FIRE STOPPING

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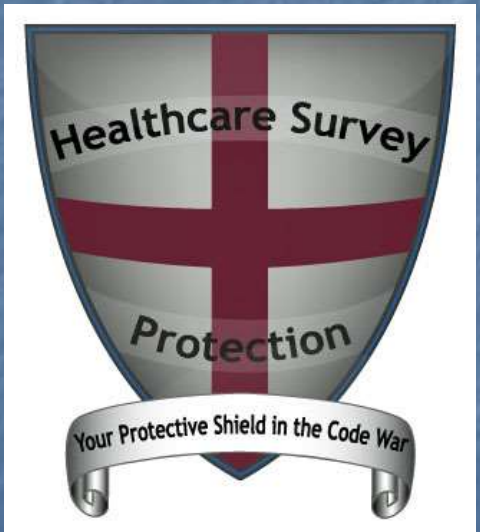
Lauzon-LSC.com



Fire Stopping

AGENDA

a. Why Fire Stopping Is Important
B. Code References
C. Life Safety Plans
D. Fire Stop Products
E. Approved Design Installation Sheets
F. Installation Fundamentals
G. Labeling
H. Penetration Management Program
I. Installer Qualifications
J. Inspection Guidelines

Fire Stopping

You May Type in Questions at any point in the program

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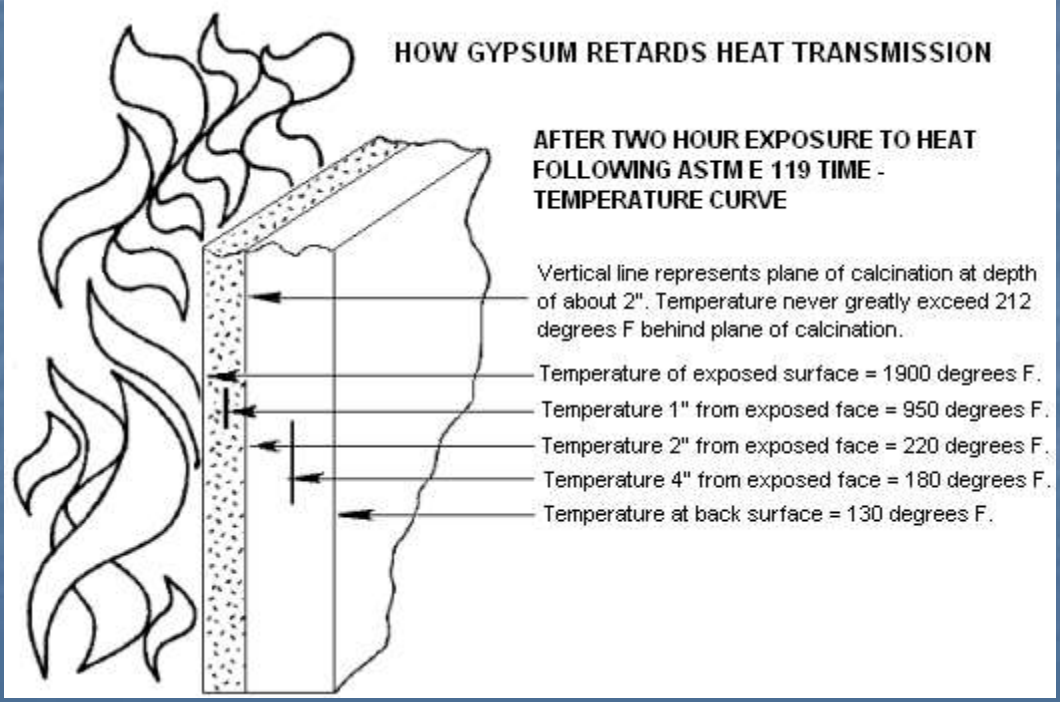
Fire Safety is important in health care

- **Health Care "Defends in Place" rather than Evacuates in a Fire Emergency**

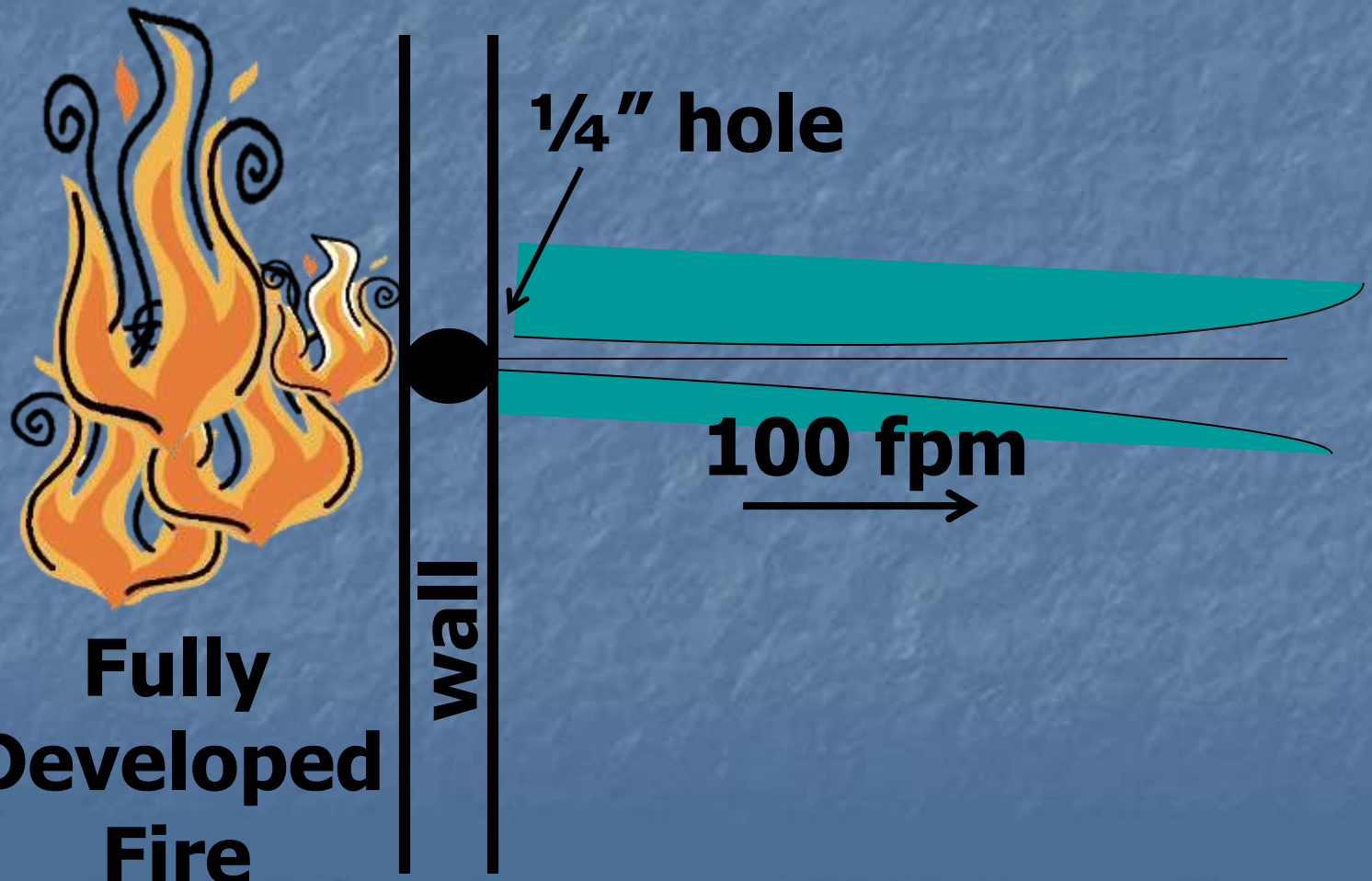
- **The Safety of Patients Depends on the Quality of its Fire Resistive Construction**

Fire Safety is important in health care



FIRE STOPPING protects the fire resistance ratings of walls, floors & ceilings

Even Little holes make a BIG difference in the spread of fire



FIRE STOPPING HELPS

. . . Keep fires in (from spreading)

- Hazardous Areas
- Shafts
- Floors

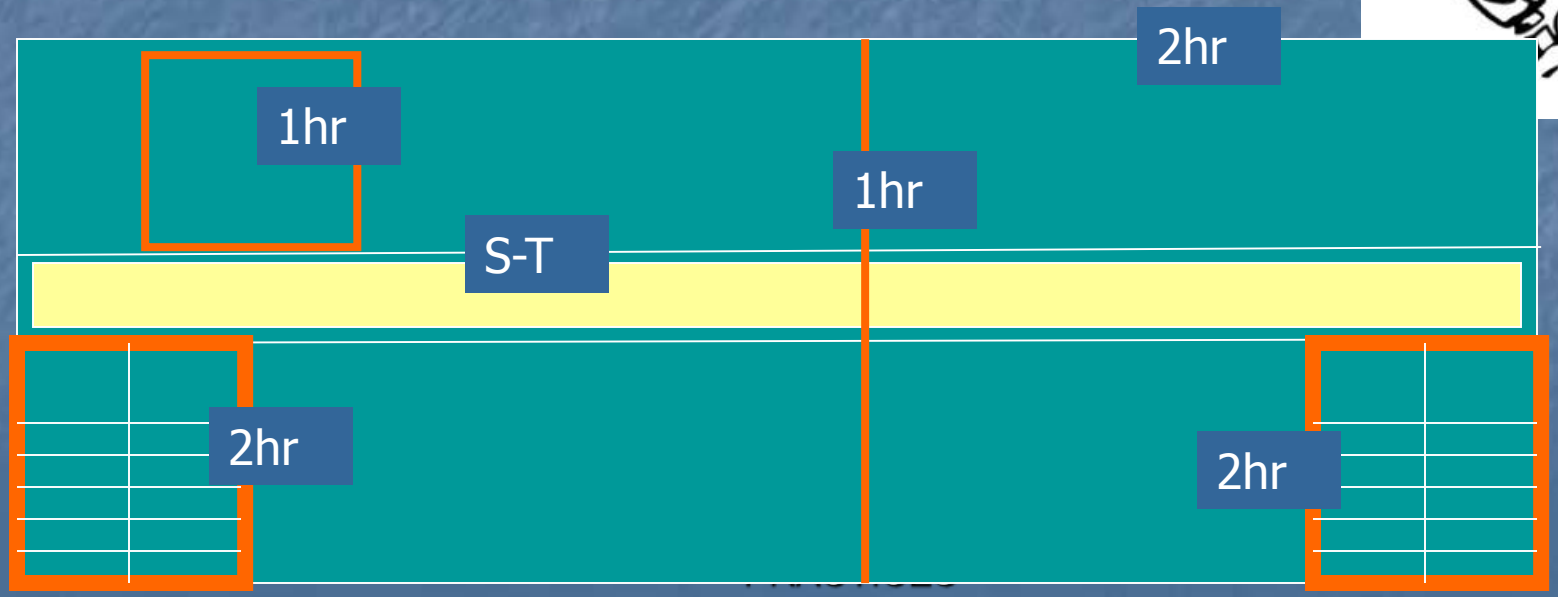
. . . Keep fires out (for exiting areas)

- Stairs
- Smoke Compartments

Fire Stopping is a frequent reason for citations

Health care is <u>inspected more</u> than any other building for proper construction !

