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BuildingName
The Description of the Project
P00000000 0000

SPECIFICATION DIVISION 22

NUMBER SECTION DESCRIPTION

DIVISION 22 PLUMBING
SECTION 220500 - COMMON WORK RESULTS FOR MECHANICAL

END OF CONTENTS TABLE

DIVISION 22 PLUMBING
SECTION 220500 - COMMON WORK RESULTS FOR MECHANICAL

REVISIONS:
2012-07-24: UPDATED CODE REFERENCES AND ADDED REFERENCES TO SID-F AND DG SECTION 220500. ADDED REFERENCE TO SECTION 078413 UNDER FIRESTOPPING. REVISED 'GRINNELL' TO 'ANVIL' IN PARA'S 2.3.A.3, 2.3.B.1.AAND 2.3.C.1, REMOVED POWDER ACTUATED FASTENERS, MOVED BELT DRIVES TO SECTION 233400 FANS. B. BEGG FOR PLMG MTT.

2017-08-02: REVISED TO DELETE REFERENCES TO 2009 MECH AND PLMG CODES, AND TO PROVIDE CORRECT LINK TO U-M DG CODE PAGE. D. KARLE FOR PLMG MTT.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

INCLUDE PARAGRAPH 1.1.A AND B IN EVERY SPECIFICATION SECTION. EDIT RELATED SECTIONS 1.1.B TO MAKE IT PROJECT SPECIFIC.

A. Drawings and general provisions of the Contract, Standard General and Supplementary General Conditions, Division 1 Specification Sections, and other applicable Specification Sections including the Related Sections listed below, apply to this Section.

B. Related Sections:

1. Section 078413 - Penetration Firestopping

1.2 INTERPRETATION OF DRAWINGS:

A. The Drawings show the location and general arrangement of equipment, piping, ductwork and related items. They shall be followed as closely as elements of the construction will permit. Examine the drawings of other trades and verify the conditions governing the work on the job site. Drawings are schematic in nature, and installation may require additional offsets and modifications, including fittings, traps, valves and accessories.

B. The architectural and structural drawings take precedence in all matters pertaining to the building structure, mechanical drawings in all matters pertaining to mechanical trades and electrical drawings in all matters pertaining to electrical trades. Report conflicts or differences to the architect/ engineer for resolution.

1.3 PROJECT RECORD DOCUMENTS:

A. For underground piping, record dimensions and invert elevations of all piping, including all offsets, fittings, cathodic protection and accessories. Locate dimensions from benchmarks that will be preserved after construction is complete.

B. For fire protection systems, record actual locations of sprinkler heads, and valves and deviations of piping from drawings. Indicate drain and test locations.

1.4 DELIVERY, STORAGE AND HANDLING:

A. Deliver, store and handle all materials to keep clean and protected from damage.

B. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

C. Protect equipment and other materials from damage after installed from construction debris and other damage.

1.5 QUALITY ASSURANCE:

A. Regulatory Requirements: Comply with the following:

1. Michigan Mechanical Code.
2. Michigan Plumbing Code.
3. Applicable City of Ann Arbor rules and regulations.

B. Labeling requirement for packaged equipment:

1. Electrical panels on packaged mechanical equipment shall bear UL label or label of other approved testing agency (ETL, CSA).

C. Other referenced standards:

1. Comply with codes and regulatory agency requirements as detailed in University of Michigan Design Guideline 1.0 Codes and Regulatory Agencies (http://www.umaec.umich.edu/for-vendors/design-guidelines/1-0-codes-and-regulatory-agencies/)

PART 2 - PRODUCTS

2.1 FIRE STOPPING:

A. Provide UL classified firestopping system for mechanical penetrations through fire rated construction to maintain the fire rating. See Related Section for additional firestopping requirements, including approved manufacturers.

2.2 ACCESS PANELS:

SPEC EDITOR: COORDINATE USE OF ACCESS DOORS WITH ARCHITECT

A. Furnish access panels to access valves, traps, control valves or devices, dampers, damper motors, etc. Access panels shall be sized as necessary for ample access, or as indicated on drawings, but no smaller than 12″ x 12″ where devices are within easy reach of operator, and at least 24"x24" when operator must pass through opening in order to reach the devices. Architectural Trades shall install access panels coordinated with Mechanical Trades.

B. Access panels in fire rated walls or ceiling must be U.L. labeled for intended use. Unless otherwise indicated on plans, access doors shall be hinged flush type steel framed panel, 14 gauge minimum for frame, and with anchor straps. Only narrow border shall be exposed. Hinges shall be concealed type. Locking device shall be flush type and screw driver operated. Metal surfaces shall be prime coated with rust-inhibitive paint. Panels shall be compatible with architectural adjacent materials Manufacturer: Milcor, Bilco

2.3 BUILDING ATTACHMENTS FOR MECHANICAL WORK SUPPORTS:

SPEC EDITOR: PROJECT SPECIFIC DETAILS MUST ACCOMPANY SPECIFICATIONS.

