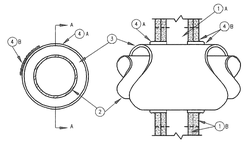
SYSTEM NO. W-L-5001
MAY 19, 2005
F RATINGS – 1 AND 2 HR (SEE ITEM 1)
T RATINGS – 1 AND 1-1/2 HR (SEE ITEM 3)
L RATING AT AMBIENT – 2 CFM PER SQ. FT.
L RATING AT 400 DEGREES FARENHEIGHT – LESS THAN 1 CFM PER SQ. FT.



1. WALL ASSEMBLY – THE 1 OR 2 HR FIRE-RATED WALLBOARD/STUD ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4" LUMBER SPACED 16 IN. OC WITH NOM 2 BY 4" LUMBER AND PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3-5/8" WIDE BY 1-3/8" DEEP CHANNELS SPACED MAX 24 IN. OC.

   B. GYPSUM BOARD* – NOM 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 SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 14-1/2 IN FOR WOOD STUD WALLS AND 18 IN. FOR STEEL STUD WALLS. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS 1 HR. WHEN INSTALLED IN A 1 HR. FIRED RATED WALL AND 2 HR. WHEN INSTALLED IN A 2 HR. FIRE RATED WALL.

2. THROUGH – PENETRANTS – ONE METALLIC PIPE OF TUBING TO BE CENTERED WITH THE FIRESTOP SYSTEM. PIPE OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBING MAY BE USED: THE FIRESTOP SYSTEM. PIPE TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.

   A. STEEL PIPE – NOMINAL 12" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

   B. COPPER TUBING – NOMINAL 6" DIAMETER (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. C. COPPER PIPE – NOMINAL 6" DIAMETER (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. PIPE COVERING* NOM 1 OR 2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE TRANSVERSE JOINTS SEALED WITH METAL FASTENERS OR WITH BUTT STRIP TYPE SUPPLIED WITH THE PRODUCT. WHEN NOM 1 IN. THICK PIPE COVERING IS USED, THE ANNULAR SPACE BETWEEN THE PIPE COVERING AND THE CIRCULAR CUTOUT IN THE GYPSUM WALLBOARD LAYERS ON EACH SIDE OF THE

SECTION A–A
WALL SHALL BE MIN 1/4 IN. TO MAX 3/8 IN. WHEN NOM 2 IN. THICK PIPE COVERING IS USED, THE ANNULAR SPACE BETWEEN THE PIPE COVERING AND THE CIRCULAR CUTOUT IN THE GYPSUM WALLBOARD LAYERS ON EACH SIDE OF THE WALL SHALL BE MIN 1/2 IN. TO MAX 3/4 IN.

SEE PIPE AND EQUIPMENT COVERING – MATERIALS (BRGU) CATEGORY IN BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS 3/4 HR. WHEN NOMINAL 1" THICK PIPE COVERING IS USED. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS 1 HR. AND 1 1/2 HR. WHEN NOMINAL 2" THICK PIPE COVERING IS USED WITH 1HR. AND 2HR. FIRE RATED WALLS, RESPECTIVELY.

4. FIRESTOP SYSTEM – INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F AND T RATINGS OF THE FIRESTOP SYSTEM ARE 1 HR WHEN INSTALLED IN A 1 HR FIRE RATED WALL. THE HOURLY R AND T RATINGS OF THE FIRESTOP SYSTEM ARE 2 HR AND 1-1/2 HR. RESPECTIVELY. WHEN USED IN A 2 HR FIRE RATED WALL ASSEMBLY. THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:

   A. FILL, VOID OR CAVITY MATERIALS* – WRAP STRIP – NOM 1/4 IN. THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2 IN. WIDE STRIPS. NOM 2 IN. WIDE STRIP TIGHTLY WRAPPED AROUND PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED. WRAP STRIP LAYER SECURELY BOUND WITH STEEL WIRE OF ALUMINUM FOIL TAPE AND SLID INTO ANNULAR SPACE APPROX. 1-1/4 IN. SUCH THAT APPROX 3/4 IN. OF THE WRAP STRIP WIDTH PROTRUDES FROM THE WALL SURFACE. ONE LAYER OF WRAP STRIP IS REQUIRED WHEN NOM 1 IN. THICK PIPE COVERING IS USED. TWO LAYERS OF WRAP STRIP ARE REQUIRED WHEN NOM 2 IN. THICK PIPE COVERING IS USED. 3M COMPANY – FS 195+

