

# MULTIPLE PENETRANTS THROUGH CONCRETE FLOOR/WALL OR BLOCK WALL

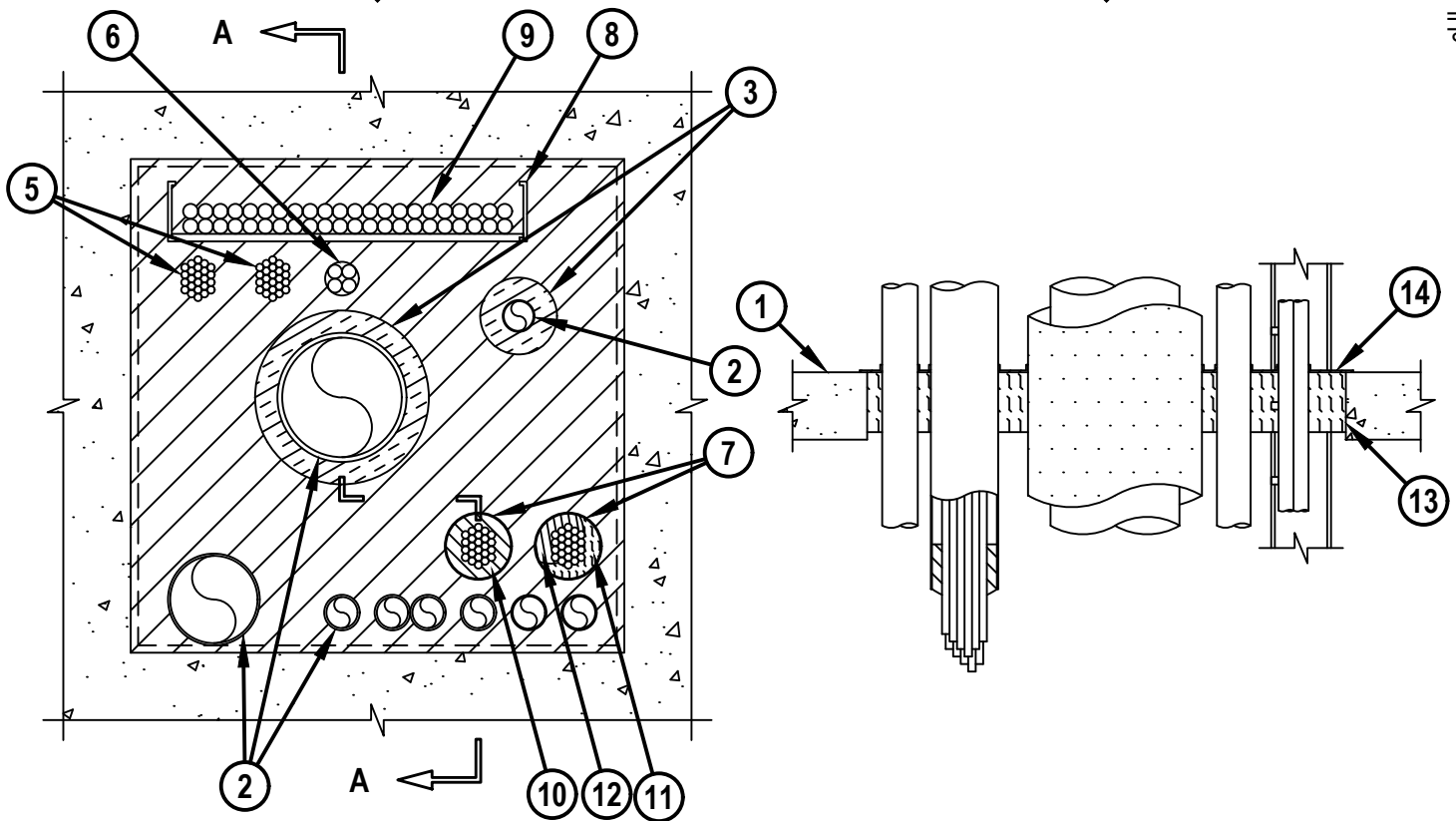
F-RATING = 2-HR.

FT-RATING = 0-HR., 1/4-HR., 1/2-HR., OR 1-HR.

FH AND FTH-RATINGS = 0-HR.

