

## SECTION 23 05 00

### COMMON WORK RESULTS FOR HVAC

#### PART 1 - GENERAL

##### 1.01 REFERENCES

- A. American National Standards Institute (ANSI)
- B. American Society of Mechanical Engineers (ASME)
- C. National Electric Code (NEC)
- D. National Electrical Manufacturer's Association (NEMA)
- E. American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE)
- F. American Society for Testing and Materials (ASTM)
- G. National Fire Protection Association (NFPA)
- H. Underwriters Laboratories (UL)

##### 1.02 QUALITY ASSURANCE

- A. Welder Qualifications: Welding shall be performed by ASME Certified Welders with current certificate in accordance with ANSI B31.1 for shop and project site welding of piping work.

#### PART 2 - PRODUCTS

##### 2.05 DIELECTRIC PIPE FITTINGS AND ISOLATORS

- A. Manufacturers:
  - 1. Precision Plumbing Products: Clearflow dielectric waterway.
  - 2. Perfection Corporation: Dielectric Waterway.
  - 3. Victaulic.
- B. Dielectric waterways:
  - 1. Designed to meet requirements of ASTM Standard F-492.
  - 2. Capable of continuous use at 230 °F and pressures up to 300 psi.
  - 3. IAMPO/UPC listed.
- C. Dielectric fittings:
  - 1. Water-way nipples only. No dielectric unions.
  - 2. Dielectric flanges and kits are approved.

#### PART 3 - EXECUTION

##### 3.01 INSTALLATION

- A. Access Doors:
  - 1. Coordinate standard and fire rated access doors with the Architect.
  - 2. 20" by 20" minimum size or larger as required for service use on mechanical equipment.
  - 3. Locate where required for access to valves, shock absorbers, dampers, controls, mechanical equipment and appurtenances.
- B. Sleeves, Plates and Closures:
  - 1. Protection for Insulated Pipes.

- a. When insulated pipes penetrate floors which will be covered with finish flooring, provide a sheet metal protective covering around the insulation jacket.
  - b. Sheet metal shall extend above the pipe sleeve far enough to protect the insulation from bumping by polishing machines and vacuum sweepers.
  - c. Space between the pipe sleeve and the sheet metal shall be sealed.
2. Floor Sleeve Heights:
- a. Rooms with floor drains: Extend 2" above floor.
  - b. Kitchens and Mechanical Equipment Rooms: Extend 4" above floor.
  - c. Other areas where pipes are exposed: Extend 1/4" above floor finish material.
3. Seals:
- a. Where fire rated separations are penetrated by pipes or ductwork, the annular space around the pipe or ductwork shall be caulked with appropriate fire rated material.
- C. Suspension and anchorage
- 1. Use of powder actuated fasteners and toggle bolts is prohibited.
  - 2. Steel roof and floor decking, suspended ceilings, and hollow assemblies shall not be used for the attachment of anchorages or supports for suspended equipment, pipes, or other mechanical system components.
    - a. Exception: Attachment, anchorages, or supports specifically approved by a Structural Engineer.
  - 3. Equipment shall be anchored with anchors extending through the housekeeping pad or curb into the floor, except where the housekeeping pad is an extension of an inertia block separated from the floor structure.
  - 4. Specify use of retaining clips/clamps in locations where vibration may be a concern.
  - 5. Drilling, cutting or burning of, or welding to, structural members for attachment of hangers and supports is subject to prior approval by the A/E.
  - 6. Wall assemblies are not an acceptable replacement for hangers.
  - 7. Signs shall be secured to a fixed device or the building wall with corrosion-resistant chains or fasteners.
- D. Pipe Hangers, Supports and Guides
- 1. All pipe to be hung separately from structure or with trapeze hung with two hanger rods minimum.
    - a. No pipe shall be supported from another pipe. All pipe to be supported from building structure (deck, beam, joist, wall and or floor).
    - b. The use of perforated metal and/or plastic strapping, aka "holy iron" for support on any piping installation is prohibited.
  - 2. Specify hanger tolerances.
  - 3. Hangers in contact with steel, iron, cast or ductile iron shall be plated.
  - 4. Hangers in contact with copper piping shall be copper clad or have a suitable lining to prevent electrolysis.
  - 5. Hangers for hot and cold insulated pipe shall be installed around the outside of the insulation with saddles and calcium silicate inserts for 1/2" and larger.
    - a. Provide galvanized metal shields, heavy density insulation inserts, and roller support points to prevent insulation damage at these hangers.
  - 6. Plastic piping shall be supported on continuous galvanized steel trough, with clevis hangers spaced as required for metallic piping or as recommended by supplier.
  - 7. Pipes that run parallel and have similar grade or pitch may be supported on trapeze hangers with spacing determined by the smallest pipe.

8. Special pipe hanger and support provisions required for control of pipe expansion, vibration, and sound transmission shall be in accordance with Section 15240 - Mechanical Sound and Vibration Control.
  9. Gas piping installed on flat roofs shall be at code approved height supported by a MiFab model CEW/CREW wide body base support with strut and roller. Supports shall be spaced per code based on pipe diameter.
  10. Pipe hangers shall be tightened with all hangers plumb and tight against the pipe or insulation saddle with all adjustment nuts and lock nuts properly installed.
  11. If any hangers are found to be out of plumb or not adjusted properly, the Contractor shall be responsible for the cost of removal and reinstallation of the ceiling in order to inspect and correct the hanger installation.
- E. Excavating and Backfilling: Refer to Division 32 standards.
- F. Cutting and Patching: Refer to standard Section 01 73 29 Cutting and Patching.

**END OF SECTION 23 05 00**