WORK. ENSURE VALVES CLOSE PRIOR TO THE COMMENCEMENT OF DEMOLITION. PROVIDE COST PER VALVE TO REPLACE IN KIND IF VALVE DOES NOT HOLD.

WARNING:
THE ALTERATION OF THIS MATERIAL IN ANY WAY, UNLESS DONE UNDER THE DIRECTION OF A COMPARABLE PROFESSIONAL, I.E. ARCHITECT FOR AN ARCHITECT, ENGINEER FOR AN ENGINEER OR LANDSCAPE ARCHITECT, FOR A LANDSCAPE ARCHITECT, IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW AND/OR REGULATIONS AND IS A CLASS "A" MISDEAMOR.



CONTRACT: HVAC
TITLE: REHABILITATE DISHWASHING ROOM
LOCATION: ATTICA CORRECTIONAL FACILITY
639 EXCHANGE STREET RD
ATTICA, NY 14011-9647
CLIENT: DEPARTMENT OF CORRECTIONS AND COMMUNITY SUPERVISION

2	2026.02.10	ADDENDUM 01
1	2025.12.05	FINAL BID SUBMISSION
MARK	DATE	DESCRIPTION
PROJECT NUMBER:	M3213 - H	
DESIGNED BY:	KM	
DRAWN BY:	MB	
FIELD CHECK:	GS	
APPROVED:	GS	
SHEET TITLE:	BASEMENT MECHANICAL REMOVALS PLAN	
DRAWING NUMBER:	MD-100	
SHEET 2	OF 31	

2/11/2026 11:57:17 AM
36x24 PLOT SHEET

1 BASEMENT MECHANICAL REMOVALS PLAN
1/4" = 1'-0"