SPEC EDITOR: SPEC TEAM IS CONTINUING TO RESEARCH BUILDING ATTACHMENTS. EDIT CAREFULLY

A. General Requirements:

1. Provide building attachments required for supporting mechanical work, suitably selected and installed for the loads applied with a minimum additional safety factor of 3.
2. Where specified attachments are not suitable for conditions, submit to Engineer for approval, proposal for alternate building attachments.
3. Approved Manufacturers: Anvil, or equivalent products by Michigan Hanger and B-Line.
4. Provide supplemental trapeze supports where necessary. Design trapeze to support all trades. Coordinate loads, and supports with all trades. Size trapeze for maximum deflection of 1/64 of the span.

B. Attachments to Structural Steel:

1. Support mechanical work from building structural steel where possible and approved. No welding or bolting to structural steel is permitted unless authorized by Architect. C-clamps are not permitted.
   a. Center beam clamp - for loads over 120 lb.: Malleable center hung Anvil Fig. 228.
   b. Side beam clamp with retaining clips - for loads up to 120 lb.

C. Cast in Place Concrete Inserts:

SPEC EDITOR: APPLICABLE FOR SUPPORTING FROM NEW CONCRETE ONLY.

1. Provide inserts selected for applied load of present load plus 100% for future, and coordinated with concrete work. Except as detailed on drawings, inserts shall be Unistrut or Grinnell. Plan, lay out and coordinate setting of inserts prior to concrete pour. Use Anvil Fig. 285 lightweight concrete insert for loads up to 400# or Anvil Fig. 281 Wedge Type concrete insert for loads up to 1200#

D. Drilled Insert Anchors:

SPEC EDITOR: APPLICABLE FOR SUPPORTING FROM NEW AND EXISTING CONCRETE. COORDINATE LOADING WITH STRUCTURAL ENGINEER. DEVELOP AND EDIT CRITERIA FOR PROJECT SPECIFIC REQUIREMENTS

1. Where mechanical work cannot be supported from structural steel, or cast in place concrete inserts, provide drilled concrete insert anchors. Submit for approval, project specific installation drawings for all loads over 100 lbs. Install inserts in web of beam if possible and approved. Insert depth shall not exceed two thirds the thickness of the concrete. Where existing concrete appears to be deteriorating, or where applied load at insert exceeds 1000 lbs., conduct test of concrete to determine derated capacity of insert. Anchors may be adhesive or expansion type up to 1000 lbs., and shall be adhesive type for loads over 1000 lbs.
   Manufacturers: Hilti, Powers Fasteners

SPEC EDITOR: POWDER ACTUATED FASTENERS HAVE BEEN REMOVED FROM THIS SPECIFICATION. IF A DESIGN REQUIRES POWDER ACTUATED FASTENERS, DESIGNER TO DEVELOP AND ADD SPECIFICATION.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Install equipment and materials in accordance with manufacturer's written and illustrated instructions, as detailed on drawings and as described in these specifications. Bring discrepancies in installation methods to the attention of the owner and A/E.

B. Install hanger rod straight, without bending.

3.2 REFRIGERANT HANDLING

A. Refrigerant Installation and Disposal: Perform all work related to refrigerant contained in chillers, cooling coils, air conditioners, and similar equipment, including related piping, in strict accordance with the following requirements:

1. ASHRAE Standard 15 and Related Revisions: Safety Code for Mechanical Refrigeration.
2. ASHRAE Standard 34 and Related Revisions: Number Designation and Safety Classification of Refrigerants.
3. United States Environmental Protection Agency (US EPA) requirements of Section 808 (Prohibition of Venting and Regulation of CFC) and applicable State and local regulations of authorities having jurisdiction.

B. To assure the proper handling of refrigerant materials, the Owner has implemented a tracking procedure for all CFC and HCFC refrigerants. When new refrigeration equipment is installed, or when refrigerant is disposed of, the "Refrigerant Disposal Form" must be completed. A copy of the form has been included with the Project Bidding Requirements and General Conditions package. Alternatively, copies may be obtained from Owner's Plant Operations Air Conditioning Shop. Contact Air Conditioning Shop Foreman at (734) 647-2041. Submit completed forms to the Owner's Representative and Air Conditioning Shop Foreman.

C. Recovered refrigerant is the property of the Contractor. Dispose of refrigerant legally, in accordance with applicable rules and regulations of authorities

END OF SECTION 220500