UL/cUL SYSTEM NO. W-L-8152

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

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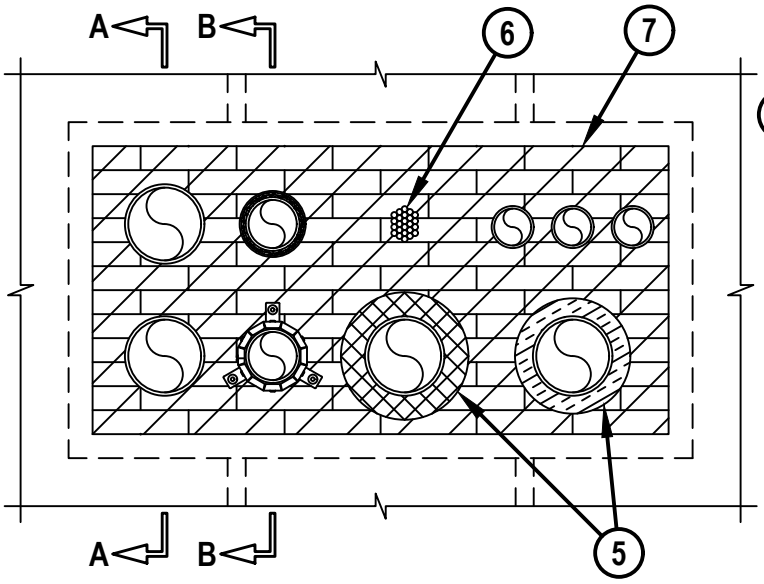
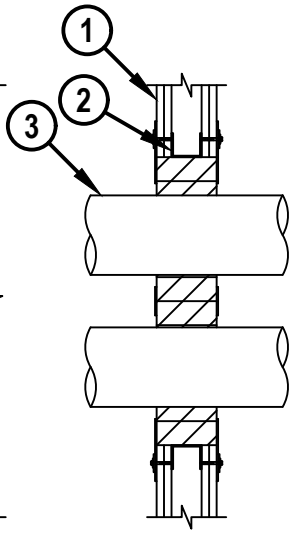
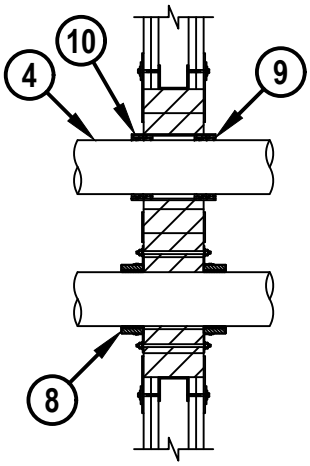
FRONT VIEW



SECTION A-A



SECTION B-B



Hilti Firestop Systems	HILTI, Inc. Plano, Texas USA (800) 879-8000	*Sheet* 1 of 4 *Scale* 1/16" = 1" *Date* Dec. 23, 2024	*Drawing No.* WL 8152a

Saving Lives through Innovation and Education

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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.

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.**
- **D. MAXIMUM 4" NOMINAL DIAMETER STEEL EMT.**
- **E. MAXIMUM 4" NOMINAL DIAMETER COPPER PIPE OR TUBING.**
- **F. MAXIMUM 1" NOMINAL DIAMETER FLEXIBLE STEEL CONDUIT.**
- **G. MAXIMUM 4" NOMINAL DIAMETER ALUMINUM PIPE (SCH. 10 OR HEAVIER) (CLOSED PIPING SYSTEM).**
- **H. MAXIMUM 4" NOMINAL DIAMETER RIGID ALUMINUM CONDUIT (CLOSED PIPING SYSTEM).**
- **I. MAXIMUM 2" NOMINAL DIAMETER ALUMINUM PIPE (SCH. 10 OR HEAVIER) (CLOSED OR VENTED PIPING SYSTEM).**
- **J. MAXIMUM 2" NOMINAL DIAMETER RIGID ALUMINUM CONDUIT (CLOSED OR VENTED PIPING SYSTEM).**