(except nuclear)



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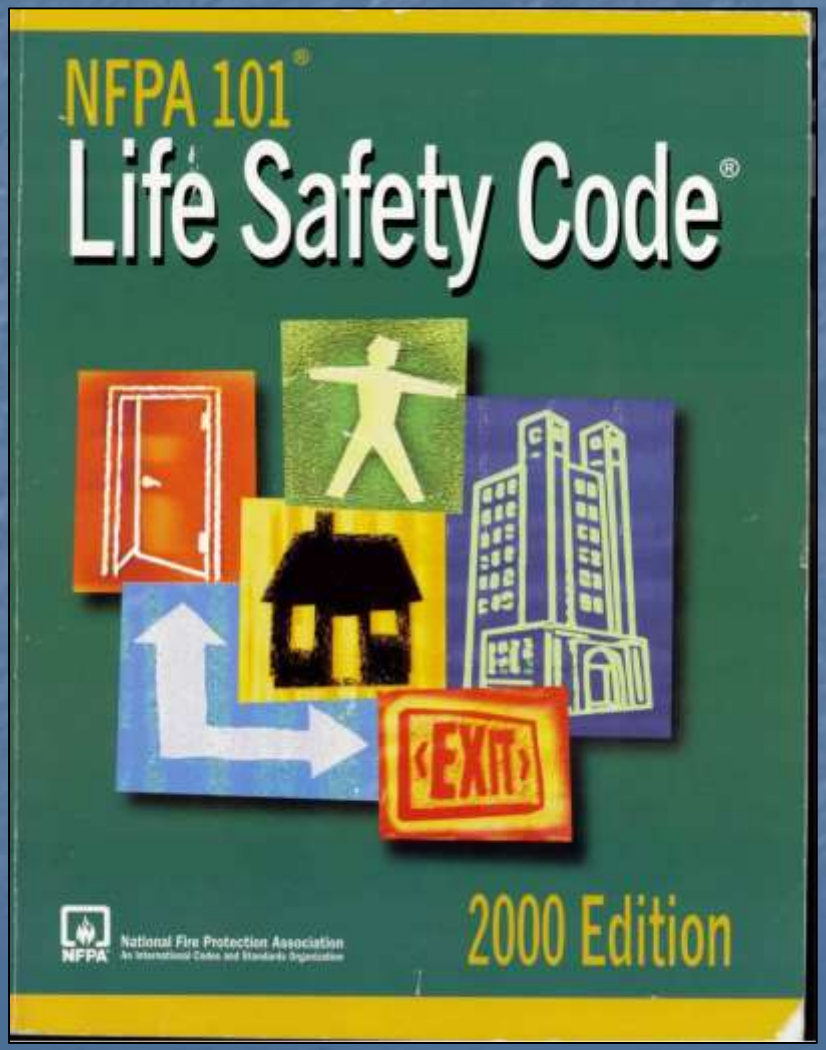
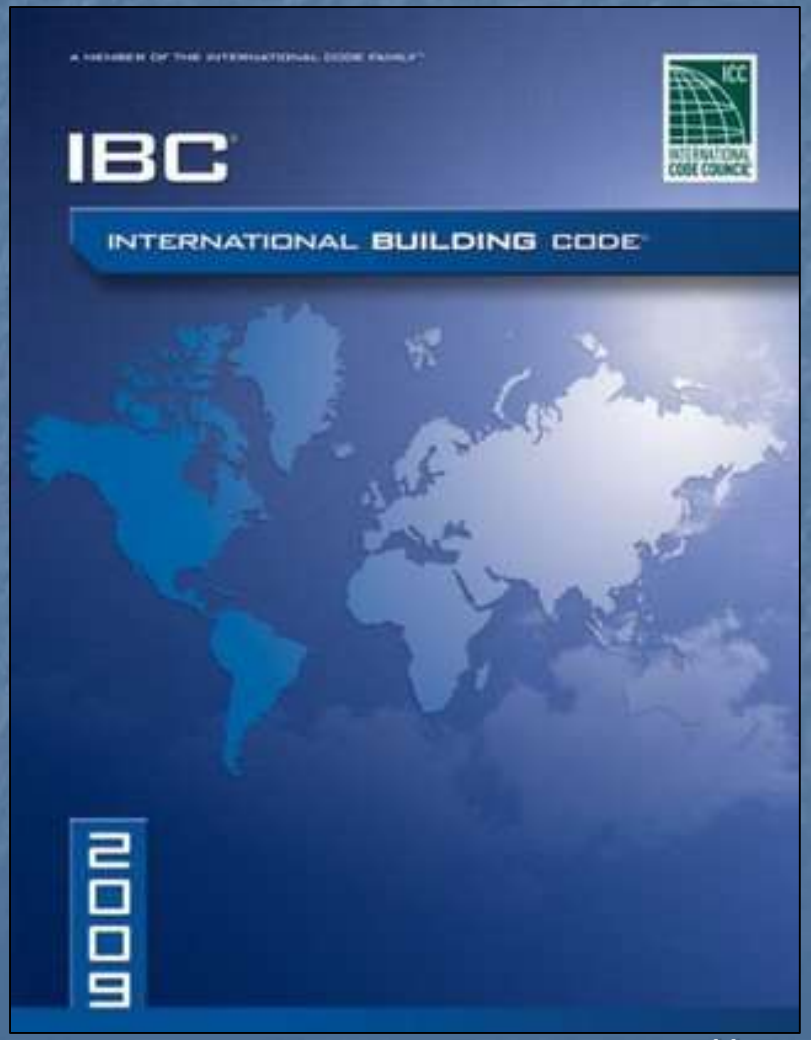
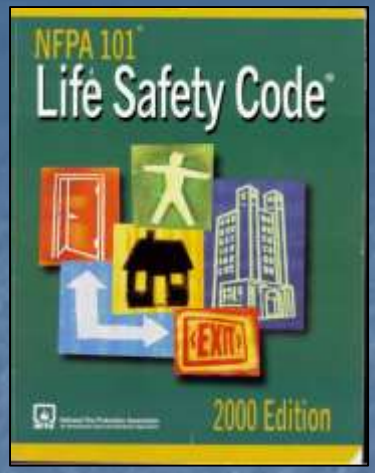
CODE REFERENCES





FIRE STOPPING CODE REFERENCES



3 LSC References

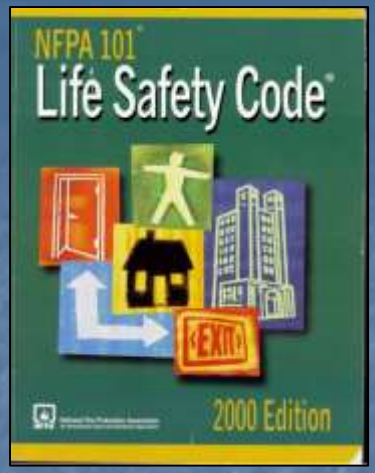
8.2.3.2.4 - FIRE BARRIERS (p.70)

8.2.4.4.1 - SMOKE PARTITIONS (p.71)

8.3.6.1 - SMOKE BARRIERS (p.73)

All pretty much say the same thing

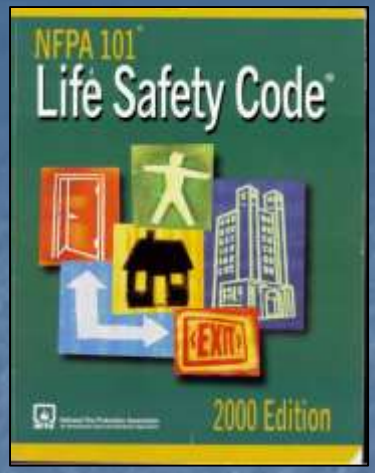
FIRE STOPPING CODE REFERENCES



8.2.3.2.4.1* Openings for DUCTS or air movement shall be protected in accordance with 9.2.1

9.2.1 – Duct Openings must comply with NFPA 90A

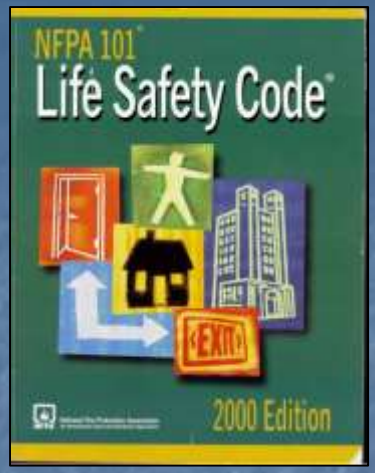
FIRE STOPPING CODE REFERENCES



8.2.3.2.4.2* PIPES, CONDUITS, bus ducts, cables, wires, air ducts, pneumatic tubes and ducts, and similar building service equipment that pass through fire barriers shall be protected as follows:

(1) Space between the penetrating item and the fire barrier …
(2) Sleeve situation …
(3) Insulation and coverings for pipes and ducts …
(4) Vibration situations …

FIRE STOPPING CODE REFERENCES



8.2.3.2.4.2

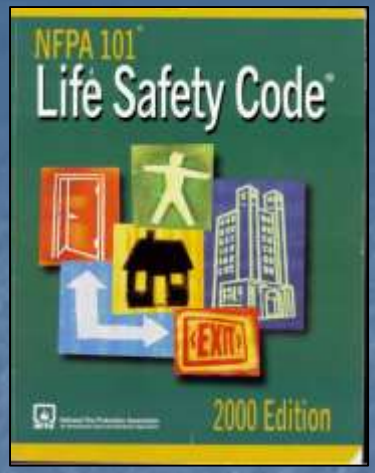
(1) SPACE between the penetrating item and the fire barrier shall meet one of the following conditions:


Annular Space

a. … filled with a material that is capable of maintaining the fire resistance of the fire barrier

b. … protected by an approved device that is designed for the specific purpose

FIRE STOPPING CODE REFERENCES



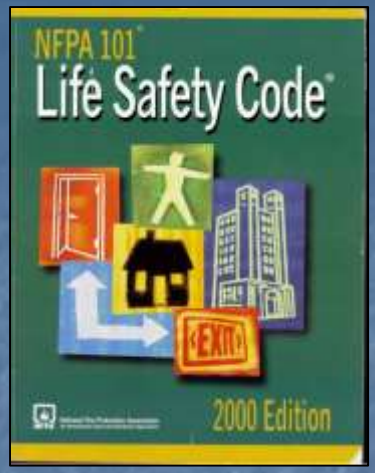
8.2.3.2.4.2

(2) Where the penetrating item uses a SLEEVE to penetrate the fire barrier, the sleeve shall be solidly set in the fire barrier, and the space between the item and the sleeve shall meet on of the following:

a. … filled with a material that is capable of maintaining the fire resistance of the fire barrier

b. … protected by an approved device that is designed for the specific purpose

FIRE STOPPING CODE REFERENCES



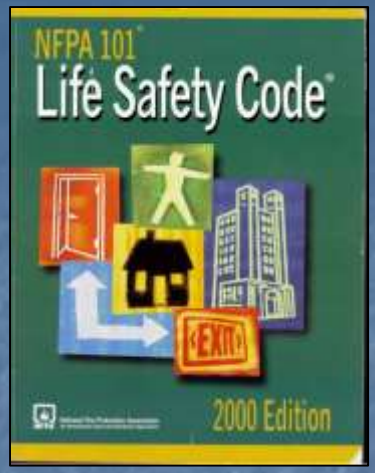
8.2.3.2.4.2

(3) INSULATION AND COVERINGS for pipes and ducts shall not pass through the fire barrier unless on of the following are met:

a. … filled with a material that is capable of maintaining the fire resistance of the fire barrier

b. … protected by an approved device that is designed for the specific purpose

FIRE STOPPING CODE REFERENCES



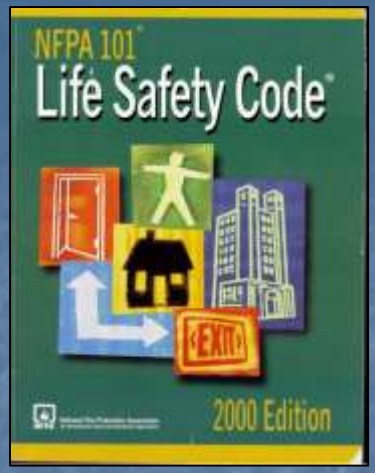
8.2.3.2.4.2

(4) Where designs that take VIBRATION into consideration, any vibration isolation shall meet one of the following conditions:

a. Shall be made on either side of the barrier

b. Shall be made by an approved device that is designed for the specific purpose

FIRE STOPPING CODE REFERENCES



8.2.4.4.2 – Smoke Partitions
8.3.6.2 - Smoke Barriers & Floors

Where floors or smoke partitions/barriers meet the outside walls, other smoke partitions/barriers or fire barriers of a building shall meet one of the following conditions:

a. … filled with a material that is capable of maintaining the fire resistance of the fire barrier

