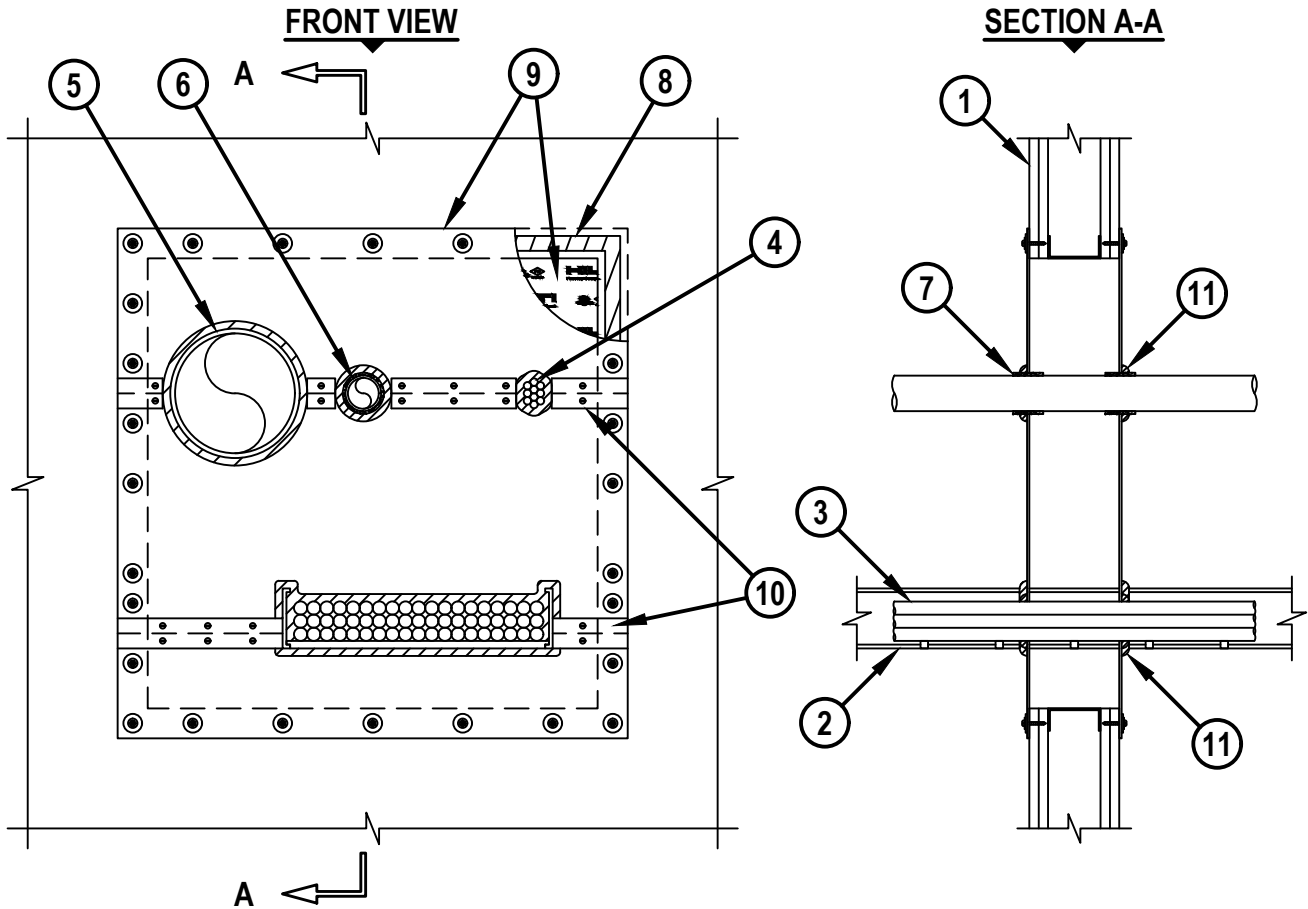


MULTIPLE PENETRATING ITEMS THROUGH GYPSUM WALL ASSEMBLY

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

T-RATING = 0-HR.

