

UL/cUL SYSTEM NO. W-L-8087

MULTIPLE PENETRATIONS THROUGH GYPSUM WALL ASSEMBLY

F-RATING = 1-HR. OR 2-HR.

T-RATING = 0-HR.

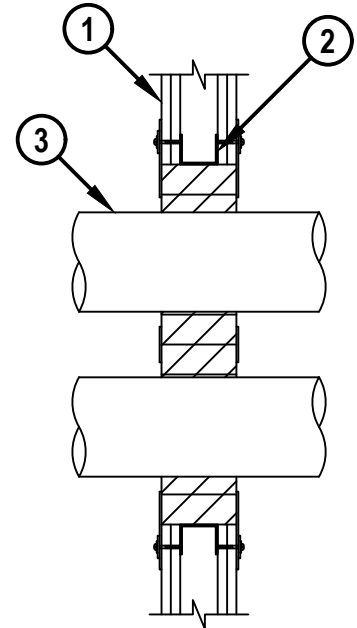
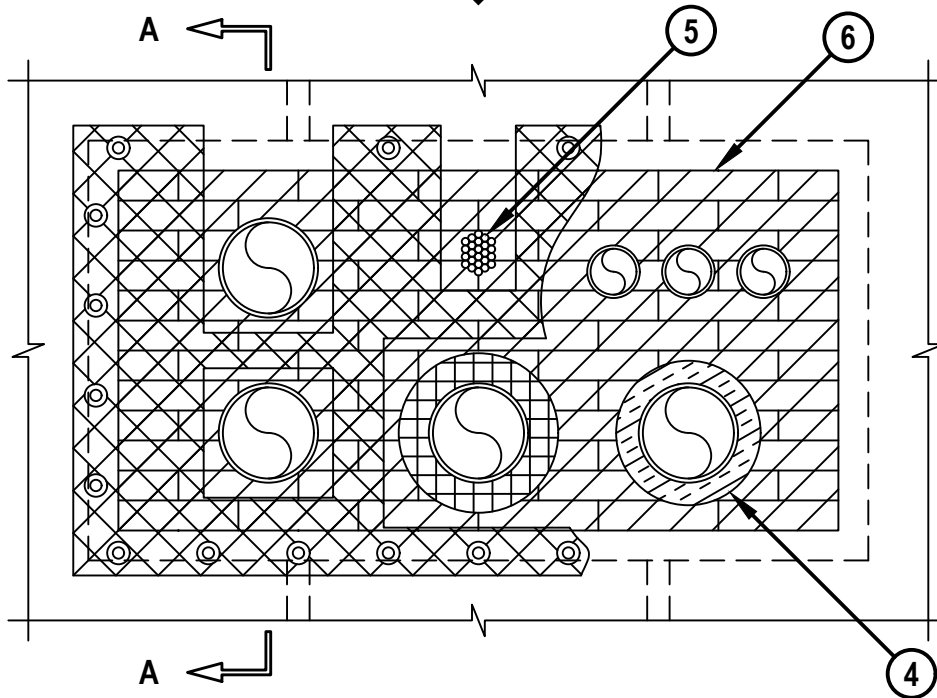
L-RATING AT AMBIENT = 5 CFM / SQ FT

L-RATING AT 400°F = 2 CFM / SQ FT

NOTE : TESTED TO A 2.5 Pa PRESSURE DIFFERENTIAL

FRONT VIEW

SECTION A-A



WL 8087h.030823

1. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U400, V400, OR W400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN) TO INCLUDE THE FOLLOWING CONSTRUCTION FEATURES :

A. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE (SPACED MAXIMUM 24" OC).

B. NOMINAL 5/8" THICK GYPSUM WALLBOARD. TYPE, NUMBER OF LAYERS, AND SHEET ORIENTATION AS SPECIFIED IN THE INDIVIDUAL UL DESIGN.