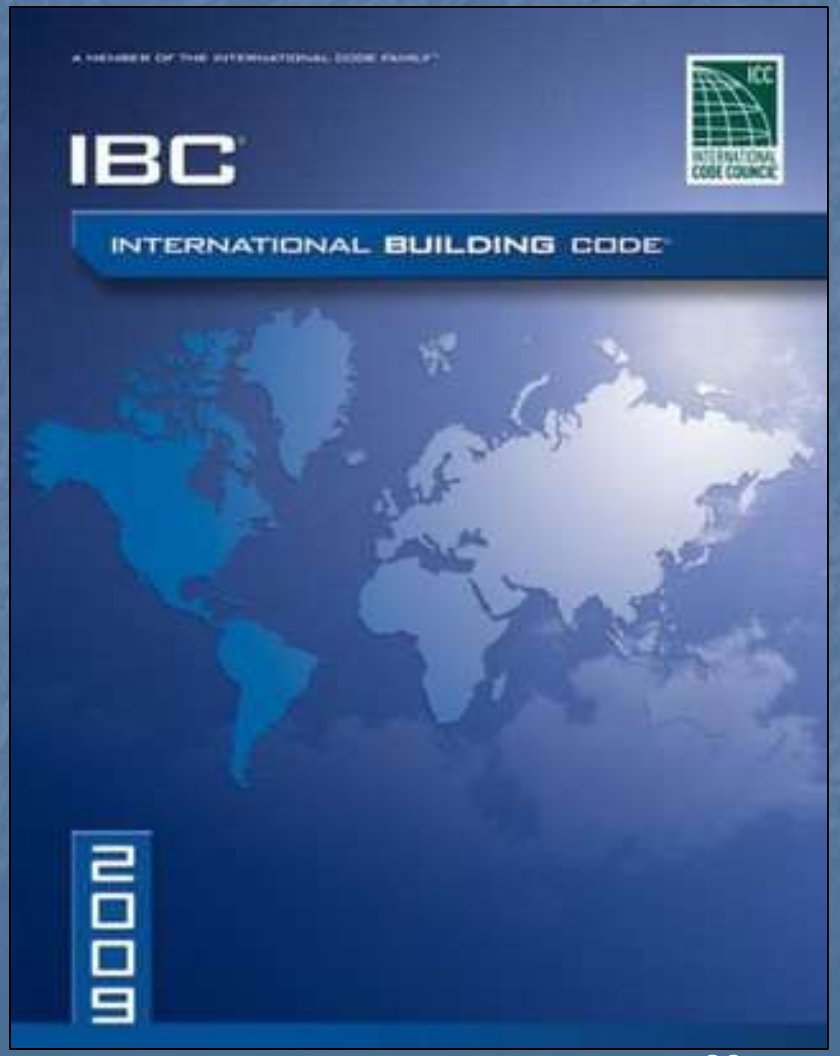
b. … protected by an approved device that is designed for the specific purpose

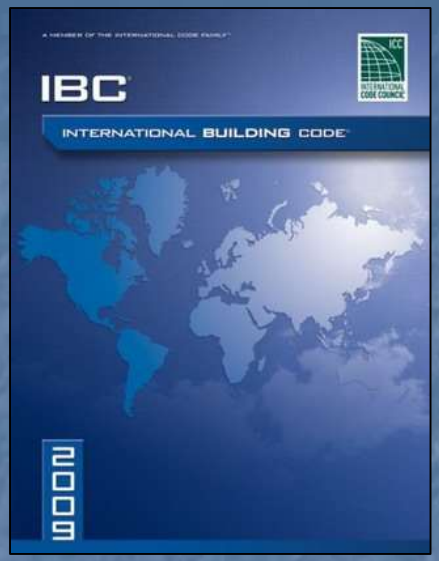
CODE REFERENCES

Wis Commercial Building Code

713 - PENETRATIONS

716 – DUCTS & AIR TRANSFER OPENINGS



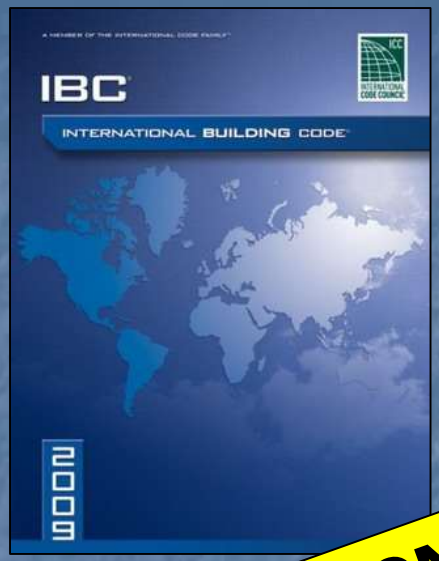


CODE REFERENCES - WALLS

713.3.1.1 – Through-wall penetrations shall be installed as tested in an approved fire-resistance-rated ASSEMBLY

OR

713.3.1.2 – Through-wall penetrations shall be protected by an approved penetration FIRE STOP SYSTEM installed as tested in accordance with ASTM E814 or UL 1479 … and shall have an F rating of not less than the required fire-resistance rating of the wall penetrated.



CODE REFERENCES - WALLS

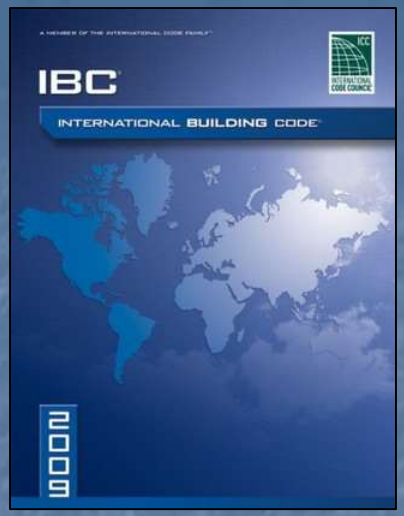
713.3.1.1 – Through-wall penetrations shall be ins… tested in an appr… resistance…

EXCEPTIONS FOR METAL PIPES/CONDUITS:

1. Annular space in concrete/masonry walls can be filled the full depth with concrete/grout or mortar (max 6" dia, max 144 si hole)

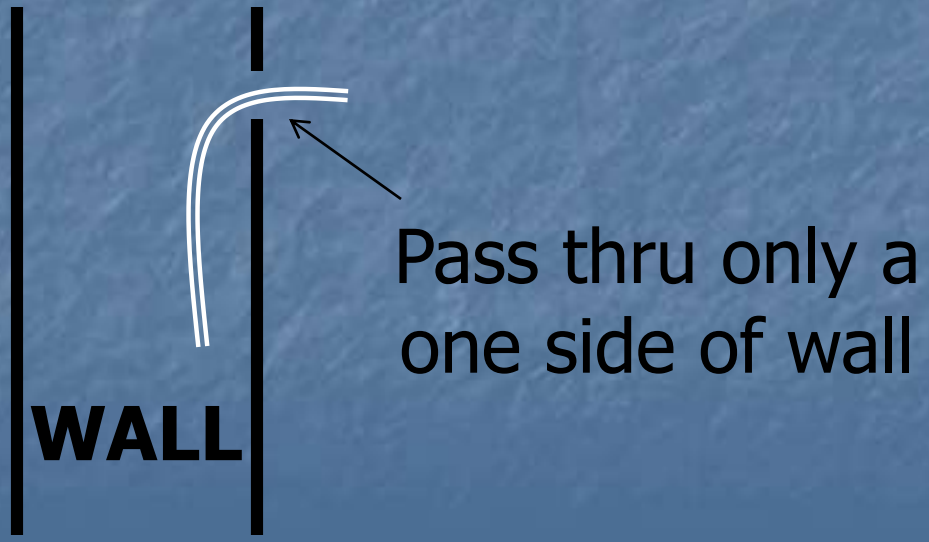
2. Annular space may be filled with a material that passes ASTM E119 or UL 263

…op … sted in … ASTM E814 or UL … and shall have an F rating of … less than the required fire-resistance rating of the wall penetrated.



CODE REFERENCES - WALLS

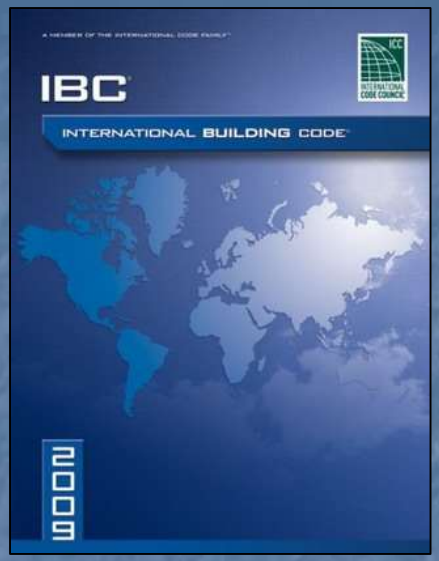
713.3.2 – MEMBRANE PENETRATIONS shall comply with the through penetration requirements. Recessed fixtures shall not reduce the required fire-resistance rating of the wall.



CODE REFEREN S

EXCEPTIONS FOR MEMBRANE PENETRATIONS:

1. **Steel electrical boxes**
   - max 16 si per box
   - max total 100 si per 100 sf area
   - max 1/8" gap around box
   - Special rules for boxes on opposites side of wall
2. **Listed electrical boxes of any material**
   - Installed per listing instructions
   - Max 1/8" gap around box
3. **Electrical boxes in a listed opening system**
4. **Non-Electrical boxes**
   - Annular space filled with approved membrane fire stop system with F & T ratings of the wall
5. **Sprinkler Pipes**
   - Covered with a metal escutcheon plate



CODE REFERENCES - FLOORS

713.4.1.1.1 – Floor penetrations shall be installed as tested in an approved fire-resistance-rated assembly.