WL8105d.091922



SYSTEM TESTED WITH A PRESSURE DIFFERENTIAL OF 2.5 Pa BETWEEN THE EXPOSED AND THE UNEXPOSED SURFACES WITH THE HIGHER PRESSURE ON THE EXPOSED SIDE.

1. GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED U300, U400, OR V400 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 3-1/2" WIDE (SPACED MAXIMUM 24" OC). OPENING TO BE COMPLETELY FRAMED OUT.
 - B. NOMINAL 5/8" THICK GYPSUM WALLBOARD. TYPE, NUMBER OF LAYERS, AND SHEET ORIENTATION AS SPECIFIED IN THE INDIVIDUAL UL DESIGN.
2. MAXIMUM 18" x 4" FIBERGLASS, ALUMINUM, OR STEEL CABLE TRAY.



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Sheet	1 of 3
Scale	5/64" = 1"
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3. CABLES TO BE A COMBINATION OF ANY OF THE FOLLOWING (SEE NOTE NO. 2 BELOW) :
 - A. MAXIMUM 750 MCM POWER CABLES, THHN OR THWN JACKETED.
 - B. MAXIMUM 8/C NO. 12 AWG MULTICONDUCTOR POWER AND CONTROL CABLE.
 - C. MAXIMUM 300 PAIR NO. 24 AWG COPPER CONDUCTOR COMMUNICATION CABLE WITH PVC JACKET.
 - D. MULTIPLE FIBER OPTIC COMMUNICATION CABLE WITH PVC JACKET.
 - E. ANY MAXIMUM 2/C NO. 18 AWG METAL CLAD OR ARMORED CABLE WITH STEEL OR ALUMINUM JACKET CURRENTLY LISTED UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY.
4. MAXIMUM 4" DIAMETER CABLE BUNDLE TO BE A COMBINATION OF ANY OF THE CABLES LISTED ABOVE (ITEM 3) (SEE ITEMS 11, 12, AND 13).
5. ONE OR MORE OF THE FOLLOWING MAY BE INSTALLED WITHIN THE OPENING (ONLY ONE PIPE SHALL HAVE A NOMINAL DIAMETER GREATER THAN 4") :
 - A. MAXIMUM 8" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
 - B. MAXIMUM 8" NOMINAL DIAMETER CAST OR DUCTILE IRON PIPE.
 - C. MAXIMUM 8" NOMINAL DIAMETER STEEL ELECTRICAL METALLIC TUBING.
 - D. MAXIMUM 8" NOMINAL DIAMETER RIGID STEEL CONDUIT.
 - E. MAXIMUM 4" NOMINAL DIAMETER COPPER PIPE OR TUBING.
6. ONE OF THE FOLLOWING NON-METALLIC PIPE MAY BE INSTALLED WITHIN THE OPENING :
 - A. MAXIMUM 2" NOMINAL DIAMETER PVC PLASTIC PIPE (SCHEDULE 40) (CLOSED OR VENTED PIPING SYSTEM).
 - B. MAXIMUM 2" NOMINAL DIAMETER CPVC PLASTIC PIPE (SDR 13.5) (CLOSED PIPING SYSTEM ONLY).
 - C. MAXIMUM 2" NOMINAL DIAMETER RIGID PVC CONDUIT (SCHEDULE 40).
7. HILTI CP 648E FIRESTOP WRAP STRIP (NOMINAL 3/16" x 1-3/4" WIDE) CONTINUOUSLY WRAPPED AROUND THE OUTER CIRCUMFERENCE OF THE PIPE, COVERING ONE TIME, AND HELD IN PLACE WITH TAPE. WRAP STRIP INSTALLED TO PROJECT 1" FROM THE SURFACE OF THE COMPOSITE SHEET.
8. ONE LAYER HILTI CP 619T PUTTY ROLL OR MINIMUM 1/2" BEAD HILTI FS-ONE MAX INTUMESCENT FIRESTOP SEALANT APPLIED UNDER COMPOSITE SHEET AROUND PERIMETER OF OPENING AND OVER BUTTED SEAM OR SLIT MADE IN COMPOSITE SHEET (NOT SHOWN ON SEAM).
9. HILTI CFS-COS FIRESTOP COMPOSITE SHEET CUT TO OVERLAP WALL A MINIMUM OF 2". COMPOSITE SHEET INSTALLED WITH THE ALUMINUM FOIL FACING AGAINST THE WALL AND SECURED WITH MINIMUM 3/16" DIAMETER BY 1-1/4" LONG DRYWALL SCREWS WITH 1" DIAMETER STEEL FENDER WASHERS AT MAXIMUM 2" FROM ENDS AND MAXIMUM 6" C/C. COMPOSITE SHEET CUT TO TIGHTLY FOLLOW THE CONTOUR OF THE PENETRANTS.
10. MINIMUM 3" WIDE STAINLESS STEEL STRIP (MIN. 24 GA.) CENTERED OVER ENTIRE LENGTH OF BUTT SEAM OR SLIT MADE IN THE COMPOSITE SHEET. COVER STRIP SECURED TO COMPOSITE SHEET WITH STEEL SHEET METAL SCREWS OR STEEL RIVETS SPACED MAXIMUM 3" C/C ON EACH SIDE OF SEAM OR SLIT.