TOP VIEW

SECTION A-A



## 1. CONCRETE FLOOR OR WALL ASSEMBLY (2-HR. FIRE-RATING) :

- A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 4-1/2" THICK).
- B. ANY UL/cUL CLASSIFIED CONCRETE BLOCK WALL.

## 2. ONE OR MORE OF THE FOLLOWING PENETRATING ITEMS (ITEMS 2-7) MAY BE INSTALLED WITHIN OPENING AND IN ANY COMBINATION :

- A. MAXIMUM 24" NOMINAL DIAMETER STEEL PIPE.
- B. MAXIMUM 24" NOMINAL DIAMETER CAST OR DUCTILE IRON PIPE.
- C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE OR TUBING.
- D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
- E. MAXIMUM 4" NOMINAL DIAMETER EMT.
- F. MAXIMUM 2" NOMINAL DIAMETER FLEXIBLE STEEL CONDUIT.



Hilti Firestop Systems

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

Sheet	1 of 3
Scale	5/64" = 1"
Date	Feb. 17, 2017

Drawing No.

**cUL**  
**CAJ8014e**

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3. [OPTIONAL] ANY OR ALL STEEL OR IRON PIPES (8" OR SMALLER) OR COPPER PIPES (2" AND SMALLER) MAY BE INSTALLED WITH MAXIMUM 1-1/2" THICK GLASS-FIBER PIPE INSULATION.
4. [NOT SHOWN] METAL JACKET INSTALLED ON ALL INSULATED COPPER PIPES. MINIMUM 6" LONG JACKET OF MINIMUM 0.013" THICK STEEL SHEET METAL HAVING A MINIMUM 2" OVERLAP AT LONGITUDINAL SEAM AND SECURED USING MINIMUM 1/2" WIDE STAINLESS STEEL HOSE CLAMP AT CENTER OF JACKET. THE BOTTOM EDGE OF JACKET TO EXTEND MINIMUM 1" BELOW TOP SURFACE AT FLOOR ASSEMBLY AND MINIMUM 5" ABOVE TOP SURFACE OF FLOOR ASSEMBLY.
5. MAXIMUM 3" NOMINAL DIAMETER CABLE BUNDLE TO CONSIST OF ANY OF THE FOLLOWING :
  - A. MAXIMUM 500 KCMIL SINGLE COPPER OR ALUMINUM CONDUCTOR POWER CABLE WITH PVC JACKET.
  - B. MAXIMUM 300 PAIR NO. 24 AWG TELEPHONE CABLE WITH PVC JACKET.
  - C. MAXIMUM 7/C NO. 12 AWG POWER CABLE WITH PVC JACKET.
  - D. MAXIMUM 1/2" DIAMETER FIBER OPTIC CABLE WITH PVC JACKET.
  - E. MAXIMUM 3/C NO. 12 AWG STEEL CLAD CABLE.
6. MAXIMUM 4/C NO. 500 KCMIL ALUMINUM OR COPPER CONDUCTOR CLADDED CABLE.
7. MAXIMUM 4" NOMINAL DIAMETER EMT SLEEVE EXTENDING MINIMUM 10" TO MAXIMUM 12" BEYOND BOTH SURFACE OF FLOOR OR WALL, WITH MAXIMUM 3" CABLE BUNDLE (ITEM NO. 5), AND TO BE RIGIDLY SUPPORTED ON TOP SIDE OF FLOOR OR BOTH SIDES OF WALL ASSEMBLY.
8. MAXIMUM 24" x 4" ALUMINUM OR STEEL OPEN LADDER CABLE TRAY (MAX. QTY. = 1).
9. ANY COMBINATION OF THE FOLLOWING CABLES MAY BE USED WITHIN CABLE TRAY :
  - A. MAXIMUM 300 PAIR NO. 24 AWG TELEPHONE CABLE.
  - B. MAXIMUM 3/C NO. 12 AWG METAL CLAD CABLE.
  - C. MAXIMUM 3/C (+GROUND) NO. 2 AWG METAL CLAD TEK CABLE WITH PVC OR PE JACKET.
10. HILTI CFS-PL FIRESTOP PLUG OR HILTI CP 658T FIRESTOP PLUG CUT TO FIT AROUND CABLE BUNDLE AND INSTALLED TIGHTLY WITHIN SLEEVE (ITEM NO. 7) SUCH THAT THE OUTER CIRCUMFERENCE OF THE DOME SHAPED PLUG IS FLUSH WITH THE BOTTOM SURFACE OF SLEEVE IN FLOORS, OR BOTH SURFACES IN WALLS (SEE NOTE NO. 3 BELOW).
11. MINIMUM 2" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED AND RECESSED TO ACCOMMODATE SEALANT, FLUSH WITH TOP SURFACE OF SLEEVE (ITEM NO. 7) WITHIN FLOORS, OR BOTH SURFACES IN WALLS.
12. MINIMUM 1/2" DEPTH HILTI FS-ONE MAX INTUMESCENT FIRESTOP SEALANT FLUSH WITH TOP OF SLEEVE IN FLOOR ASSEMBLY OR BOTH SIDES OF WALL ASSEMBLY.
13. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED FLUSH WITH TOP SURFACE OF FLOOR, OR BOTH SURFACES OF WALL.
14. MINIMUM 1/8" (WET) THICKNESS HILTI CFS-SP WB FIRESTOP JOINT SPRAY TO COMPLETELY COVER MINERAL WOOL AND OVERLAP MINIMUM 1/2" ONTO PENETRATING ITEMS AND CONCRETE FLOOR.

