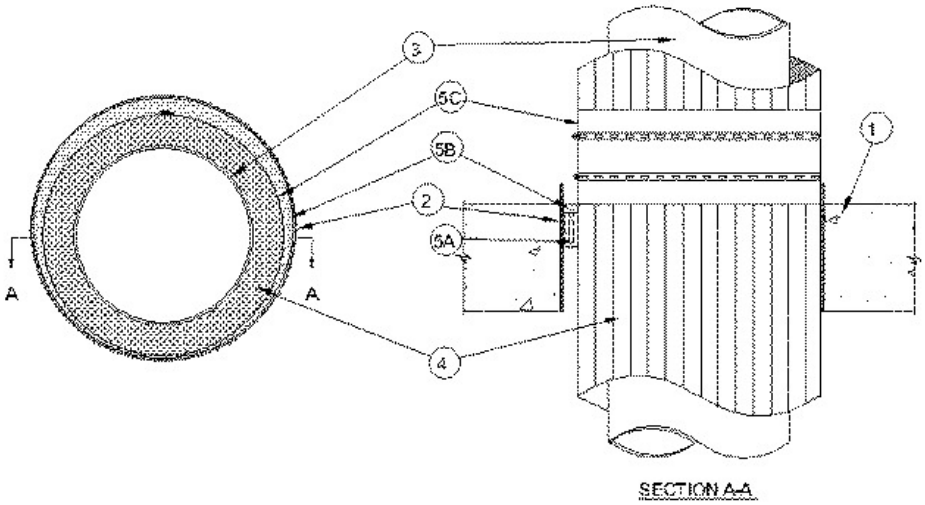
F Rating — 2 Hr
T Rating — 3/4 Hr



SECTION A-A

1. **Floor or Wall Assembly —** Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Floor assembly may also be constructed of any min 6 in. thick UL Classified hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening 28 in. Max diam of opening in floors constructed of hollow-core concrete is 7 in.

See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in Fire Resistance Directory for names of manufacturers.

2. **Steel Sleeve —** (Optional)- Nom 28 in. diam (or smaller) cylindrical sleeve formed from min 1/8 in. thick uncoated steel. Length of steel sleeve to be 1-1/2 in. greater than thickness of floor or 3 in. greater than thickness of wall. Steel sleeve to project 1-1/2 in. beyond top surface of floor or both sides of wall.

3. **Through Penetrants —** One metallic pipe or tubing to be installed concentrically or eccentrically within opening. Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes or tubes may be used:

A. **Steel Pipe —** Nom 20 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe —** Nom 20 in. diam (or smaller) cast or ductile iron pipe.

C. **Copper Tubing —** Nom 6 in. diam (or smaller) Type L (or heavier) copper tube.

D. **Copper Pipe —** Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.

4. **Pipe Covering Cellular Glass Insulation —** Nom 2 or 3 in. thick cellular glass units sized to the outside diam of the pipe and supplied in nom 24 in. long half sections or nom 18 in. long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. The annular space between pipe insulation and edge of opening shall be min 0 in. (point contact) to max 2 in.

5. **Firestop System —** The firestop system shall consist of the following:

A. **Packing Material —** Min 2 in. thickness of min 4 pcf mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material. In floors constructed of hollow-core concrete, packing material to be recessed from top and bottom surfaces of floor as required to accommodate the required thickness of fill material.

B. **Fill, Void or Cavity Materials* - Caulk —** Min 1/2 in. thickness of caulk applied within the annulus, flush with top surface of floor or with both surfaces of wall. In floors constructed of hollow-core concrete, min 1/2 in. thickness of caulk applied within the annulus, flush with top and bottom surfaces of floor.
RECTORSEAL — Metacaulk 1000

C. **Metal Jacket —** (Optional) Min 12 in. long jacket formed of min 0.010 in. thick aluminum sheet cut to wrap tightly around the pipe insulation with a min 2 in. lap and secured using stainless steel hose clamps. Hose clamps to be located within 2 in. of each end of the jacket and spaced max 8 in. OC. Jacket to be installed with edge abutting surface of caulk on top surface of floor or both surfaces of wall. Metal jacket to be used in addition to any other jacketing material which may be required or

desired on the pipe insulation.

*,+ Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.