OR

713.4.1.1.2 – Floor penetrations shall be protected by an approved penetration FIRE STOP SYSTEM installed as tested in accordance with ASTM E814 or UL 1479 … and shall have an F/T rating of not less than the required fire-resistance rating of the floor (min 1 hr).

CODE REFERENCES - FLOORS

713.4.1.1.1 – Floor pen… shall be installed as te… …ved fire-resist…

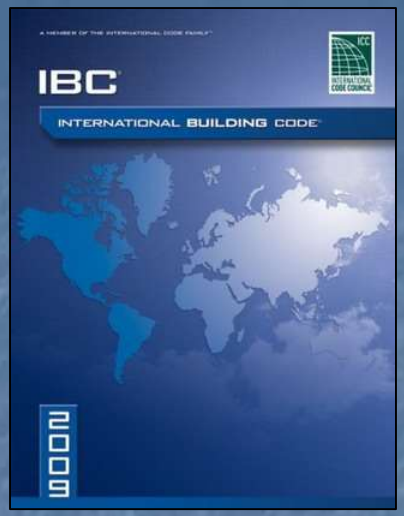
EXCEPTIONS FOR METAL PIPES/CONDUITS:

1. Annular space in a single concrete floor can be filled the full depth with concrete/grout or mortar (max 6" dia, max 144 si hole)

2. Annular space may be filled with a material that passes ASTM E119 or UL 263

3. Listed electrical boxes

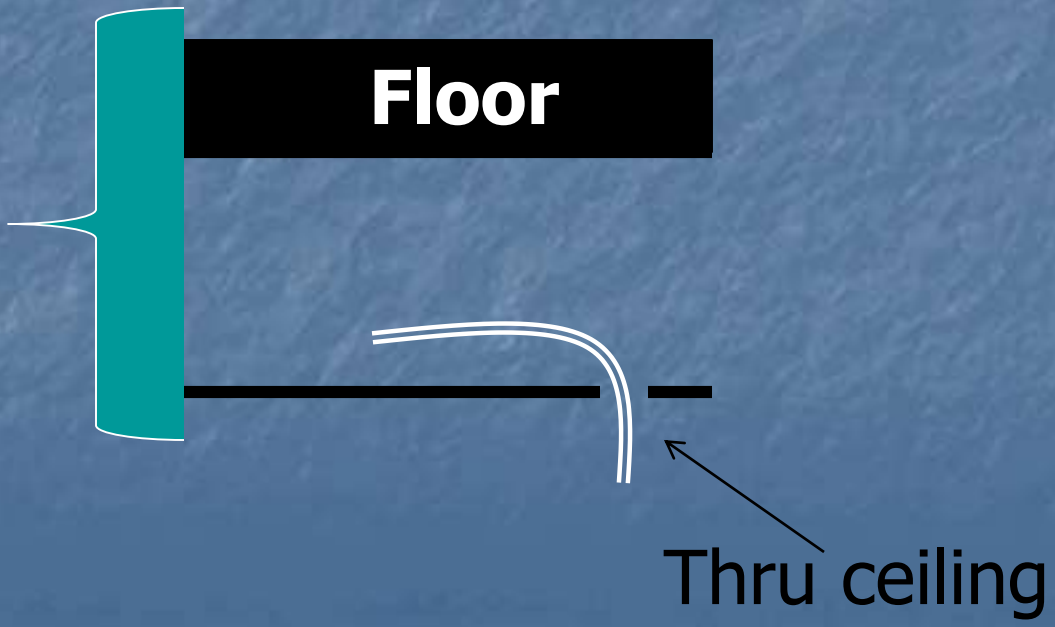
… and …ting of not less …ired fire-resistance … or the floor (min 1 hr).



CODE REFERENCES - FLOORS

713.4.1.2 – MEMBRANE PENETRATIONS shall comply with the through penetration requirements. Recessed fixtures shall not reduce the required fire-resistance rating of the assembly

Rated Floor-Ceiling Assembly



CODE REFEREN S

TONS

EXCEPTIONS FOR MEMBRANE PENETRATIONS:

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   - max total 100 si per 100 sf area
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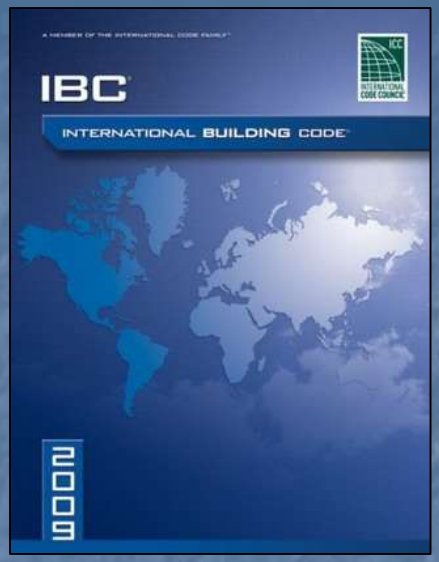
2. **Listed electrical boxes of any material**
   - Installed per listing instructions
   - Max 1/8" gap around box
3. **Electrical boxes in a listed opening system**
4. **Non-Electrical boxes**
   - Annular space filled with approved membrane fire stop system with F & T ratings of the wall
5. **Sprinkler Pipes**
   - Covered with a metal escutcheon plate

As

Thru ceiling



CODE REFERENCES - DUCTS

713.1.1 (wall) & 713.4.1.3 (floor):

- **Wall DUCTS WITHOUT DAMPERS shall follow the wall penetration rules**
- **Floor ducts without dampers (if permitted by exception 4 of section 708.2) shall follow the floor penetration rules**
- **Duct penetrations protected by dampers shall comply with section 716**

Damper requirements are beyond the scope of this webinar

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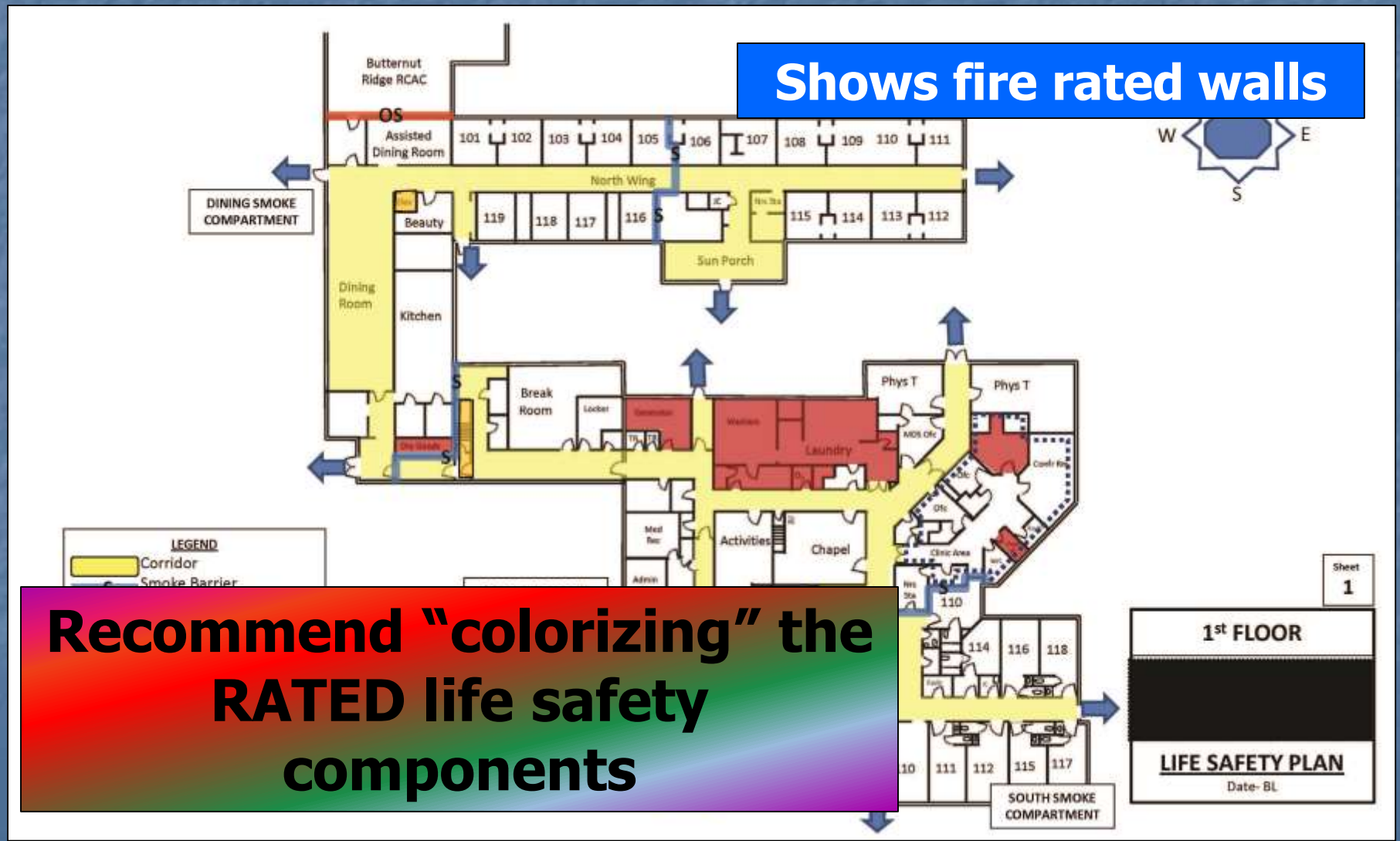
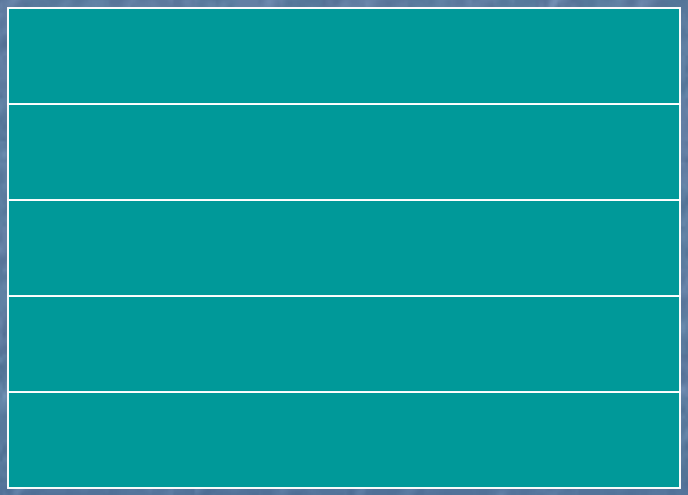
LIFE SAFETY PLANS

