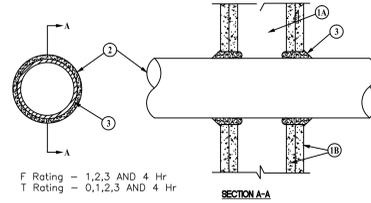


three inches = one foot  
 one and one half inches = one foot  
 one inch = one foot  
 three quarters inch = one foot  
 one half inch = one foot  
 three eighths inch = one foot  
 one quarter inch = one foot  
 one eighth inch = one foot



F Rating = 1, 2, 3 AND 4 Hr  
T Rating = 0, 1, 2, 3 AND 4 Hr

1. Wall Assembly -- The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs -- Wall framing may consist of either wood studs (max 2 hr fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1 3/8 in. deep channels spaced max 24 in. OC.

B. Gypsum Board\* -- Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in.

2. Through-Penetrant -- One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit or tubing and periphery of opening shall be min of 0 in. (point contact) to max 2 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

A. Steel Pipe -- Nom 24 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. Iron Pipe -- Nom 24 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

C. Conduit -- Nom 6 in. diam (or smaller) steel conduit or nom 4 in diam (or smaller) steel electrical metallic tubing

D. Copper Tubing -- Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing

E. Copper Pipe -- Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.

F. Through Penetrating Product\* -- Flexible Metal Piping The following types of steel flexible metal gas piping may be used:

1. Nom 2 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

2. Nom 1 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

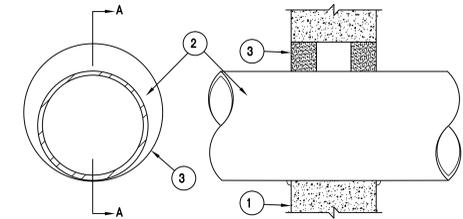
3. Nom 1 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

3. Fill, Void or Cavity Material\* -- Caulk -- Min 5/8, 1-1/4, 1-7/8 and 2-1/2 in. thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In.	Annular Space In.	F Rating Hr	T Rating Hr
1	0 to 3/16	1 or 2	0+, 1 or 2
1	1/4 to 1/2	3 or 4	3 or 4
4	0 to 1-1/2	1 or 2	1 or 2
6	1/4 to 1/2	3 or 4	3 or 4
12	3/16 to 3/8	1 or 2	0

\*Bearing the UL Classification Mark

**1**  
**E-501** SCALE NTS  
**CONDUIT PENETRATION THROUGH GYPSUM ASSEMBLY (UL #W-L-1001)**



1. WALL ASSEMBLY -- MIN 4-7/8 IN. AND 6-1/8 IN. THICK NORMAL WEIGHT OR LIGHTWEIGHT (100-150 PCF) CONCRETE FOR 1 AND 2 HR RATED ASSEMBLIES, RESPECTIVELY. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*, MAX DIAM OF OPENING IS 14-1/8 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS. THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.

2. THROUGH PENETRANTS -- ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. TO MAX 1-3/8 IN. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBINGS MAY BE USED:

A. STEEL PIPE-- THE FOLLOWING TYPES AND SIZES OF STEEL PIPES MAY BE USED:  
1A. NOM 4 IN. DIAM (OR SMALLER) SCHEDULE 7 (OR HEAVIER) STEEL PIPE.  
2A. NOM 8 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

3A. NOM 10 IN. DIAM (OR SMALLER) SCHEDULE 20 (OR HEAVIER) STEEL PIPE. WHEN STEEL PIPE IS USED, T RATING IS 1/4 HR FOR NOM 4 IN. DIAM (OR SMALLER) AND 0 HR FOR STEEL PIPES GREATER THAN NOM 4 IN. DIAM.

B. IRON PIPE -- NOM 4 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE. WHEN IRON PIPE IS USED T RATING IS 1/4 HR.

C. CONDUIT -- NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT) OR STEEL CONDUIT. WHEN EMT OR STEEL CONDUIT IS USED T RATING IS 1/4 HR.

D. COPPER TUBING -- NOM 4 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING WHEN COPPER TUBE IS USED T RATING IS 0 HR.

E. COPPER PIPE -- NOM 4 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE. WHEN COPPER PIPE IS USED T RATING IS 0 HR.

3. FILL, VOID OR CAVITY MATERIAL -- SEALANT -- MIN 5/8 IN. AND 1-1/4 IN. THICKNESS OF FILL MATERIAL FOR 1 AND 2 HR RATED WALL ASSEMBLIES, RESPECTIVELY, APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACE OF WALL. AT POINT CONTACT LOCATION BETWEEN PENETRANT AND PERIPHERY OF OPENING, A MIN 1/2 IN. DIAM BEAD OF FILL MATERIAL SHALL BE INSTALLED AT THE CONCRETE/PENETRANT INTERFACE ON BOTH SURFACES OF WALL.

PASSIVE FIRE PROTECTION PARTNERS -- 4800DW  
\*BEARING THE UL CLASSIFICATION MARK

**2**  
**E-501** SCALE NTS  
**CONDUIT PENETRATION THROUGH CONCRETE WALL (UL #W-J-1040)**

FINAL CONSTRUCTION DOCUMENTS

ARCHITECT/ENGINEERS:  <b>APOGEE</b> Consulting Group, PA Raleigh, NC Indianapolis, IN Columbia, MD www.acg-pa.com Apogee Project # 2010 185	Professional Stamp/Seal 	Drawing Title <b>ELECTRICAL DETAILS</b>	Project Title Department of Veterans Affairs Replace HVAC System Building One - TB Unit	Project Number 542-11-106	Office of Construction and Facilities Management 
		Approved Project Director	Location Coatesville, PA	Building Number Building 1	
Revisions:	Date	Date June 14th, 2011	Checked JWM		