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REVISIONS		
No.	Date	Description

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EDWIN D. BELK LICENSE NO. 70897 STATE OF FLORIDA PROFESSIONAL ENGINEER
7/31/18

KEY PLAN

VTM Hotels, LLC

Home2Suites

2630 Wilde Lake Blvd.
Pensacola, FL 32526

Drawing Title
Penetration Details

Phase
Construction Documents

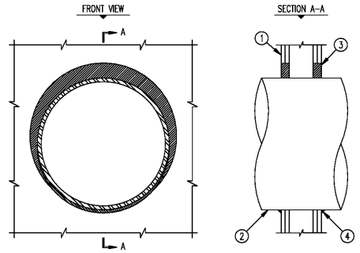
Project No.	17-101
Prepared by	MSM
Checked by	EDB
Date	July 31, 2018

Sheet No. E004

Review

Home2Suites

U.L. SYSTEM NO. WL1054
METAL PIPE THROUGH GYPSUM WALL ASSEMBLY
F RATING = 1-HR. OR 2-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = LESS THAN 4 CFM/SQ. FT.

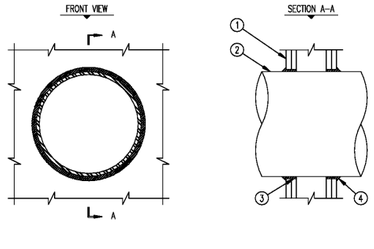


1. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 30" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 8" DIAMETER COPPER PIPE.
   C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER STEEL EMT.
3. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT :
   A. MINIMUM 5/8" DEPTH OF SEALANT FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH OF SEALANT FOR A 2-HR. FIRE-RATING.
4. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 32-1/4".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/4".

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL1085
EMT THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY
F RATING = 1-HR. AND 2-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.

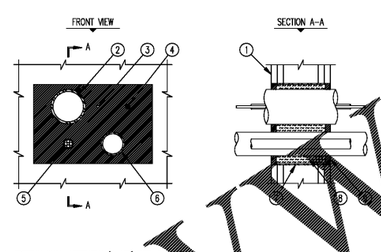


1. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
2. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 12" DIAMETER STEEL PIPE (SCHEDULE 20 OR HEAVIER).
   B. MAXIMUM 12" DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" DIAMETER COPPER PIPE.
   D. MAXIMUM 6" DIAMETER EMT.
   E. MAXIMUM 6" DIAMETER STEEL CONDUIT.
3. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT FORCED INTO ANNULAR SPACE TO MAXIMUM EXTENT.
4. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT PIPE/GYPSUM WALLBOARD INTERFACE.

NOTE : ANNULAR SPACE = MINIMUM 0", MAXIMUM 1/4".

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL8004
MULTIPLE METAL PIPE AND CABLE THROUGH 2-HR. GYPSUM WALL
F RATING = 2-HR.
T RATING = 1/4-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.

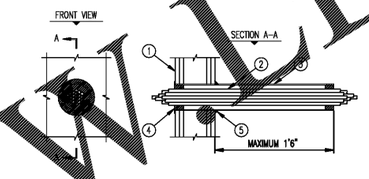


1. GYPSUM WALL ASSEMBLY (2-HR. FIRE-RATING).
2. MAXIMUM 3" DIAMETER FLEXIBLE METALLIC TUBING (CONDUIT).
3. MAXIMUM 25 PAIR NO. 24 AWG (OR SMALLER) TELEPHONE CABLES.
4. MAXIMUM 3/C NO. 10 AWG NM (ROMEX) POWER CABLE WITH PVC INSULATION.
5. MAXIMUM 300 KCMIL (OR SMALLER) POWER CABLE WITH PVC INSULATION & NYLON JACKET.
6. MAXIMUM 2" DIAMETER STEEL PIPE, CONDUIT OR EMT, OR SCHEDULE 40 PVC CONDUIT.
7. NO. 4 STEEL WIRE MESH, 4-3/4" LONG (OVERLAPPED) STANDARD METAL DRYWALL TRACK SCREWED SECURELY (IN PLACE) CENTERED IN OPENING.
8. MINIMUM 4" THICKNESS MINERAL WOOL (MIN. 4 PCF DENSITY) TIGHTLY PACKED.
9. MIN. 1/2" DEPTH HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.

NOTES : 1. MAXIMUM AREA OF OPENING = 96 SQUARE INCHES WITH A MAX. DIM. OF 12".
2. DISTANCE BETWEEN ITEMS = MINIMUM 1-3/4", MAXIMUM 7".
3. DISTANCE FROM EDGE OF OPENING = MINIMUM 1/2", MAXIMUM 7". (EXCEPTION: 300 KCMIL POWER CABLE MUST BE MINIMUM 1-1/2" FROM EDGE OF OPENING.

