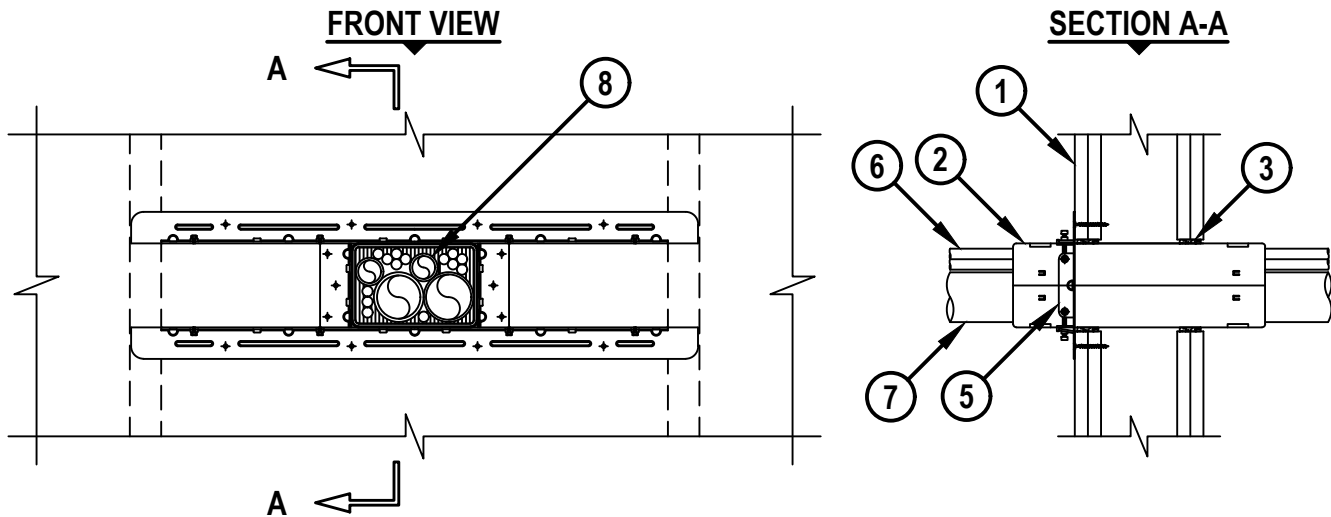


**MULTIPLE PENETRANTS THROUGH GYPSUM WALL ASSEMBLY**

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

T-RATING = 0-HR., 1-HR., OR 1-1/4-HR.

WL8153a.050825



1. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U300, U400, V400, OR W400 SERIES) (1-HR. OR 2-HR. FIRE RATING) (2-HR. SHOWN) TO INCLUDE THE FOLLOWING CONSTRUCTION FEATURES :
  - A. [NOT SHOWN] WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER (SPACED MAXIMUM 16" OC). STEEL STUDS TO BE MINIMUM 3-5/8" 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 (MINIMUM ONE LAYER OF 3/4" THICK GYPSUM WALLBOARD MAY BE USED AS SPECIFIED IN THE INDIVIDUAL UL DESIGN).
2. ONE OR MORE HILTI CFS-MSL [S, M, OR L] MODULAR SLEEVES TO BE GANGED TOGETHER WITH GANGING CLIPS AND CENTERED IN THE WALL. DEVICES TO BE SECURED IN FLANGE USING A MINIMUM EVERY OTHER SCREW HOLE IN ADJUSTABLE FLANGE (ITEM 5). WHEN SLEEVES ARE GANGED TOGETHER, SLEEVES ARE TO FORM A RECTANGULAR SHAPE.
3. HILTI CP-648E WRAP STRIP (NOMINAL 3/16" THICK x 1" WIDE) WRAPPED AROUND THE OUTER CIRCUMFERENCE OF THE CFS-MSL DEVICE(S), ONE TIME, WITH ENDS BUTTED AND HELD IN PLACE WITH TAPE. HILTI CP 648E TO BE FLUSH WITH WALL SURFACES FOR 1-HOUR WALL ASSEMBLIES, AND CENTERED OVER LAYERS OF GYPSUM BOARD ON BOTH SIDES OF THE WALL FOR TWO HOUR WALL ASSEMBLIES.