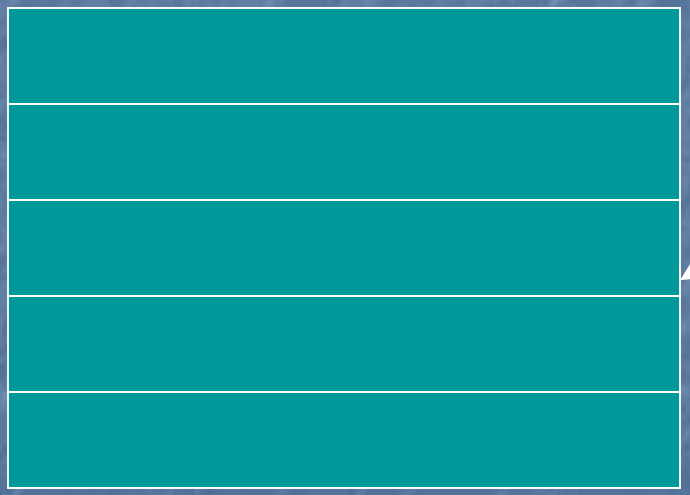


FRR are for 4 story example



Health care occupancies are built with a combination of "boxes" or <u>compartments</u> … whose job is to slow down the spread of fire & smoke

