



May 15, 2020



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Project: 1928.00
CADD File: CODE
Drawn By: SGS
Checked By: GA

Permit Release:
May 15, 2020
Construction Release Set:
May 15, 2020

Revisions
No. Date Description

ASI / RFI Revisions
No. Date Description

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Borough 33
an Apartment Community by
33 Broad MF, LLC
in Chattanooga, Tennessee

Drawing Title:
Rated Assemblies
Penetrations

A0.2d

ISSUED FOR CONSTRUCTION

UL/cUL SYSTEM NO. W-J-1202
MULTIPLE METALLIC PIPES THROUGH CONCRETE OR BLOCK WALL ASSEMBLY
F-RATING = 2-HR.
T-RATING = 1/4-HR.

1. CONCRETE WALL ASSEMBLY (2-HR. FIRE-RATING):
A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL (MINIMUM 6" THICK).
B. ANY UL/cUL CLASSIFIED CONCRETE BLOCK WALL.
2. ONE OR MORE OF THE FOLLOWING PENETRATING DEVICES TO BE INSTALLED IN A SINGLE ROW:
A. MAXIMUM 4" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 40 OR HEAVIER).
B. MAXIMUM 4" NOMINAL DIAMETER STEEL CONDUIT.
C. MAXIMUM 4" NOMINAL DIAMETER ENT.
3. MINIMUM 5/8" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
4. MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES: 1. MAXIMUM SIZE OF OPENING = 23" x 5".
2. ANNUAL SPACE BETWEEN PENETRANTS AND PERIPHERY OF OPENING = MINIMUM 0", MAXIMUM 1".
3. ANNUAL SPACE BETWEEN PENETRANTS = MINIMUM 0", MAXIMUM 1-1/2".

HILTI HILTI, Inc. Sheet 1 of 1 Drawing No. WJ 1202a
HBO Firestop Systems Tulsa, Oklahoma USA (918) 252-6000 Scale 1/8" = 1" Date Sep. 14, 2006

UL SYSTEM NO. W-J-1221
FLEXIBLE STEEL CONDUITS THROUGH CONCRETE WALL OR BLOCK WALL ASSEMBLY
F-RATING = 2-HR.
T-RATING = 1 1/2-HR.

1. CONCRETE WALL ASSEMBLY (2-HR. FIRE-RATING):
A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL (MINIMUM 6" THICK).
B. ANY UL/cUL CLASSIFIED CONCRETE BLOCK WALL.
2. MAXIMUM 1" NOMINAL DIAMETER FLEXIBLE STEEL CONDUIT (MAX. QTY. = 6).
3. MINIMUM 5/8" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
4. MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 1 1/2".
2. ANNUAL SPACE BETWEEN PENETRANTS = MINIMUM 0", MAXIMUM 3".

HILTI HILTI, Inc. Sheet 1 of 1 Drawing No. WJ 1221a
HBO Firestop Systems Tulsa, Oklahoma USA (918) 252-6000 Scale 5/32" = 1" Date Mar. 24, 2011

UL SYSTEM NO. F-C-2263
CLOSET FLANGE IN WOOD FLOOR/CEILING ASSEMBLY
F-RATING = 1-HR.
T-RATING = 1-HR.

1. WOOD FLOOR/CEILING ASSEMBLY (UL CLASSIFIED L500 SERIES) (1-HR. FIRE-RATING).
2. 2" x 2" SHIP-LAP STUDS (1-5/8" WIDE x 2-1/2" DEEP) (MIN. 25 GA.) SPACED MAXIMUM 24" O.C.
3. OR 2" x 2" SHIP-LAP STUDS (1-5/8" WIDE x 2-1/2" DEEP) (MIN. 25 GA.) SPACED MAXIMUM 24" O.C.
4. OR 2" x 2" SHIP-LAP STUDS (1-5/8" WIDE x 2-1/2" DEEP) (MIN. 25 GA.) SPACED MAXIMUM 24" O.C.

NOTES: 1. MAXIMUM DIAMETER OF OPENING TO BE MAXIMUM 1/2" LARGER THAN OUTSIDE DIAMETER OF CLOSET FLANGE.