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL3065
CABLE BUNDLE THROUGH 1-HR. OR 2-HR. FIRE-RATED GYPSUM WALL
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.

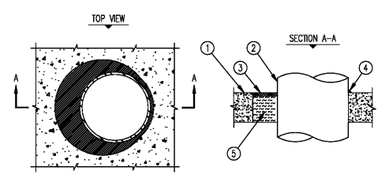


1. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
2. CABLE BUNDLE TO CONSIST OF ANY OF THE FOLLOWING :
   A. 7/C NO. 12 AWG CABLES.
   B. 12 PAIR 24 AWG PHONE CABLES.
   C. 25 PAIR 24 AWG PHONE CABLES.
   D. RG 59 COAXIAL CABLES.
   E. 2/C (+GND) NO. 14 AWG METAL-CLAD CABLES.
   F. 2/C NO. 8 AWG METAL-CLAD CABLES.
   G. MAXIMUM 1/2" DIAMETER FIBER-OPTIC CABLES.
3. OPTIONAL : MAX. 4" NOM. DIA. STEEL PIPE SLEEVE (SCH. 40 OR THINNER)(SEE NOTE NO. 4).
4. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT :
   A. MINIMUM 5/8" DEPTH OF SEALANT FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH OF SEALANT FOR A 2-HR. FIRE-RATING.
5. SEE NOTE NO. 4 BELOW.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 4-1/2".
2. CABLES TO FILL MAXIMUM 33% OF AREA OF OPENING.
3. ANNULAR SPACE = MINIMUM 1/4", MAXIMUM 3/4".
4. STEEL SLEEVE MAY BE FLUSH WITH WALL SURFACE OR EXTEND UP TO 18" BEYOND WALL SURFACE IN ANY COMBINATION. WHEN SLEEVE IS FLUSH WITH WALL, APPLY HILTI FS-ONE FIRESTOP SEALANT ONTO WALL SURFACE. WHEN SLEEVE IS EXTENDED BEYOND ONE OR BOTH SIDES OF WALL, APPLY 1/2" CROWN HILTI FS-ONE FIRESTOP SEALANT TO WALL/SLEEVE INTERFACE.

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. CAJ1149
METAL PIPE THROUGH CONCRETE FLOOR, WALL, OR BLOCK WALL
F RATING = 2-HR.
T RATING = 0-HR.

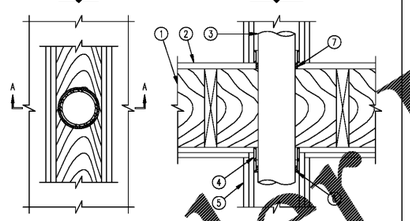


1. CONCRETE FLOOR OR WALL ASSEMBLY :
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR (MINIMUM 4-1/2" THICK).
   B. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL (MINIMUM 4-1/2" THICK).
   C. ANY U.L. CLASSIFIED CONCRETE BLOCK WALL.
2. THROUGH PENETRANTS TO INCLUDE ANY OF THE FOLLOWING :
   A. MAXIMUM 10" NOMINAL DIAMETER STEEL PIPE.
   B. MAXIMUM 4" NOMINAL DIAMETER COPPER PIPE.
   C. MAXIMUM 4" NOMINAL DIAMETER EMT.
   D. MAXIMUM 4" NOMINAL DIAMETER STEEL CONDUIT.
3. MIN. 1/2" DEPTH HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.
4. MIN. 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.
5. MINIMUM 4" THICK MINERAL WOOL (MIN. 4 PCF DENSITY) (SEE NOTE NO. 4).

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 12".
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2".
3. WALLS REQUIRE 1/2" DEPTH OF SEALANT FLUSH WITH BOTH SIDES.
4. IF MAXIMUM PIPE SIZE IS 4" NOM. DIA., A MINIMUM 3" THICKNESS OF MINERAL WOOL MAY BE USED.

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. FC1009
METAL PIPE/CONDUIT THROUGH 1-HR. OR 2-HR. WOOD FLOOR ASSEMBLY
F RATING = 1-HR. OR 2-HR. L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
T RATING = 1-HR. OR 2-HR. L RATING AT 400°F = 4 CFM/SQ. FT.

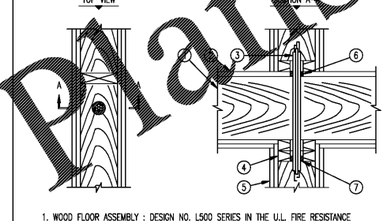


1. WOOD FLOOR ASSEMBLY : DESIGN NO. L500 SERIES IN THE U.L. FIRE RESISTANCE DIRECTORY.
2. LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OR LUMBER, PLYWOOD, OR FLOOR TOPPING MIXTURE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 12" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 40 OR HEAVIER).
   B. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   C. MAX. 4" NOM. DIAMETER COPPER TUBE (TYPE L OR HEAVIER).
   D. MAXIMUM 4" NOMINAL DIAMETER COPPER PIPE.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. TOP PLATE .
5. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
6. PROVIDE A GENEROUS BEAD OF HILTI FS 601 ELASTOMERIC FIRESTOP SEALANT OR HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT THE TOP PLATE.
7. MIN. 1/2" DEPTH HILTI FS 601 ELASTOMERIC FIRESTOP SEALANT OR FS-ONE FIRESTOP SEALANT.