   B. FILL, VOID OR CAVITY MATERIALS* – CAULK – MIN 1/4 IN. DIAM CONTINUOUS BEAD APPLIED TO THE WRAP STRIP/WALL INTERFACE AND TO THE EXPOSED EDGE OF THE WRAP STRIP LAYER APPROX 3/4 IN. FROM THE WALL SURFACE. 3M COMPANY – CP 25WB+, IC 15WB OR FIRE DAM 150+ OR FB-3000 WT

* BEARING THE UL CLASSIFICATION MARKING.

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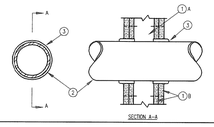
D4 UL SYSTEM # W-L-5001
NOT TO SCALE

SYSTEM NO. W-L-1001
JUNE 15, 2005
F RATINGS – 1, 2, 3 AND 4 HR (SEE ITEMS 2 AND 3)
T RATINGS – 0, 1, 2, 3 AND 4 HR (SEE ITEM 3)
L RATING AT AMBIENT – LESS THAN 1 CFM PER SQ. FT.
L RATING AT 400°F – LESS THAN 1 CFM PER SQ. FT.



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" LUMBER SPACE 16 IN. OC WITH NOM 2 BY 4". LUMBER END PLATES & CROSS BRACES. STEEL STUDS TO BE MIN 3-5/8" WIDE BY 1-3/8" DEEP CHANNELS SPACED MAX 24". OC.

   B. WALLBOARD, GYPSUM* – 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 MINIMUM OF 0" (POINT CONTACT) TO MAXIMUM 2". 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 – NOMINAL 24" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

   B. IRON PIPE – NOMINAL 24" DIAMETER (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOMINAL 12" DIAMETER (OR SMALLER) OR CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE.

   C. CONDUIT – NOMINAL 6" DIAMETER (OR SMALLER) STEEL CONDUIT OR NOMINAL 4" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.

   D. COPPER TUBING – NOMINAL 6" DIAMETER (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.

   E. COPPER PIPE – NOMINAL 6" DIAMETER (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. NOMINAL 2" DIAMETER (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.

         OMEGA FLEX, INC.

      2. NOMINAL 1" DIAMETER (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.

         TITEFLEX CORP.

         A BUNDY CO.

      3. NOMINAL 1" DIAMETER (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.

         WARD MFG, INC.

3. FILL, VOID OR CAVITY MATERIAL* – CAULK – MINIMUM 5/8". 1 1/4", 1 7/8", AND 2 1/2" THICKNESS OF CAULK FOR 1,2,3 & 4 HOUR RATED ASSEMBLIES, RESPECTIVELY, APPLIED WITHIN ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. MINIMUM 1/4" DIAMETER BEAD OF CAULK APPLIED TO GYPSUM BOARD/PENETRANT INTERFACE AT POINT OF 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	F RATING, HR.	T RATING, HR
1	1 OR 2	0+, 1 OR 2
1	3 OR 4	3 OR 4
4	1 OR 2	0
4	1 OR 2	0
6	3 OR 4	0
12	1 OR 2	0

\+ WHEN COPPER PIPE IS USED, T RATING IS 0 HR. 3M COMPANY – CP WB+ OR FB-3000 WT

* BEARING THE UL CLASSIFICATION MARK.

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D8 UL SYSTEM # W-L-1001
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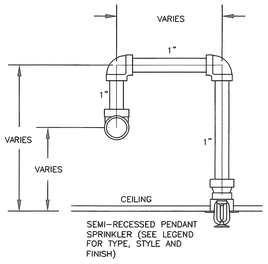
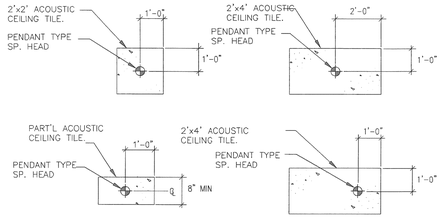
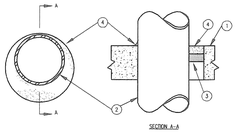


F2 SPRINKLER HEAD DETAIL
NOT TO SCALE



F4 SPRINKLER HEAD LOCATIONS
NOT TO SCALE

SYSTEM NO. C-AJ-1001
JUNE 15, 2005
F RATINGS – 3 HR
T RATINGS – 0 HR
W RATING – CLASS 1 (SEE ITEM 4)



1. FLOOR OR WALL ASSEMBLY – MIN 4-1/2 IN. THICK LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF CIRCULAR THROUGH OPENING IS 32-1/2 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

1A. STEEL SLEEVE – (OPTIONAL, NOT SHOWN) – NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE SLEEVE CAST INTO CONCRETE FLOOR OR WALL. SLEEVE TO BE FLUSH WITH OR PROJECT MAX 2 IN. FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL.