HILTI HILTI, Inc. Sheet 1 of 1 Drawing No. FC 2263c
HBO Firestop Systems Tulsa, Oklahoma USA (918) 252-6000 Scale 5/32" = 1" Date Apr. 23, 2009

UL SYSTEM NO. F-C-2262
PLASTIC PIPE THROUGH WOOD FLOOR/CEILING ASSEMBLY
F-RATING = 1-HR.
T-RATING = 1-HR.

1. WOOD FLOOR/CEILING ASSEMBLY (UL CLASSIFIED L500 SERIES) (1-HR. FIRE-RATING).
2. LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD, OR FLOOR TOPPING MIXTURE.
3. MAXIMUM 1-1/2" NOMINAL DIAMETER PVC OR ABS PLASTIC PIPE (SCHEDULE 40) AND DRAIN FITTINGS CEMENTED TOGETHER WITH PVC OR ABS BATHING WASTE/OVERFLOW FITTINGS.
4. 3/4" THICK PLYWOOD PATCH SIZED TO OVERLAP MINIMUM 2" BEYOND EACH EDGE OF RECTANGULAR OPENING. TWO PIECES POSITIONED AROUND DRAIN PIPING WITH CUT EDGES THICKLY BUTTED, AND SCREW ATTACHED TO UNDERSIDE OF SUBFLOOR WITH 1-1/4" LONG STEEL SCREWS (SPACED MAXIMUM 6" O.C.). (SEE NOTE NO. 3 BELOW).
5. MINIMUM 5/8" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
6. MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

NOTES: 1. MAXIMUM SIZE OF OPENING = 12" x 8".
2. ANNUAL SPACE BETWEEN DRAIN PIPING AND PATCH = MINIMUM 0", MAXIMUM 1".
3. AS AN ALTERNATE TO PLYWOOD, 5/8" THICK GYPSUM WALL BOARD MAY BE USED.

HILTI HILTI, Inc. Sheet 1 of 1 Drawing No. FC 2262b
HBO Firestop Systems Tulsa, Oklahoma USA (918) 252-6000 Scale 1/8" = 1" Date Sep. 17, 2003

UL SYSTEM NO. F-C-2389
PLASTIC PIPE THROUGH WOOD FLOOR/CEILING ASSEMBLY
F-RATING = 1-HR.
T-RATING = 3/4-HR. OR 1-HR.

1. WOOD FLOOR/CEILING ASSEMBLY (UL CLASSIFIED L500 SERIES) (1-HR. FIRE-RATING).
2. GYPSUM WALL ASSEMBLY TO INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
A. MAXIMUM 2 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
B. MAXIMUM 2 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
3. MAXIMUM 2 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
4. MINIMUM 3/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT FLUSH WITH TOP SURFACE OF FLOOR OR TOP SURFACE OF SOLE PLATE.
5. MINIMUM 3/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT FLUSH WITH BOTTOM SURFACE OF LOWER TOP PLATE.
6. MINIMUM 1/2" BEAD HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT APPLIED AT POINT OF CONTACT.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 4".
2. ANNUAL SPACE = MINIMUM 0", MAXIMUM 5/8".
3. CLOSED OR VENTED PIPING SYSTEM (PVC, ABS = SCHEDULE 40; CPVC = SDR 13.5).
4. WHEN LUMBER PLATES ARE DISCONTINUOUS, ATTACH MINIMUM 1-1/2" WIDE STEEL STRIP (MIN. 20 GA.) AT SOLE PLATE AND MINIMUM 3" WIDE STEEL STRIP AT TOP PLATES TO BRIDGE OPENING. STRIPS TO OVERLAP PLATES MINIMUM 2" ON EACH SIDE OF OPENING AND SECURED WITH MINIMUM OF 2 NAILS OR SCREWS ON EACH SIDE.
5. F-RATING IS 3/4-HR. WHEN PVC OR CPVC PIPE IS USED AND 1-HR. WHEN ABS PIPE OR ENT IS USED.