NOTE : ANNULAR SPACE = MINIMUM 1/8", MAXIMUM 3/4".

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. FC3012
CABLE/CABLE BUNDLE THROUGH 1-HR. OR 2-HR. WOOD FLOOR ASSEMBLY
F RATING = 1-HR. OR 2-HR. L RATING AT AMBIENT = [illegible]
T RATING = 1-HR. OR 2-HR. L RATING AT 400°F = 2 CFM/SQ. FT.

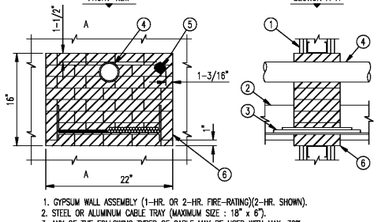


1. WOOD FLOOR ASSEMBLY : DESIGN NO. L500 SERIES IN THE U.L. FIRE RESISTANCE DIRECTORY.
2. LUMBER OR PLYWOOD SUBFLOOR WITH FINISH FLOOR OR LUMBER, PLYWOOD, OR FLOOR TOPPING MIXTURE.
3. MAXIMUM 2" DIAMETER CABLE BUNDLE MAY CONSIST OF ANY OF THE FOLLOWING :
   A. RG 59 COAXIAL CABLE.
   B. MAXIMUM 8/C NO. 22 AWG TELEPHONE CABLE.
   C. MAXIMUM 3/C NO. 10 AWG CABLE (ROMEX).
   D. MAXIMUM 3/C (+GRND) 2/0 AWG SER CABLE (ALUMINUM OR COPPER).
   E. MAXIMUM 2/C NO. 12 AWG CABLE.
4. TOP PLATE.
5. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
6. MINIMUM 3/4" DEPTH HILTI FS-ONE FIRESTOP SEALANT.
7. PROVIDE A GENEROUS BEAD OF HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRE-STOP SEALANT AT THE TOP PLATE.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 2-1/2".
2. ANNULAR SPACE BETWEEN CABLE BUNDLE AND OPENING = MIN. 0", MAX. 1/2".
3. CABLES TO FILL A MAXIMUM OF 45% OF CROSS-SECTIONAL AREA OF OPENING.

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WL8013
MULTIPLE PENETRATIONS THROUGH 1-HR. OR 2-HR. GYPSUM WALL
F RATING = 1-HR. OR 2-HR. L RATING AT AMBIENT = 5 CFM/SQ. FT.
T RATING = 0-HR. L RATING AT 400°F = 2 CFM/SQ. FT.

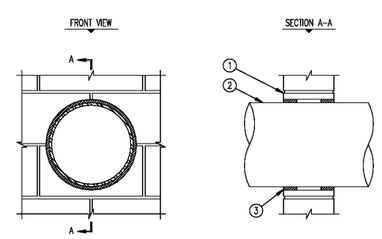


1. GYPSUM WALL ASSEMBLY (1-HR. OR 2-HR. FIRE-RATING)(2-HR. SHOWN).
2. STEEL OR ALUMINUM CABLE TRAY (MAXIMUM SIZE : 18" x 6").
3. ANY OF THE FOLLOWING TYPES OF CABLE MAY BE USED WITH MAX. 30% FILL ON CABLE TRAY :
   A. 500 KCMIL SINGLE CONDUCTOR POWER CABLE.
   B. 7/C NO. 12 AWG COPPER CONDUCTOR CABLE.
   C. 300 PAIR NO. 24 AWG TELEPHONE CABLE.
4. MAXIMUM 5" DIAMETER PVC PLASTIC PIPE (SCHEDULE 40)(CLOSED OR VENTED PIPING SYSTEM).
5. CABLE BUNDLE (MAX. 2" DIA.) TO CONSIST OF ANY OF THE FOLLOWING:
   A. FIBER-OPTIC CABLE.
   B. RG 59 COAXIAL CABLE.
   C. 25 PAIR NO. 24 AWG TELEPHONE CABLE.
   D. 7/C NO. 12 AWG COPPER CONDUCTOR.
6. HILTI FS 657 FIRESTOP BLOCKS (2" x 5" x 8" DEEP, REF: FRONT VIEW).