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

Sheet	1 of 2
Scale	7/64" = 1"
Date	May 08, 2025

Drawing No.

**WL**  
**8153a**

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**MULTIPLE PENETRANTS THROUGH GYPSUM WALL ASSEMBLY**

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

T-RATING = 0-HR., 1-HR., OR 1-1/4-HR.

WL8143a.092923

4. [NOT SHOWN] GASKET MATERIAL APPLIED TO BACK OF ADJUSTABLE FLANGE MATERIAL WITH INTEGRATED TAPE PRIOR TO FLANGE BEING INSTALLED TO WALL ASSEMBLY.
5. HILTI CFS-MSL GPA ADJUSTABLE FLANGE [24" x 4" OR 24" x 8"] BOLTED TOGETHER AROUND GANGED DEVICES AND SECURED TO WALL WITH 1-1/2" LONG STEEL SCREWS ALONG TOP AND BOTTOM OF HORIZONTAL FRAME MEMBERS AT MINIMUM EVERY OTHER HOLE. CORNERS OF HORIZONTAL FRAME SECURED WITH 2" LONG STEEL SCREWS INTO STUD MATERIAL.
6. CABLE BUNDLE TO BE ANY COMBINATION OF THE FOLLOWING :
  - A. MAXIMUM 100 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC JACKET AND INSULATION.
  - B. MAXIMUM 7/C NO. 12 AWG COPPER CONDUCTOR CONTROL CABLE WITH PVC OR XLPE JACKET AND INSULATION.
  - C. MAXIMUM 4/0 AWG TYPE RHH GROUND CABLE.
  - D. MAXIMUM 4 PAIR NO 23 AWG CAT 7 COMPUTER CABLE.
  - E. MAXIMUM RG 6/U COAXIAL CABLE WITH FLUORINATED ETHYLENE INSULATION AND JACKETING.
  - F. MAXIMUM 1/2" FIBER-OPTIC CABLE WITH PVC OR PE JACKET AND INSULATION.
  - G. MAXIMUM 20/C NO. 22 AWG SHIELDED PRINTER CABLE WITH PVC JACKET.
  - H. MAXIMUM 1/4" DIAMETER S-VIDEO CABLE CONSISTING OF 2 MAX 24 AWG 75 OHM COAX OR TWISTED PAIR CABLE WITH PE INSULATION AND PVC JACKET.
  - I. MAXIMUM 2/C NO. 18 AWG POWER OR NON-POWER LIMITED FIRE ALARM CABLE WITH OR WITHOUT METAL JACKET (MANUFACTURED BY AFC CABLE SYSTEMS, INC.).
  - J. MAXIMUM 3/C NO. 12 AWG METAL CLAD CABLE.
  - K. ANY CABLES, METAL-CLAD CABLES, OR ARMORED CABLES CURRENTLY LISTED UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY.
7. [OPTIONAL] ONE OR MORE OF THE FOLLOWING METALLIC PIPES MAY BE BUNDLED TOGETHER WITH THE OTHER PENETRATING ITEMS :
  - A. MAXIMUM 2" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
  - B. MAXIMUM 2" NOMINAL DIAMETER CAST OR DUCTILE IRON PIPE.
  - C. MAXIMUM 2" NOMINAL DIAMETER STEEL CONDUIT OR STEEL EMT.
  - D. MAXIMUM 3/4" NOMINAL DIAMETER FLEXIBLE STEEL CONDUIT.
8. [OPTIONAL] ONE OR MORE OF THE FOLLOWING NONMETALLIC PIPES MAY BE BUNDLED TOGETHER WITH THE OTHER PENETRATING ITEMS :
  - A. MAXIMUM 2" NOMINAL DIAMETER ENT (PVC OR HDPE).
  - B. MAXIMUM 1/2" NOMINAL DIAMETER DURA-LINE MICRODUCT.

NOTES : 1. MAXIMUM SIZE OF OPENING = 6-1/2" x 4-1/2".  
 2. ANNULAR SPACE = MINIMUM 3/16", MAXIMUM 5/16".  
 3. CABLES MAY REPRESENT 0% TO 100% VISUAL FILL OF EACH FIRESTOP DEVICE.

**Hilti Firestop Systems**

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

Sheet 2 of 2

Scale -

Date Sep. 29, 2023

Drawing No.

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