2. OPENING TO BE FRAMED OUT WITH ADDITIONAL FRAMING MEMBERS.



Hilti Firestop Systems

HILTI, Inc.
Plano, Texas USA (800) 879-8000

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Scale	5/64" = 1"
Date	Mar. 08, 2023

Drawing No.

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3. ONE OR MORE OF THE FOLLOWING PIPES, CONDUITS, OR TUBING (IN ANY COMBINATION) MAY BE INSTALLED WITHIN OPENING :
 - A. MAXIMUM 6" NOMINAL DIAMETER STEEL PIPE (SCH 5 OR HEAVIER).
 - B. MAXIMUM 6" NOMINAL DIAMETER CAST OR DUCTILE IRON PIPE.
 - C. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT OR MAXIMUM 4" NOMINAL DIAMETER EMT.
 - D. MAXIMUM 4" NOMINAL DIAMETER COPPER PIPE OR TUBING.
 - E. MAXIMUM 1" NOMINAL DIAMETER FLEXIBLE STEEL CONDUIT.
 - F. MAXIMUM 2" NOMINAL DIAMETER CPVC PLASTIC PIPE (SDR 13.5) (CLOSED PIPING SYSTEM).
 - G. MAXIMUM 2" NOMINAL DIAMETER RIGID NON-METALLIC CONDUIT (RNC) (SCH 40).
 - H. MAXIMUM 2" NOMINAL DIAMETER FIBER OPTIC RACEWAY (PVC).
4. ONE OR MORE METALLIC PENETRANTS (ITEMS 3A, 3B, AND 3D) MAY BE INSTALLED WITH THE FOLLOWING TYPES OF INSULATION :
 - A. MAXIMUM 1-1/2" THICK GLASS-FIBER PIPE INSULATION (MIN. 3.5 PCF DENSITY).
 - B. MAXIMUM 2" THICK CALCIUM SILICATE PIPE INSULATION (SEE NOTE NO. 6 BELOW).
 - C. MAXIMUM 3/4" THICK AB/PVC PIPE INSULATION (MAY BE INSTALLED ON 2" AND SMALLER PIPES).
5. MAXIMUM 3" DIAMETER CABLE BUNDLE TO CONSIST OF ANY OF THE FOLLOWING (MAX. QTY. = 8) :
 - A. MAXIMUM 750 KCMIL POWER CABLE WITH PVC JACKET.
 - B. MAXIMUM 300 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC JACKET.
 - C. MAXIMUM 24 FIBER OPTIC CABLE WITH PVC JACKET.
 - D. MAXIMUM 3/C NO. 12 AWG METAL CLAD CABLE.
 - E. MAXIMUM 7/C NO. 12 POWER CABLE WITH PVC JACKET.
 - F. RGU/59 COAXIAL CABLE WITH PVC JACKET.
 - G. MAXIMUM 4 PAIR NO. 22 AWG CAT 5 OR CAT 6 DATA CABLE.
 - H. MAXIMUM 3/C NO. 2/0 AWG COPPER CONDUCTOR PVC JACKETED ALUMINUM CLAD OR STEEL CLAD TECK 90 CABLE.
 - I. ANY CABLES, METAL-CLAD CABLES, OR ARMORED CABLES CURRENTLY LISTED UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY.
 - J. MAXIMUM 500 KCMIL SINGLE COPPER OR ALUMINUM CONDUCTOR POWER CABLE WITH THERMOPLASTIC INSULATION AND PVC JACKET.
 - K. MAXIMUM 1/2" DIAMETER MULTIPLE FIBER OPTICAL COMMUNICATION CABLES WITH PVC JACKET.
 - L. MAXIMUM 3/C NO. 12 AWG STEEL CLAD CABLE WITH COPPER CONDUCTORS AND PVC INSULATED JACKET.
 - M. MAXIMUM 4C/750 KCMIL ALUMINUM OR COPPER CONDUCTOR METAL CLAD CABLE WITH ALUMINUM OR STEEL ARMOR, WITH OR WITHOUT PVC JACKET.
6. HILTI CFS-BL FIRESTOP BLOCK (2" THICK, 8" WIDE, 5" DEEP, REFERENCE : FRONT VIEW) FIRMLY PACKED AND CENTERED WITHIN OPENING (SEE NOTE NO. 2 BELOW).