NOTES : 1. NOT SHOWN: PENETRATING ITEMS MAY ALSO INCLUDE A MAX. 4" DIA. STEEL OR COPPER PIPE, EMT, OR STEEL CONDUIT WITH A MAX. 1-1/2" GLASS-FIBER PIPE INSULATION OR NON-INSULATED MAX. 4" STEEL PIPE, EMT, OR CONDUIT.
2. ANNULAR SPACE = MINIMUM 1".
3. INSTALL HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT IN ANY VOID THAT MAY EXIST (AROUND PENETRATING ITEMS, OR BETWEEN BLOCKS).

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WJ1042
METALLIC PIPE THROUGH 4-HR. CONCRETE OR CONCRETE BLOCK WALL
F RATING = 4-HR.
T RATING = 0-HR.

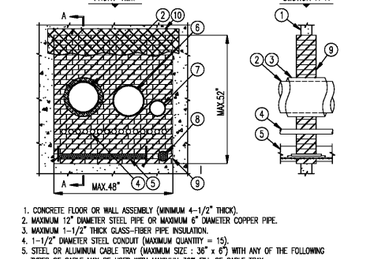


1. CONCRETE WALL ASSEMBLY (4-HR. FIRE-RATING) :
   A. LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL.
   B. ANY U.L. CLASSIFIED CONCRETE BLOCK WALL ASSEMBLY.
2. PENETRATING ITEM TO BE ANY ONE OF THE FOLLOWING :
   A. MAXIMUM 12" DIAMETER STEEL PIPE.
   B. MAXIMUM 6" DIAMETER COPPER PIPE.
   C. MAXIMUM 6" DIAMETER STEEL CONDUIT.
   D. MAXIMUM 4" DIAMETER EMT.
3. MIN. 2" DEPTH HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING = 13-3/4".
2. ANNULAR SPACE = MINIMUM 3/8", MAXIMUM 1/2".

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

U.L. SYSTEM NO. WJB007
MULTIPLE PENETRATING ITEMS THROUGH CONCRETE FLOOR OR WALL
F RATING = 4-HR.
T RATING = 0-HR.



1. CONCRETE FLOOR OR WALL ASSEMBLY (MINIMUM 4-1/2" THICK).
2. MAXIMUM 12" DIAMETER STEEL PIPE OR MAXIMUM 6" DIAMETER COPPER PIPE.
3. MAXIMUM 1-1/2" THICK GLASS-FIBER PIPE INSULATION.
4. 1-1/2" DIAMETER STEEL CONDUIT (MAXIMUM QUANTITY = 15).
5. STEEL OR ALUMINUM CABLE TRAY (MAXIMUM SIZE : 36" x 6") WITH ANY OF THE FOLLOWING TYPES OF CABLE MAY BE USED WITH MAXIMUM 30% FILL OF CABLE TRAY :
   A. MAXIMUM 500 KCMIL SINGLE CONDUCTOR POWER CABLE.
   B. MAXIMUM 7/C NO. 12 AWG COPPER CONDUCTOR CABLE.
   C. MAXIMUM 300 PAIR NO. 24 AWG TELEPHONE CABLES.
6. MAXIMUM 30" DIAMETER STEEL PIPE (12" DIAMETER PIPE SHOWN).
7. 6" DIAMETER STEEL PIPE.
8. MAXIMUM 4" DIAMETER CABLE BUNDLE TO INCLUDE ANY OF THE FOLLOWING :
   A. FIBER-OPTIC CABLE (MAX. 1/2" DIA).
   B. ROMEX (2/C NO. 10 +GROUND).
   C. 25 PAIR NO. 24 AWG TELEPHONE CABLES.
   D. 7/C NO. 12 AWG CABLES.
   E. RG 62A COAXIAL CABLES.
   F. METAL CLAD CABLE (MAX. 3/4" DIA.).
9. HILTI FS 657 INTUMESCENT FIRESTOP BLOCK (2" TALL x 5" WIDE x 8" DEEP, REF: FRONT VIEW).
10. SEE NOTE NO. 4 BELOW.

NOTES : 1. ANNULAR SPACING FOR CABLE TRAY = MINIMUM 1-1/2".
2. ANNULAR SPACING FOR PIPE AND CABLE PENETRATIONS = MINIMUM 1".
3. INSTALL HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT IN ANY VOID THAT MAY EXIST (AROUND CABLE TRAY, CABLES, OR PIPE PENETRATIONS).
4. IF THE ANNULAR SPACE IS GREATER THAN 5", PROVIDE A STEEL WIRE MESH (NOMINAL 2" SQUARES, NO. 16 SWG). INSTALL ON EACH SIDE OF WALL ASSEMBLY.
5. MAXIMUM AREA OF OPENING = 2496 SQUARE INCHES.

SEE HILTI FIRESTOP INSTALLATION MANUAL FOR ADDITIONAL INSTRUCTIONS
HILTI, INC. TULSA, OK 1-800-879-8000

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