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 MINIMUM OF 0" (POINT CONTACT) TO MAXIMUM 1 3/8". 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 – NOMINAL 30" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

   A1. IRON PIPE – NOMINAL 30" DIAMETER (OR SMALLER) CAST OR DUCTILE IRON SOIL PIPE.

   B. CONDUIT – NOMINAL 6" DIAMETER (OR SMALLER) RIGID STEEL CONDUIT.

   C. CONDUIT – NOMINAL 4" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.

3. PACKING MATERIAL – POLYETHYLENE BACKER ROD OR NOM 1 IN. THICKNESS OF TIGHTLY-PACKED CERAMIC (ALUMINA SILICA) FIBER BLANKET, MINERAL WOOL BATT OR GLASS FIBER INSULATION MATERIAL USED AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF SOLID CONCRETE OR CONCRETE BLOCK WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL (ITEM 4). AS AN ALTERNATE WHEN MAX PIPE SIZE IS 10 IN. DIAM AND WHEN MAX ANNULAR SPACE IS 1 IN. , A MIN 1 IN. THICKNESS OF TIGHTLY-PACKED CERAMIC FIBER BLANKET OF MINERAL WOOL BATT PACKING MATERIAL MAY BE RECESSED MIN 1/2 IN. FROM BOTTOM SURFACE OF FLOOR OR FROM EITHER SIDE OF SOLID CONCRETE WALL.

4. FILL, VOID OR CAVITY MATERIALS* – CAULK – APPLIED TO FILL THE ANNULAR SPACE TO THE MIN THICKNESS SHOWN IN THE FOLLOWING TABLE:

MAX PIPE DIAM. IN.	MAX ANNULAR SPACE IN.	PACKING MATERIAL TYPE (A)	MIN. CAULK THICKNESS IN
10	1	BR, CF, GF OR MW	1/2 (B)
10	1	CF OR MW	1/2 (C)
20	2-1/2	BR, CF, GF OR MW	1 (B)

(A) BR= POLYETHYLENE BACKER ROD.
CF= CERAMIC FIBER BLANKET.
GF= GLASS FIBER INSULATION.
MW= MINERAL WOOL BATT

NO PIPING OR DUCTWORK SHALL BE ROUTED THROUGH ELECTRICAL AND/OR DATA ROOMS.

(B) CAULK INSTALLED FLUSH WITH TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL
(C) CAULK INSTALLED FLUSH WITH BOTTOM SURFACE OF FLOOR OR ONE SURFACE OF SOLID (NON-CONCRETE BLOCK) WALL.

3M COMPANY – TYPE CP 25WB+ OR FB-3000 WT (RATING APPLIES ONLY WHEN FB-3000 WT IS USED)

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F6 UL SYSTEM # C-AJ-1001
NOT TO SCALE

REVISION NO.	REVISION DESCRIPTION	By	Date

Revisions

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1826 Veterans Blvd.
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SEAL 6/10/2011

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Recommended Approvals:	
1. MEDICAL DIRECTOR	6. OPERATIONS SERVICE LINE MANAGER
2. ASSOCIATE DIRECTOR	7. INFECTION CONTROL SAFETY MANAGER
3. CHIEF OF STAFF	8. SAFETY MANAGER
4. ASSOC. DIRECTOR	9. GENERAL ENGINEER
5. SERVICE LINE MGRS.	10. COTR

100% SUBMITTAL

Drawing Title
FIRE PROTECTION
U.L. DETAILS

Project Title
RENOVATE 13A
FOR ENDOSCOPY SUITE

Date
June 10, 2011

Project Number
557-10-108

FULLY SPRINKLERED

Drawn | Building Number | AutoCAD File Name

Checked | Reviewed | Const. Contract No.

DRAWING No.
FP-501

Veterans Affairs