4. ONE OR MORE OF THE FOLLOWING NON-METALLIC PIPES MAY BE INSTALLED WITHIN THE OPENING :
- **A. MAXIMUM 4" NOMINAL DIAMETER CPVC PLASTIC PIPE (SDR 13.5) (CLOSED PIPING SYSTEM).**
  (NOTE : FOR PENETRANTS LARGER THAN 2", PIPE MUST BE INSTALLED WITH ITEMS 8 OR 9 AND 10)
- **B. MAXIMUM 4" NOMINAL DIAMETER RIGID NON-METALLIC CONDUIT (RNC) (SCH 40).**
  (NOTE : FOR PENETRANTS LARGER THAN 2", PIPE MUST BE INSTALLED WITH ITEMS 8 OR 9 AND 10)
- **C. MAXIMUM 2" NOMINAL DIAMETER FIBER OPTIC RACEWAY (PVC).**
- **D. MAXIMUM 4" NOMINAL DIAMETER FRPP PLASTIC PIPE (SCH 40) (CLOSED OR VENTED PIPING SYSTEM).**
  (NOTE : FOR PENETRANTS LARGER THAN 2", PIPE MUST BE INSTALLED WITH ITEMS 8 OR 9 AND 10)
- **E. MAXIMUM 4" NOMINAL DIAMETER PVC PLASTIC PIPE (SCH 40) (CLOSED OR VENTED PIPING SYSTEM).**
  (NOTE : FOR PENETRANTS LARGER THAN 2", PIPE MUST BE INSTALLED WITH ITEMS 8 OR 9 AND 10)
- **F. MAXIMUM 4" NOMINAL DIAMETER ABS PLASTIC PIPE (SCH 40) (CLOSED OR VENTED PIPING SYSTEM).**
  (NOTE : FOR PENETRANTS LARGER THAN 2", PIPE MUST BE INSTALLED WITH ITEMS 8 OR 9 AND 10)

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5. 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. 5 BELOW).
   C. MAXIMUM 3/4" THICK AB/PVC PIPE INSULATION (MAY BE INSTALLED ON 2" AND SMALLER PIPES).
6. 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.
7. HILTI CFS-BL FIRESTOP BLOCK (2" THICK x 8" WIDE x 5" DEEP, REFERENCE : FRONT VIEW) FIRMLY PACKED AND CENTERED WITHIN WALL ASSEMBLY (SEE NOTE NO. 2 BELOW). WHEN THE ANNULAR SPACE EXCEEDS 12" THE ORIENTATION OF THE FIRESTOP BLOCK SHALL BE WITH THE 8" OR 5" DIMENSION EXTENDING IN THE DIRECTION OF THE MAX ANNULAR SPACE, DEPENDING ON THE DEPTH OF FIRE BLOCK REQUIRED THROUGH THE OPENING.
8. HILTI CP 643N FIRESTOP COLLAR INSTALLED PER ACCOMPANYING INSTALLATION INSTRUCTIONS ON BOTH SIDES OF WALL. COLLARS ARE TO BE SECURED TOGETHER THROUGH THE OPENING WITH 1/4" DIAMETER THREADED STEEL ROD WITH WASHERS/BOLTS.
9. HILTI CP 648E WRAP STRIP (NOMINAL 3/16" THICK x 1-3/4" WIDE) CONTINUOUSLY WRAPPED AROUND THE OUTER CIRCUMFERENCE OF THE PIPE, COVERING TWO TIMES, WITH ENDS BUTTED AND HELD IN PLACE WITH TAPE. WRAP STRIP INSTALLED FLUSH WITH BOTH ENDS OF SHEET METAL SLEEVE (ITEM 10).
10. SHEET METAL SLEEVE (MIN. 30 GA.) HAVING A MINIMUM 2" LAP ALONG THE LONGITUDINAL SEAM. SLEEVE TO EXTEND 2" BEYOND EACH SURFACE OF WALL. THE SLEEVE SHALL BE COMPRESSED AROUND PIPE AND WRAP STRIP (ITEM 9) AND SECURED TOGETHER WITH TWO NO. 8 SHEET METAL SCREWS ON EACH END OF SLEEVE.

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ANNULAR SPACE	MINIMUM	MAXIMUM
BETWEEN METALLIC PIPES AND PERIPHERY OF OPENING	0"	22-3/4"
BETWEEN METALLIC PIPES	1"	22-3/4"
BETWEEN NON-METALLIC PIPES OR RIGID NON-METALLIC CONDUITS	1-1/2"	22-3/4"
BETWEEN NON-METALLIC PIPES OR CONDUITS AND PERIPHERY OF OPENING	1-1/2"	22-3/4"
BETWEEN FIBER OPTIC RACEWAY AND OTHER PENETRANTS	3-1/2"	22-3/4"
BETWEEN FIBER OPTIC RACEWAY AND PERIPHERY OF OPENING	2"	22-3/4"
BETWEEN INSULATED PIPES	1-1/2"	22-3/4"
BETWEEN INSULATED PIPES AND PERIPHERY OF OPENING	1"	22-3/4"
BETWEEN CABLE BUNDLES	1-1/2"	22-3/4"
BETWEEN CABLE BUNDLES AND PERIPHERY OF OPENING	1-13/16"	22-3/4"

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. FIRESTOP BLOCKS MAY BE RECESSED MAXIMUM 1/2" FROM SURFACE OF WALL.

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. 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.