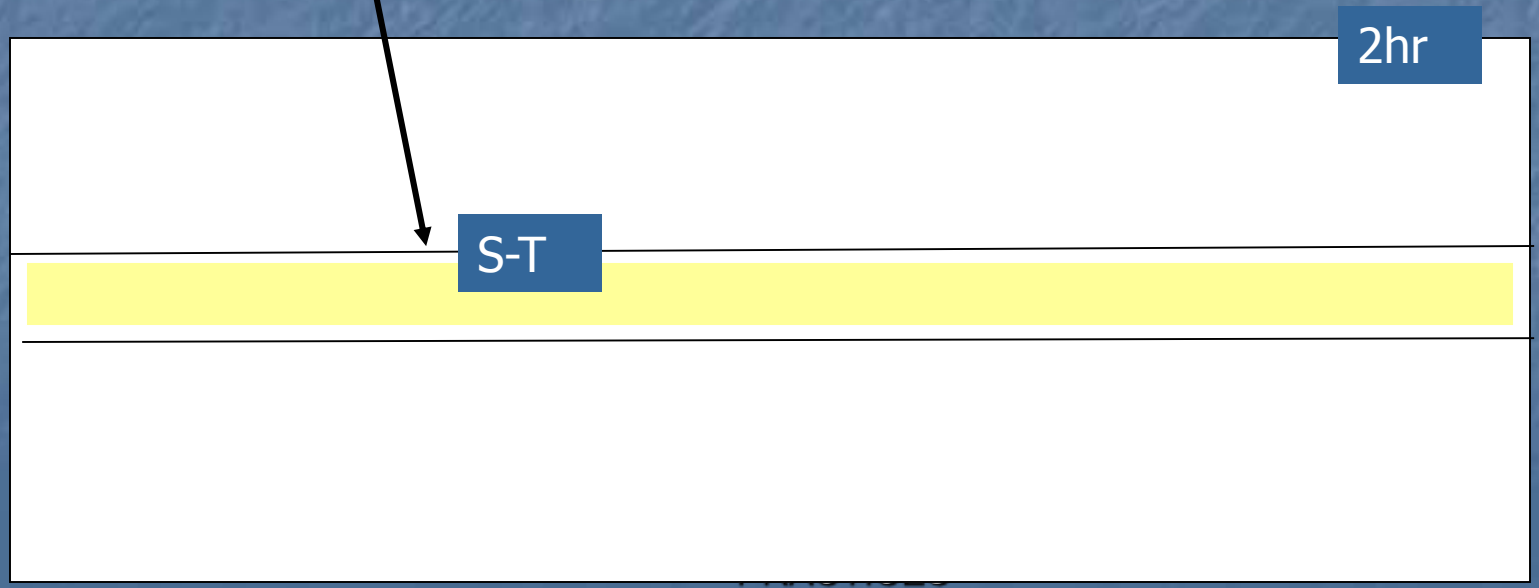
FRR are for 4 story example



Each Floor has a 2-hr Fire Resistance Rating

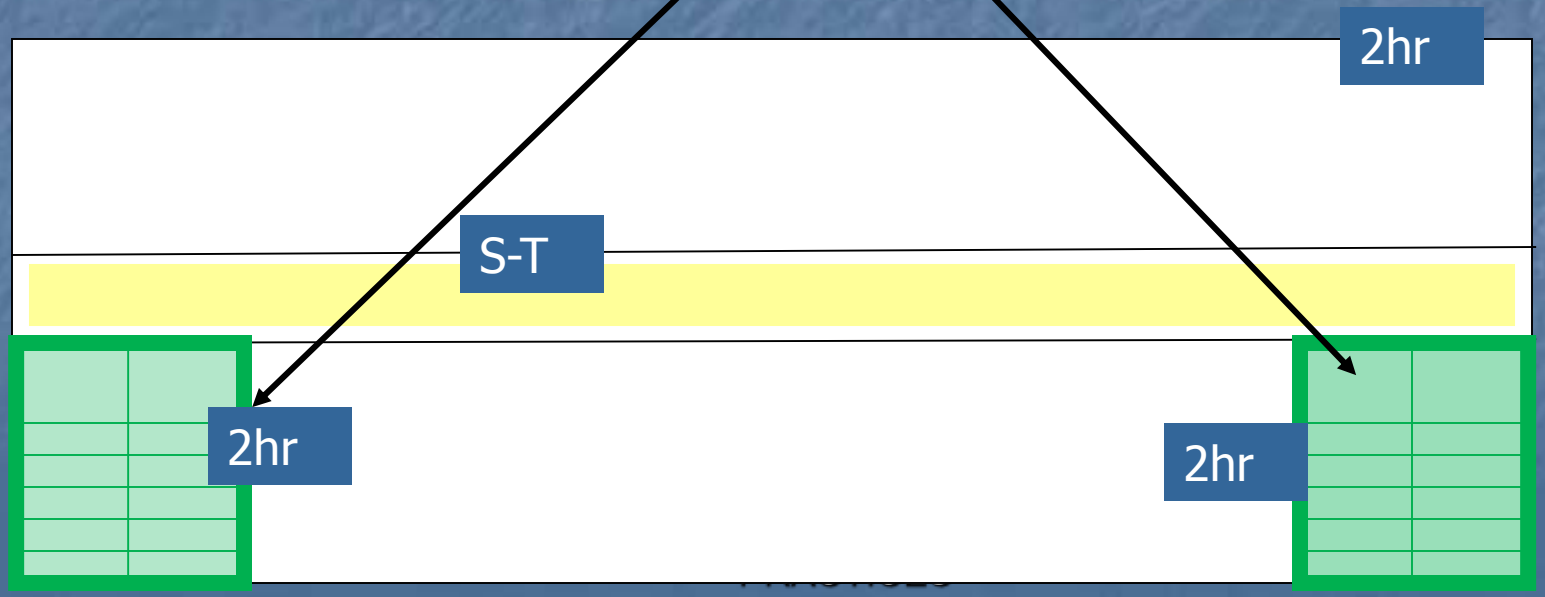
FRR are for 4 story example

Corridors are separated from rooms by "smoke-tight" walls & ceilings



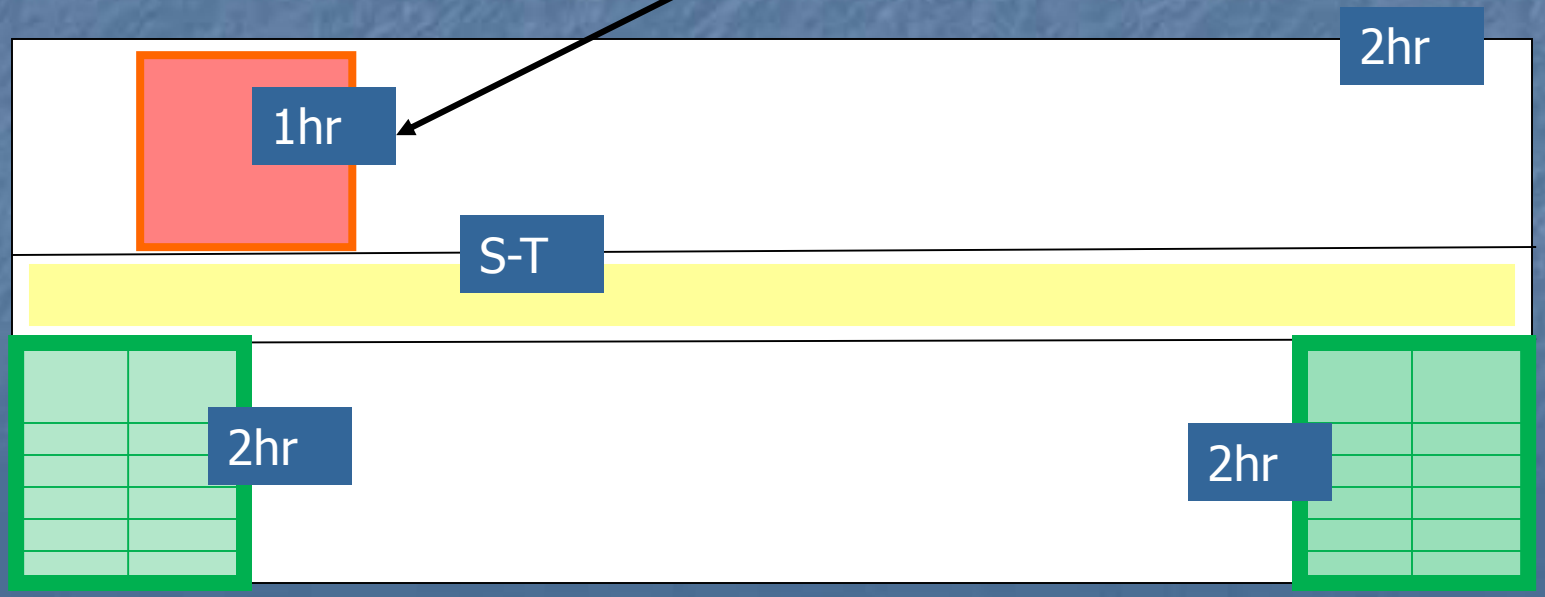
FRR are for 4 story example

<u>Stairwells</u> are surrounded by walls with 2-hour fire resistive ratings



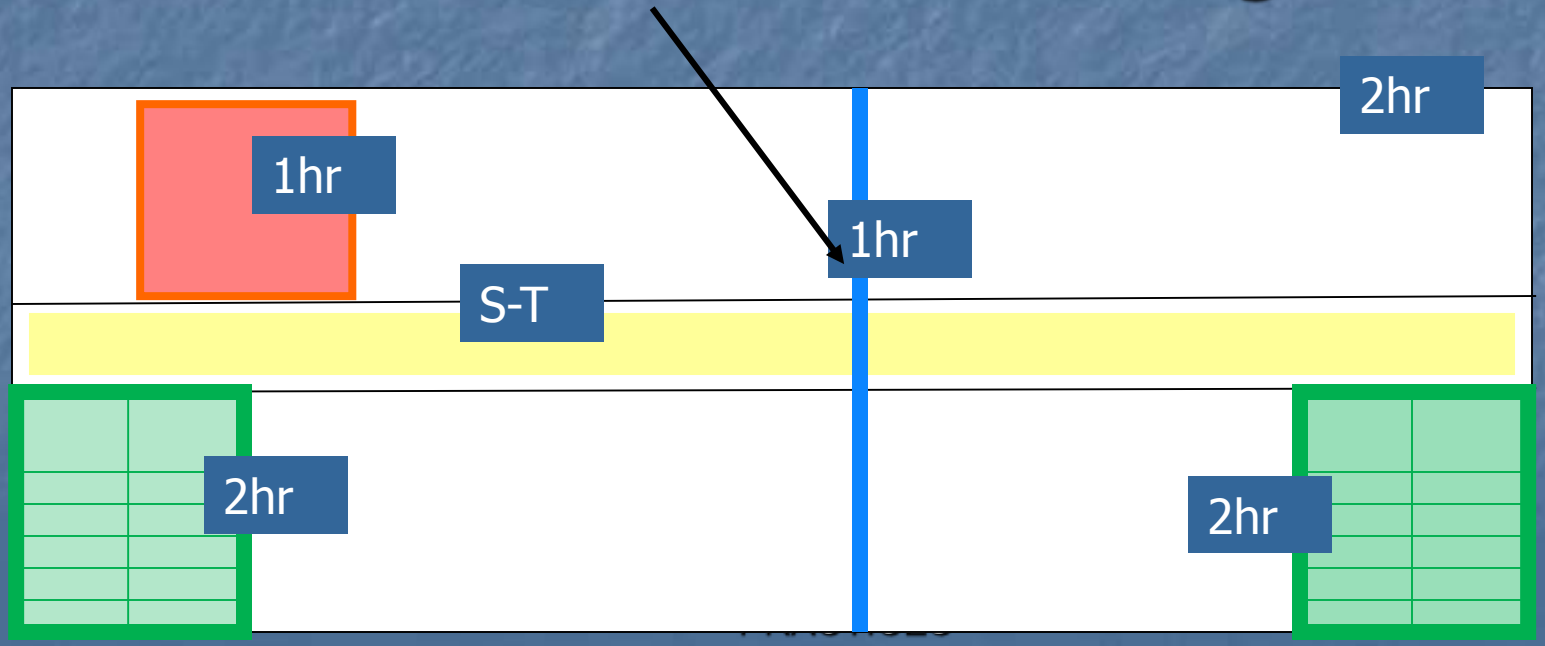
FRR are for 4 story example

Rooms with significant <u>combustibles</u> are surrounded by walls with 1-hour fire resistive ratings



FRR are for 4 story example

Each Floor is divided by Smoke Barrier Walls into compartments which have walls with 1-hour fire resistive ratings



LIFE SAFETY PLANS

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Fire Stop Products

MANY MANUFACTURERS

- 3 M
- Hilti
- Specified Tech
- Tremco
- others

All are generally good.
Difference is the COST & SUPPORT

Fire Stop Products

TYPES OF PRODUCTS

1. **SEALANTS**
2. **DEVICES**

Fire Stop Products

1. SEALANTS

INTUMESCENT

"expands 10-fold when heated"

Fire Stop Products

1. SEALANTS

INTUMESCENT

- Tube
- Wrap Strips
- Pillow/Blocks
- Putty
- Putty Pads
- Plugs
- Foam*

Fire Stop Products

*** Use Foam with CAUTION**

CMS (Region V) Has instructed DQA that it's research has NOT found any foam to be acceptable

Fire Stop Products

1. SEALANTS

INTUMESCENT

- Tube
- Wrap Strips
- Pillow/Blocks
- Putty
- Putty Pads
- Plugs
- Foam*

ELASTOMERIC

- Tube
- Spray

MORTAR

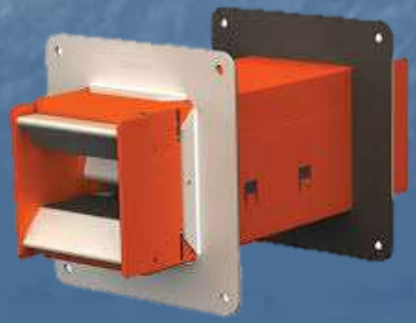
- Trowel-On
- Pourable

Fire Stop Products

2. DEVICES

INTUMESCENT

- Collars
- Cable Pathways
- More & More being Developed



ELASTOMERIC

- Cast-In Devices

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Fire Stop Installation

UL DESIGN SPECIFICATIONS

Mfgrs submit products for testing under UL 1479 to verify they provide the required fire resistance rating.

Fire Stop Testing

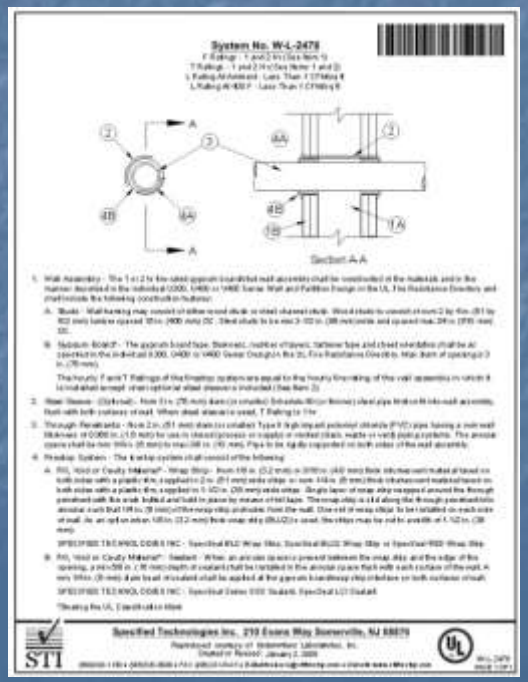
UL Test Procedures

Fire Stop Installation

UL DESIGN SPECIFICATIONS

All Fire Stop seals must be installed the same way they were tested

The written UL tested installation specification DOCUMENTS the requirements for installation


System No. W-L-2478

Section A-A

Specified Technologies Inc., 210 Essex Way Somerville, NJ 08876

Fire Stop

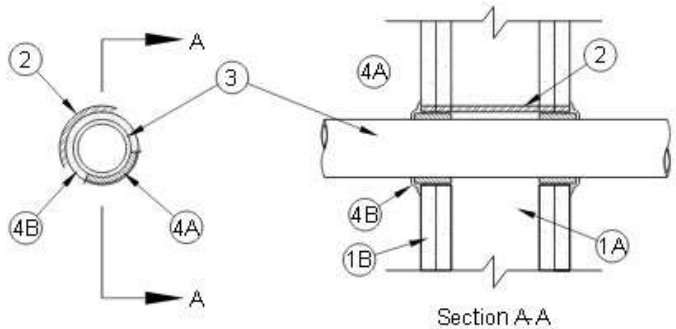
UL DESIGN

All Fire Stop seal
same way they

The written UL t
installation speci
DOCUMENTS
requirements
installatio

System No. W-L-2478

F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Items 1 and 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. Gypsum Board* - The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 3 in. (76 mm).

   The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed except when optional steel sleeve is included (See Item 2).

2. Steel Sleeve - (Optional) - Nom 3 in. (76 mm) diam (or smaller) Schedule 40 (or thinner) steel pipe friction-fit into wall assembly, flush with both surfaces of wall. When steel sleeve is used, T Rating is 1 hr.

3. Through Penetrants - Nom 2 in. (51 mm) diam (or smaller) Type II high impact polyvinyl chloride (PVC) pipe having a nom wall thickness of 0.060 in. (1.6 mm) for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The annular space shall be min 1/4 in. (6 mm) to max 3/8 in. (10 mm). Pipe to be rigidly supported on both sides of the wall assembly.

4. Firestop System - The firestop system shall consist of the following:

   A. Fill, Void or Cavity Material* - Wrap Strip - Nom 1/8 in. (3.2 mm) or 3/16 in. (4.8 mm) thick intumescent material faced on both sides with a plastic film, supplied in 2 in. (51 mm) wide strips or nom 1/4 in. (6 mm) thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. (38 mm) wide strips. Single layer of wrap strip wrapped around the through penetrant with the ends butted and held in place by means of foil tape. The wrap strip is slid along the through penetrant into annulus such that 1/4 in. (6 mm) of the wrap strip protrudes from the wall. One set of wrap strips to be installed on each side of wall. As an option when 1/8 in. (3.2 mm) thick wrap strip (BLU2) is used, the strips may be cut to a width of 1-1/2 in. (38 mm).

   SPECIFIED TECHNOLOGIES INC - SpecSeal BLU Wrap Strip, SpecSeal BLU2 Wrap Strip or SpecSeal RED Wrap Strip

   B. Fill, Void or Cavity Material* - Sealant - When an annular space is present between the wrap strip and the edge of the opening, a min 5/8 in. (16 mm) depth of sealant shall be installed in the annular space flush with each surface of the wall. A min 1/4 in. (6 mm) diam bead of sealant shall be applied at the gypsum board/wrap strip interface on both surfaces of wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant

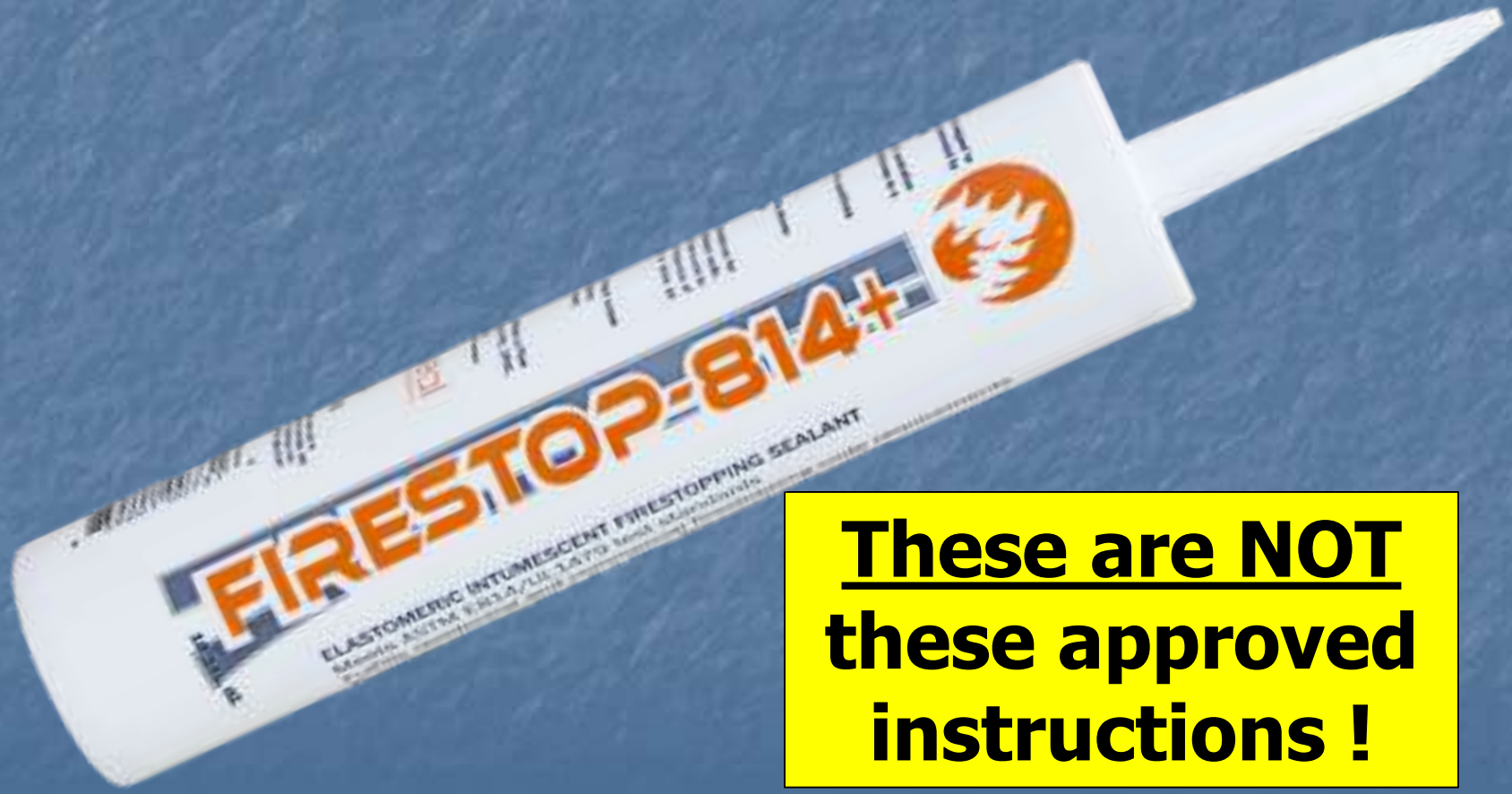
   *Bearing the UL Classification Mark

STI
Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876

(800)992-1180 • (908)526-8000 • FAX (908)231-8415 • E-Mail:techserv@stifirestop.com • Website:www.stifirestop.com