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ANNULAR SPACE	MINIMUM	MAXIMUM
BETWEEN METALLIC PENETRANTS (2" AND SMALLER)	0"	13"
BETWEEN METALLIC PENETRANTS (GREATER THAN 2")	3"	13"
BETWEEN METALLIC PENETRANTS AND PERIPHERY OF OPENING	0"	13"
BETWEEN CABLE BUNDLES	3"	13"
BETWEEN CABLE BUNDLES AND OTHER PENETRANTS	3"	13"
BETWEEN CABLE BUNDLES AND PERIPHERY OF OPENING	1"	13"
AROUND CABLE BUNDLE WITHIN SLEEVE	1/2"	3/4"
BETWEEN INDIVIDUAL CABLES AND BETWEEN INDIVIDUAL CABLES AND OTHER PENETRANTS	3"	13"
BETWEEN INDIVIDUAL CABLES AND PERIPHERY OF OPENING	1"	13"
BETWEEN CABLE TRAY AND CABLE BUNDLES	3"	13"
BETWEEN CABLE TRAY AND SLEEVE (METAL JACKET) INSULATED PENETRANTS	1"	13"
BETWEEN CABLE TRAY AND INSULATED PENETRANTS	5"	13"
BETWEEN CABLE TRAY AND PERIPHERY OF OPENING	1-1/2"	13"
BETWEEN INSULATED PENETRANTS	3"	13"
BETWEEN INSULATED PENETRANTS AND PERIPHERY OF OPENING	4"	13"
BETWEEN INSULATED PENETRANTS WITH METAL JACKET	3"	13"
BETWEEN INSULATED PENETRANTS WITH METAL JACKET AND PERIPHERY OF OPENING	1/2"	13"
BETWEEN EMT SLEEVES	3/4"	13"
BETWEEN EMT SLEEVE AND OTHER PENETRANTS	2"	13"
BETWEEN EMT SLEEVE AND PERIPHERY OF OPENING	1/2"	13"

- NOTES :
1. MAXIMUM AREA OF OPENING IS 1024 SQ. IN. WITH A MAXIMUM DIMENSION OF 32".
  2. CABLES TO FILL A MAXIMUM 45% CROSS-SECTIONAL AREA OF CABLE TRAY AND/OR A MAXIMUM 3" LOADING DEPTH.
  3. WHEN HILTI CFS-PL FIRESTOP PLUG OR HILTI CP 658T FIRESTOP PLUG IS USED WITHIN SLEEVES, SLEEVE IS TO EXTEND A NOMINAL 10" BEYOND BOTTOM SURFACE OF FLOOR OR BOTH SURFACES OF WALL.
  4. HILTI CFS-SP WB FIRESTOP JOINT SPRAY IS REQUIRED ON BOTH SIDES OF A WALL ASSEMBLY.

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