HILTI HILTI, Inc. Sheet 1 of 1 Drawing No. FC 2389c
HBO Firestop Systems Tulsa, Oklahoma USA (918) 252-6000 Scale 3/32" = 1" Date Aug. 16, 2011

UL SYSTEM NO. F-C-3012
CABLE/BUNDLE BUNDLE THROUGH WOOD FLOOR/CEILING ASSEMBLY
F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR., 1-HR., OR 1-3/4-HR.

1. WOOD FLOOR/CEILING ASSEMBLY (UL/cUL CLASSIFIED L500 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OF LUMBER, PLYWOOD, OR FLOOR TOPPING MIXTURE.
3. (OPTIONAL) GYPSUM WALL ASSEMBLY (UL/cUL CLASSIFIED L500 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN) CONSISTING OF NOMINAL 2" x 6" OR PARALLEL 2" x 4" LUMBER PLATES AND STUDS.
4. CABLE BUNDLE MAY CONSIST OF ANY OF THE FOLLOWING:
A. RG 59 COAXIAL CABLE WITH PVC JACKET.
B. MAXIMUM 3/8" NO. 22 AWG TELEPHONE CABLE WITH PVC JACKET.
C. MAXIMUM 2/0 NO. 12 AWG CABLE WITH PVC JACKET.
D. MAXIMUM 3/8" (HORIZONTAL) 2/0 AWG SER CABLE (ALUMINUM OR COPPER) WITH PVC JACKET.
E. MAXIMUM 3/8" (HORIZONTAL) 2/0 AWG TYPE NM CABLE WITH PVC JACKET.
F. MAXIMUM 3/8" NO. 12 METAL-CLAD (MC) CABLE.
G. MAXIMUM 1" DIAMETER METAL-CLAD TECK CABLE WITH PVC JACKET.
H. ANY CABLES, METAL-CLAD CABLES, OR ARMORED CABLES CURRENTLY LISTED UNDER THE THROUGH PENETRATING PRODUCTS CATEGORY.
I. MAXIMUM 4/8" (HORIZONTAL) NO. 300 KCHUL ALUMINUM SER CABLE.
5. MINIMUM 3/4" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT FLUSH WITH TOP SURFACE OF FLOOR OR SOLE PLATE OF CHASE WALL.
6. MINIMUM 5/8" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT FLUSH WITH BOTTOM SURFACE OF CEILING OR LOWER TOP PLATE.

NOTES: 1. MAXIMUM DIAMETER OF OPENING FOR 1-HR. OR 2-HR. FIRE-RATED ASSEMBLY IS 2" OR 2-1/2", RESPECTIVELY.
2. CABLES TO FILL MAXIMUM 45% OF CROSS-SECTIONAL AREA OF OPENING.

HILTI HILTI, Inc. Sheet 1 of 1 Drawing No. FC 3012m
HBO Firestop Systems Tulsa, Oklahoma USA (918) 252-6000 Scale 3/32" = 1" Date Mar. 04, 2009

UL SYSTEM NO. W-L-3161
CABLE BUNDLE THROUGH GYPSUM SHAFT WALL ASSEMBLY
F-RATING = 1 AND 2-HR.
T-RATING = 0-HR.