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ANNULAR SPACE	MINIMUM	MAXIMUM
BETWEEN METALLIC PIPES AND PERIPHERY OF OPENING	1"	26"
BETWEEN METALLIC PIPES	0"	26"
BETWEEN NON-METALLIC PIPES OR RIGID NON-METALLIC CONDUITS	1-1/2"	26"
BETWEEN NON-METALLIC PIPES OR CONDUITS AND PERIPHERY OF OPENING	1-1/2"	26"
BETWEEN FIBER OPTIC RACEWAY AND OTHER PENETRANTS	3-1/2"	-
BETWEEN FIBER OPTIC RACEWAY AND PERIPHERY OF OPENING	2"	26"
BETWEEN INSULATED PIPES	1-1/2"	-
BETWEEN INSULATED PIPES AND PERIPHERY OF OPENING	1"	-
BETWEEN CABLE BUNDLES	1-1/2"	26"
BETWEEN CABLE BUNDLES AND PERIPHERY OF OPENING	1-13/16"	26"

- NOTES :**
1. MAXIMUM AREA OF OPENING = 1152 SQ. IN. WITH A MAXIMUM DIMENSION OF 48".
 2. FOR WALLS CONSTRUCTED OF STEEL STUDS LARGER THAN 3-5/8", FIRESTOP BLOCKS SHOULD BE INSTALLED 8" DEEP, RECESSED UP TO A MAXIMUM 1/2" FROM OUTER WALL SURFACES.
 3. APPLY HILTI FS-ONE MAX INTUMESCENT FIRESTOP SEALANT, HILTI CP 618 FIRESTOP PUTTY STICK, HILTI CP 620 FIRE FOAM, OR HILTI CP 660 FIRESTOP FOAM INTO ANY VOID THAT MAY EXIST (AROUND PENETRANTS, INTO INTERSTICES OF CABLES, OR BETWEEN FIRESTOP BLOCKS), TO MAXIMUM EXTENT POSSIBLE. HILTI CP 618, HILTI CP 620, AND HILTI CP 660 ARE NOT SUITABLE FOR CPVC.
 4. L-RATINGS APPLY ONLY WHEN HILTI FS-ONE MAX INTUMESCENT FIRESTOP SEALANT IS USED.
 5. IF THE ANNULAR SPACE IS GREATER THAN 4", THEN ATTACH A STEEL WIRE MESH (NOMINAL 2" SQUARES, NO. 16 SWG) WITH 1/4" HILTI TOGGLER BOLTS WITH 1-1/2" DIAMETER FENDER WASHERS (SPACED MAXIMUM 8" C/C) OR ATTACHED TO STEEL STUDS WITH STEEL SCREWS AND 1-7/16" FENDER WASHERS (SPACED MAXIMUM 6" C/C) ON BOTH SIDES OF WALL OR STEEL WIRE MESH TO OVERLAP MINIMUM 3" BEYOND THE PERIPHERY OF THE OPENING. THE JOINTS WITHIN WIRE MESH SHALL OVERLAP A MINIMUM OF 2" AND BE SECURED TOGETHER BY 16 AWG STEEL WIRE SPACED 8" O.C.
 6. CALCIUM SILICATE PIPE INSULATION TO BE SECURED WITH STAINLESS STEEL BANDS OR WITH 18 AWG STAINLESS STEEL WIRE LOCATED MAXIMUM 6" FROM EACH FACE OF WALL AND SPACED 12" O.C.



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