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11. MINIMUM 1/2" BEAD HILTI FS-ONE MAX INTUMESCENT FIRESTOP SEALANT APPLIED AROUND THE PENETRANTS/WRAP STRIP AT THE EGRESS FROM THE COMPOSITE SHEET ON BOTH SIDES OF WALL ASSEMBLY.
12. [NOT SHOWN] HILTI CFS-CC 4" FIRESTOP CABLE COLLAR FOR USE WITH ALL CABLE BUNDLES GREATER THAN 2" DIAMETER. CABLE COLLAR ATTACHED TO OUTER SURFACE OF COMPOSITE SHEET ON BOTH SIDES OF THE WALL WITH 3/4" LONG SHEET METAL SCREWS AND 3/4" WASHER THROUGH EACH TAB OF DEVICE. FOR OPENINGS IN COMPOSITE SHEET WITH CABLES, PLUG WITHIN COLLAR CUT TO TIGHTLY FIT AROUND CABLE BUNDLE.
13. [NOT SHOWN] HILTI CP 653 BA [2" OR 4"], CENTERED WITHIN WALL, MAY BE USED AS AN ALTERNATIVE TO ITEM 12 FOR USE WITH ALL CABLE BUNDLES GREATER THAN 2" DIAMETER. MAXIMUM DIAMETER OF OPENING IN COMPOSITE SHEET FOR SPEED SLEEVE IS 3" FOR 2" DEVICE AND 4-1/2" FOR 4" DEVICE. SECURE DEVICES FLANGES TO OUTER SURFACE OF COMPOSITE SHEET ON BOTH SIDES OF THE WALL WITH TWO NO. 8 SELF-TAPPING SCREWS THROUGH PRE-MADE HOLES IN FLANGE.

ANNULAR SPACE	MINIMUM	MAXIMUM
BETWEEN CABLE TRAY AND PERIPHERY OF OPENING	1"	10" TO SIDE PERIPHERY
BETWEEN CABLE BUNDLE AND PERIPHERY OF OPENING	8"	-
BETWEEN METALLIC PIPES, CONDUITS, OR TUBING	1"	-
BETWEEN METALLIC PIPES, CONDUITS, OR TUBING AND PERIPHERY OF OPENING	1"	-
BETWEEN NON-METALLIC PIPES OR CONDUITS AND PERIPHERY OF OPENING	1"	-
BETWEEN NON-METALLIC PIPES OR CONDUITS AND OTHER PENETRANTS	6"	-

NOTES : 1. MAXIMUM SIZE OF OPENING = 30" x 30".
 2. MAXIMUM AREA OF CABLES SHALL BE 40% OF THE CROSS-SECTIONAL AREA OF THE CABLE TRAY BASED ON A MAXIMUM 3" CABLE LOADING DEPTH WITHIN TRAY.



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