1. GYPSUM SHAFT WALL ASSEMBLY (UL/cUL CLASSIFIED L400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. 2" x 2" SHIP-LAP STUDS (1-5/8" WIDE x 2-1/2" DEEP) (MIN. 25 GA.) SPACED MAXIMUM 24" O.C.
3. CABLE BUNDLE TO CONSIST OF ANY OF THE FOLLOWING:
A. MAXIMUM 7/8" NO. 12 AWG CABLE.
B. MAXIMUM 25 PAIR NO. 24 AWG TELEPHONE CABLE.
C. RG 59 COAXIAL CABLE.
D. MAXIMUM 3/8" NO. 12 AWG METAL CLAD CABLE.
E. MAXIMUM 5/8" DIAMETER FIBER-OPTIC CABLE.
F. MAXIMUM 4" DIAMETER STEEL SLEEVE (MIN. 28 GA. SHEET METAL OR NO. 8 STEEL WIRE MESH).
G. MIN. 2-1/8" OR 2-3/4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED AND RECESSED ON ONE SIDE OF THE WALL FOR 1-HR. OR 2-HR. FIRE-RATED WALLS, RESPECTIVELY.
H. MINIMUM 1" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 4".
2. CABLES TO FILL MAXIMUM 33% OF CROSS-SECTIONAL AREA OF OPENING.
3. ANNUAL SPACE = MINIMUM 1/4", MAXIMUM 5/4".
4. AS AN ALTERNATE TO THE ABOVE SHAFT WALL ASSEMBLY, A 1 OR 2-HR. GYPSUM WALL ASSEMBLY MAY BE USED (L500, L400 OR V400 SERIES). STEEL STUDS TO BE MINIMUM 2-1/2" WIDE. WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER.
5. WHEN SYSTEM IS INSTALLED IN A STANDARD WALL ASSEMBLY, MINERAL WOOL SHOULD BE INSTALLED FLUSH WITH EITHER SIDE OF WALL AND RECESSED FROM OTHER SIDE TO ACCOMMODATE SEALANT.

HILTI HILTI, Inc. Sheet 1 of 1 Drawing No. FC 3161c
HBO Firestop Systems Tulsa, Oklahoma USA (918) 252-6000 Scale 1/8" = 1" Date Sep. 08, 2005

UL SYSTEM NO. W-L-2236
PLASTIC PIPE THROUGH GYPSUM WALL ASSEMBLY
F-RATING = 1-HR. OR 2-HR.
T-RATING = 1-HR. OR 1-1/4-HR.

1. GYPSUM WALL ASSEMBLY (UL CLASSIFIED L500 OR L400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. NOT SHOWN WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 3-1/2" WIDE.
3. (OPTIONAL) NO. 8 STEEL WIRE MESH SLEEVE (SEE NOTE NO. 4 BELOW).
4. PENETRATING ITEM TO BE ONE OF THE FOLLOWING (SEE NOTE NO. 3 BELOW):
A. MAXIMUM 8" NOMINAL DIAMETER PVC PLASTIC PIPE (CELLULAR OR SOLID CORE).
B. MAXIMUM 8" NOMINAL DIAMETER CPVC PLASTIC PIPE (CLOSED PIPING SYSTEM ONLY).
5. MINIMUM 1/2" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
6. HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT TO BE BUTTED THICKLY AGAINST SURFACE OF THE WALL. SUCCESSIVE LAYER SHALL BE OFFSET. WRAP STRIP TO BE BUTTED THICKLY AGAINST SURFACE OF THE WALL.
7. HILTI RETAINING COLLAR WRAPPED OVER THE WRAP STRIPS OVERLAPPING MINIMUM 1".
8. HILTI COLLAR CLAMP(S) FASTENED AT MID-HEIGHT OF HILTI RETAINING COLLAR.
9. EVERY OTHER TAG OF RETAINING COLLAR SECURED TO GYPSUM WALL WITH 1/8" DIAMETER x 2-1/4" LONG STEEL FOLLOW WALL ANCHORS WITH 1/2" DIAMETER WASHERS.

NOTES: 1. MAXIMUM DIAMETER OF OPENING = 10".
2. ANNUAL SPACE = MINIMUM 0", MAXIMUM 1-3/8".
3. CLOSED OR VENTED PIPING SYSTEM (PVC = SCHEDULE 40; CPVC = SDR 13.5).
4. STEEL WIRE MESH SLEEVE MUST HAVE A MINIMUM 2" LAP ALONG THE LONGITUDINAL SEAL LENGTH OF STEEL WIRE MESH SLEEVE TO BE 1/2" LESS THAN THICKNESS OF WALL.

HILTI HILTI, Inc. Sheet 1 of 1 Drawing No. WL 2236d
HBO Firestop Systems Tulsa, Oklahoma USA (918) 252-6000 Scale 1/8" = 1" Date Dec. 10, 2007

Order Plans

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