Fire Stop Designs

APPROVED INSTALLATION INSTRUCTIONS

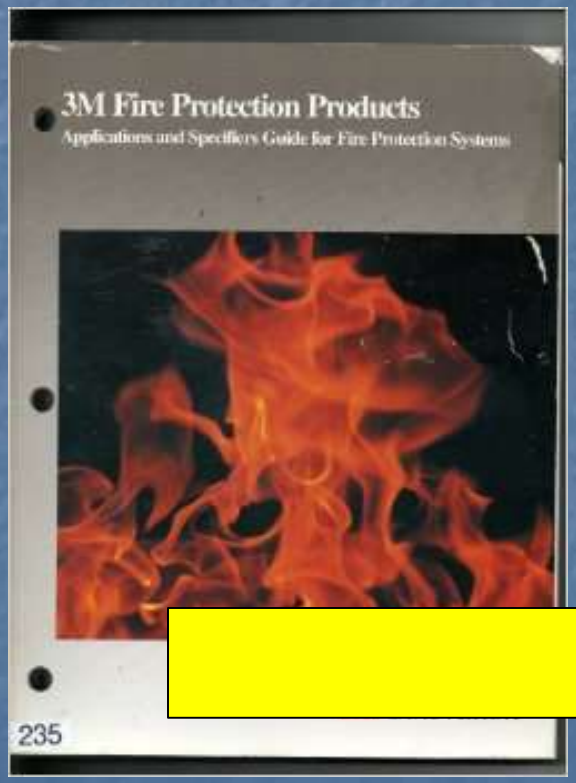


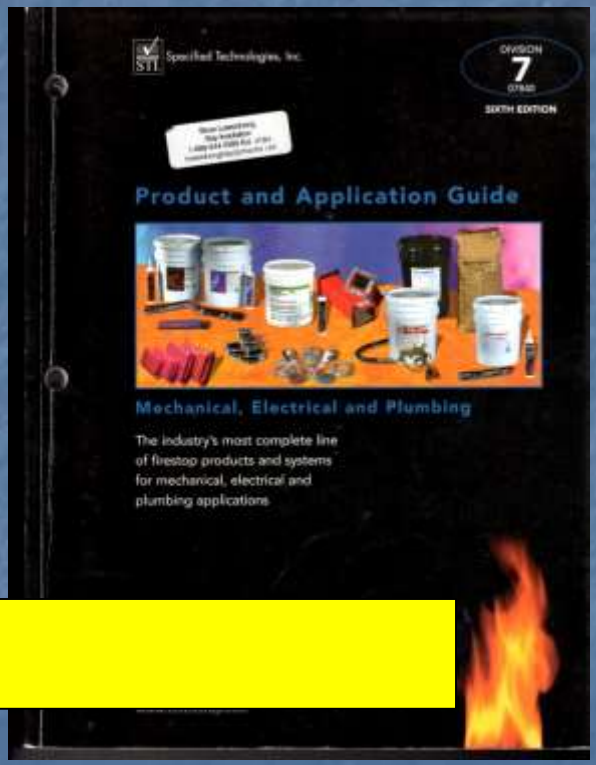
These are NOT these approved instructions !

APPROVED INSTALLATION INSTRUCTIONS

UL DESIGN SPECIFICATION

Sealant Mfgr Application Manuals





Get a Copy !

APPROVED INSTALLATION INSTRUCTIONS

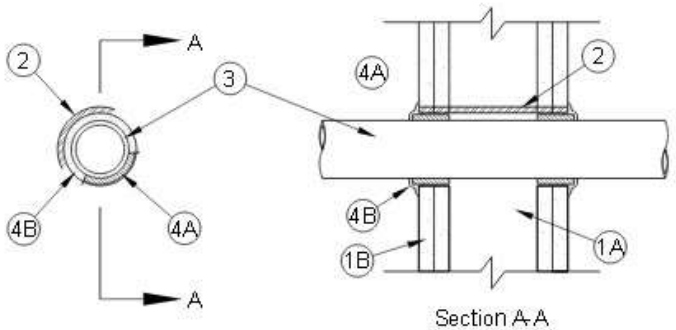
On-Line Application Manuals

PRINT-OUT
A hard copy of all UL Designs

Inspectors will NOT accept On-Line documentation unless it is immediately available

System No. W-L-2478

F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Items 1 and 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.

   B. Gypsum Board* - The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 3 in. (76 mm).

   The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed except when optional steel sleeve is included (See Item 2).

2. Steel Sleeve - (Optional) - Nom 3 in. (76 mm) diam (or smaller) Schedule 40 (or thinner) steel pipe friction-fit into wall assembly, flush with both surfaces of wall. When steel sleeve is used, T Rating is 1 hr.

3. Through Penetrants - Nom 2 in. (51 mm) diam (or smaller) Type II high impact polyvinyl chloride (PVC) pipe having a nom wall thickness of 0.060 in. (1.6 mm) for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The annular space shall be min 1/4 in. (6 mm) to max 3/8 in. (10 mm). Pipe to be rigidly supported on both sides of the wall assembly.

4. Firestop System - The firestop system shall consist of the following:

   A. Fill, Void or Cavity Material* - Wrap Strip - Nom 1/8 in. (3.2 mm) or 3/16 in. (4.8 mm) thick intumescent material faced on both sides with a plastic film, supplied in 2 in. (51 mm) wide strips or nom 1/4 in. (6 mm) thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. (38 mm) wide strips. Single layer of wrap strip wrapped around the through penetrant with the ends butted and held in place by means of foil tape. The wrap strip is slid along the through penetrant into annulus such that 1/4 in. (6 mm) of the wrap strip protrudes from the wall. One set of wrap strips to be installed on each side of wall. As an option when 1/8 in. (3.2 mm) thick wrap strip (BLU2) is used, the strips may be cut to a width of 1-1/2 in. (38 mm).

   SPECIFIED TECHNOLOGIES INC - SpecSeal BLU Wrap Strip, SpecSeal BLU2 Wrap Strip or SpecSeal RED Wrap Strip

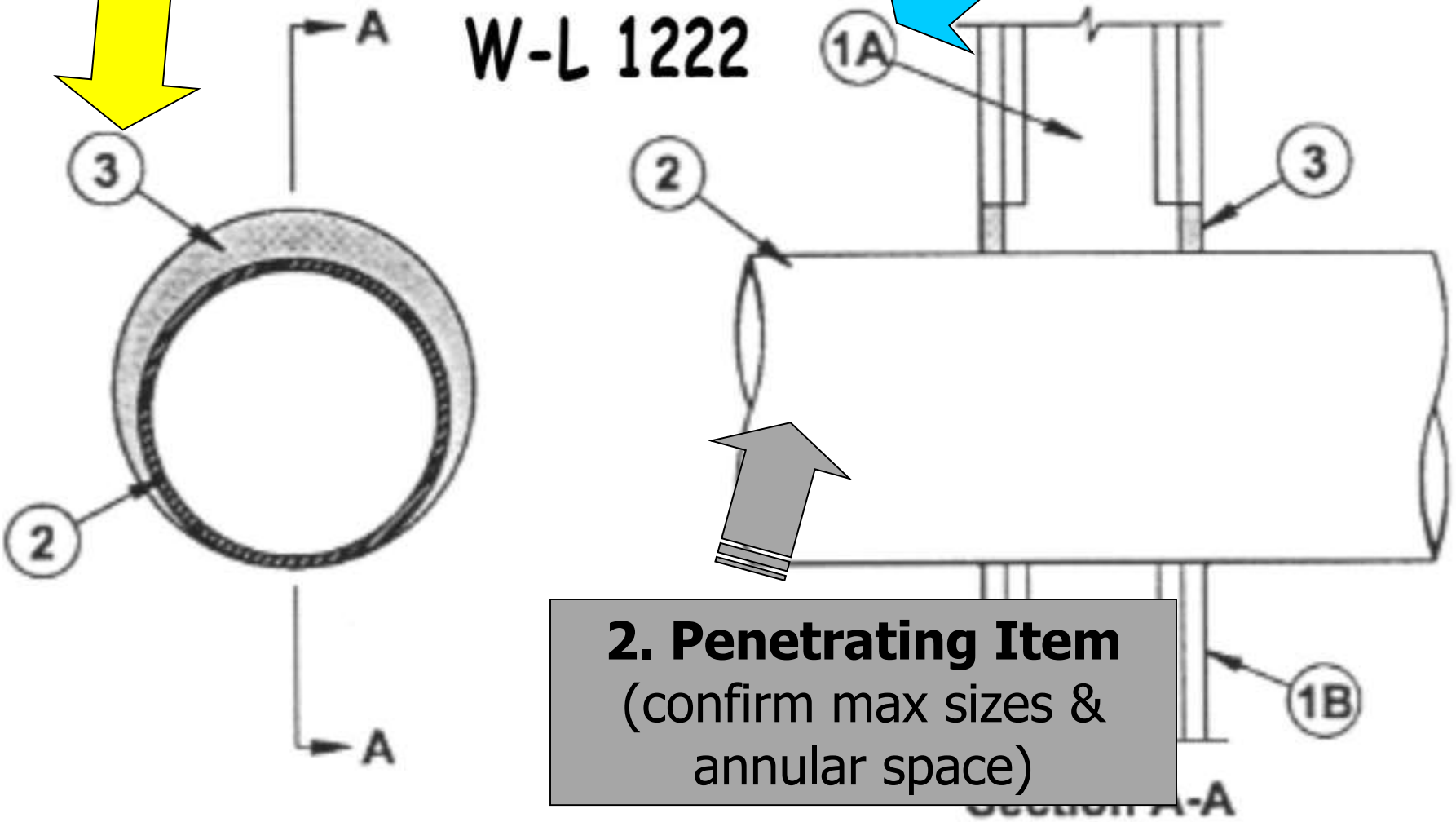
   B. Fill, Void or Cavity Material* - Sealant - When an annular space is present between the wrap strip and the edge of the opening, a min 5/8 in. (16 mm) depth of sealant shall be installed in the annular space flush with each surface of the wall. A min 1/4 in. (6 mm) diam bead of sealant shall be applied at the gypsum board/wrap strip interface on both surfaces of wall.

   SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant

   *Bearing the UL Classification Mark

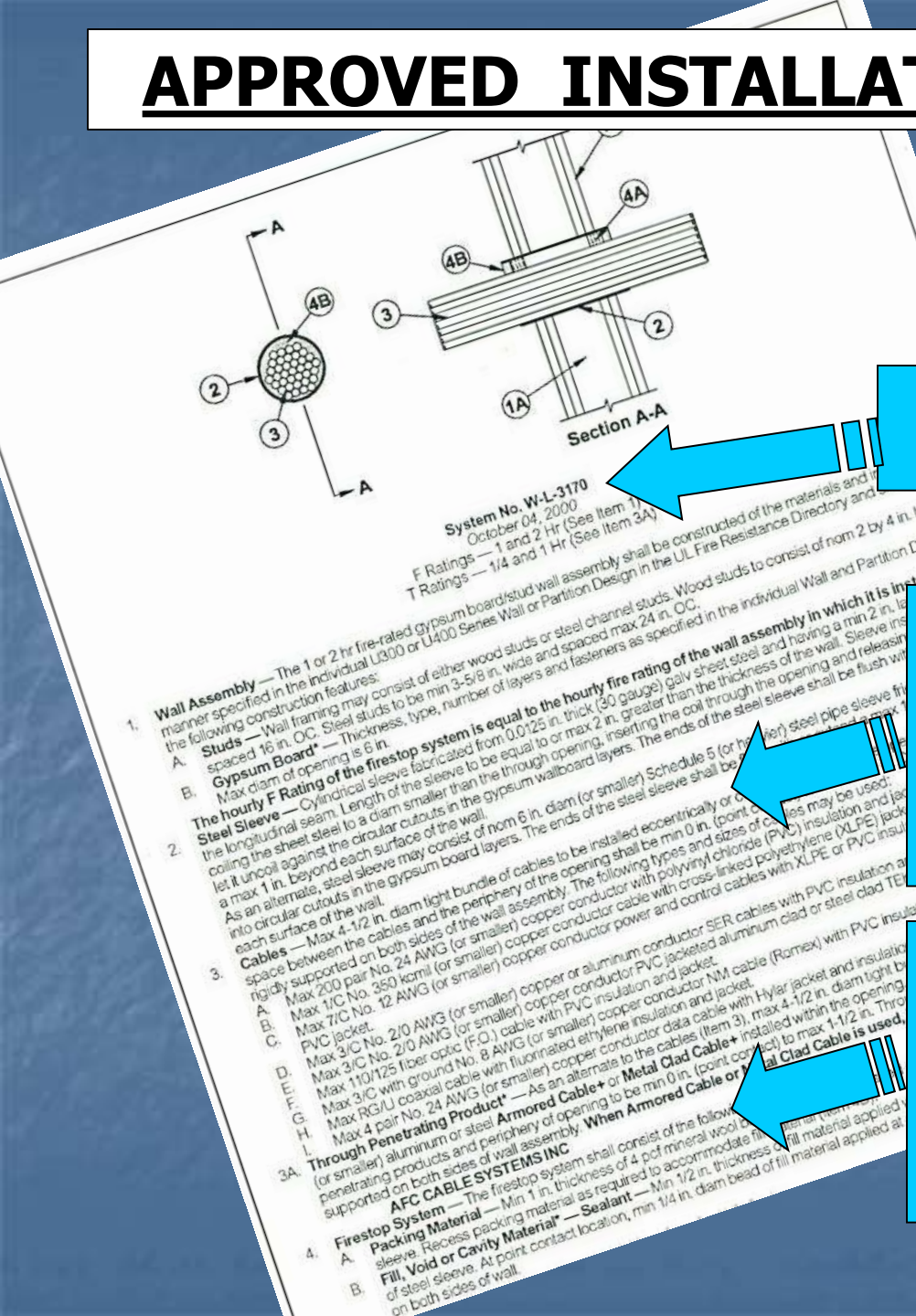
3. Sealant (confirm product & thickness

1. Wall/Floor (confirm rating)



2. Penetrating Item (confirm max sizes & annular space)

APPROVED INSTALLATION INSTRUCTIONS



System No. W-L-3170
October 04, 2000

F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/4 and 1 Hr (See Item 3A)

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and the following construction features:
   A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.
   B. **Gypsum Board*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 6 in.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Steel Sleeve** — Cylindrical sleeve fabricated from 0.0125 in. thick (30 gauge) galv sheet steel and having a min 2 in. long longitudinal seam. Length of the sleeve to be equal to or max 2 in. greater than the thickness of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing to let it uncoil against the circular cutouts in the gypsum wallboard layers. The ends of the steel sleeve shall be flush with each surface of the wall. As an alternate, steel sleeve may consist of nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe sleeve fitted into circular cutouts in the gypsum board layers. The ends of the steel sleeve shall be flush with each surface of the wall.
3. **Cables** — Max 4-1/2 in. diam tight bundle of cables to be installed eccentrically or concentrically in the annular space between the cables and the periphery of the opening shall be min 0 in. (point contact). Cables may be used:
   A. Max 200 pair No. 24 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacket, rigidly supported on both sides of the wall assembly. The following types and sizes of cables may be used:
   B. Max 1/C No. 350 kcmil (or smaller) copper conductor power and control cables with XLPE or PVC insulation and PVC jacket.
   C. Max 7/C No. 12 AWG (or smaller) copper conductor PVC jacketed aluminum clad or steel clad TEP
   D. Max 3/C No. 2/0 AWG (or smaller) copper or aluminum conductor SER cables with PVC insulation and jacket.
   E. Max 3/C No. 2/0 AWG (or smaller) cable with PVC insulation and jacket.
   F. Max 110/125 fiber optic (F.O.) cable with fluorinated ethylene insulation and jacket.
   G. Max RG/U coaxial cable with fluorinated ethylene insulation and jacket.
   H. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with Mylar jacket and insulation
   L. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable (Romex) with PVC insulation and jacket.

3A. **Through Penetrating Product*** — As an alternate to the cables (Item 3), max 4-1/2 in. diam tight bundle of (or smaller) aluminum or steel **Armored Cable+** or **Metal Clad Cable+** installed within the opening. Through penetrating products and periphery of opening to be min 0 in. (point contact) to max 1-1/2 in. Through supported on both sides of wall assembly. **When Armored Cable or Metal Clad Cable is used,**

AFC CABLE SYSTEMS INC

4. **Firestop System** — The firestop system shall consist of the following:
   A. **Packing Material** — Min 1 in. thickness of 4 pcf mineral wool fiber material applied as a permanent form. sleeve. Recess packing material as required to accommodate fill material applied at
   B. **Fill, Void or Cavity Material*** — **Sealant** — Min 1/2 in. thickness of fill material applied at of steel sleeve. At point contact location, min 1/4 in. diam bead of fill material applied at on both sides of wall.

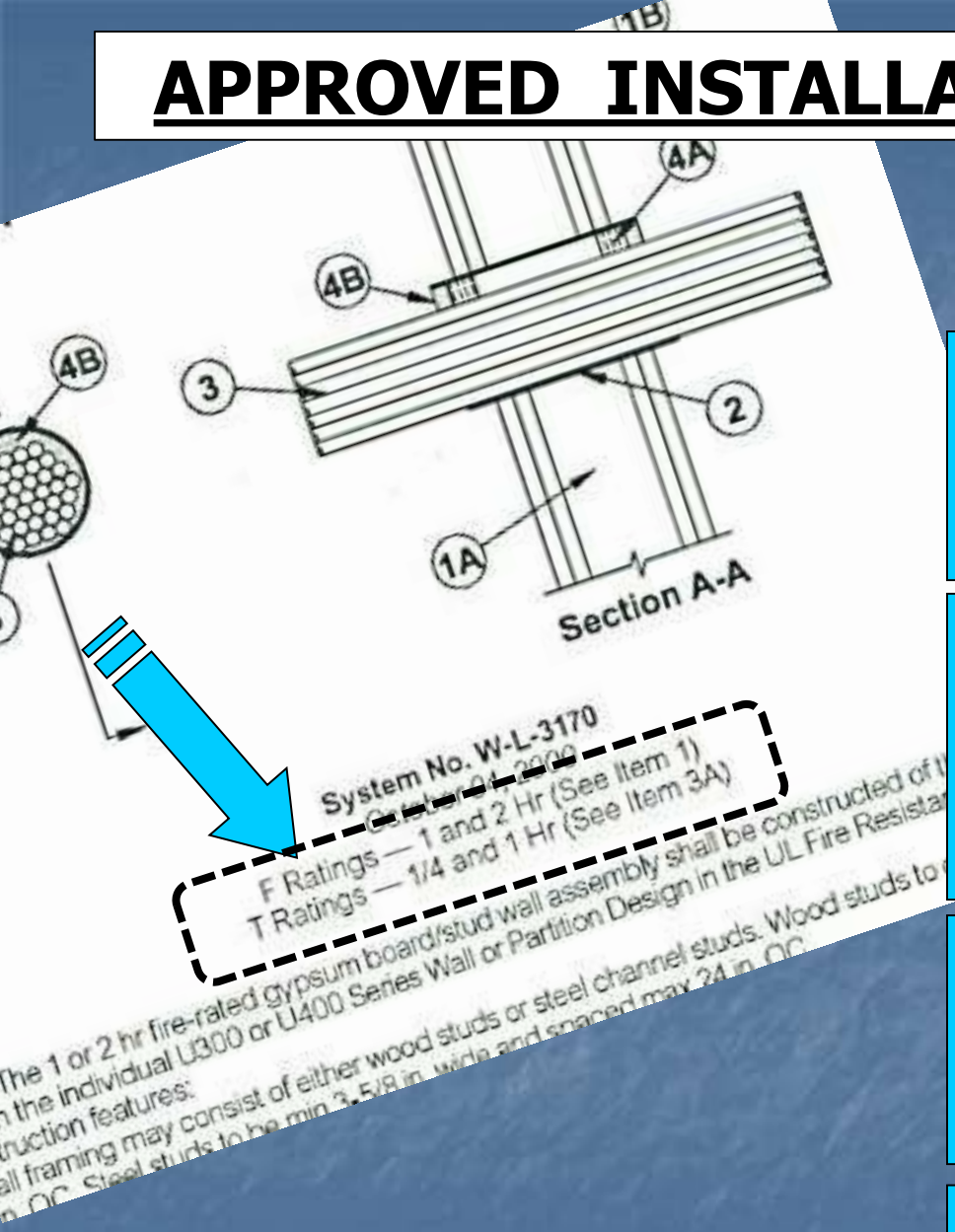
UL System WL-3170

Read the entire UL spec sheet.

Describes the limits of how many penetrants go through the opening, max opening size, etc

Describes how-to make the proper seal using packing & sealant and if tooling is needed

APPROVED INSTALLATION INSTRUCTIONS



RATINGS

F – Time that assembly has been tested to resist the penetration of fire

T – Time for temperature to reach 325°F on unexposed side of system (measure of thermal conductivity)

L – Measure of smoke leakage at a std pressure & air flow

W – Measure of water proofness

APPROVED INSTALLATION INSTRUCTIONS

Similar to a Cooking Recipe

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redients

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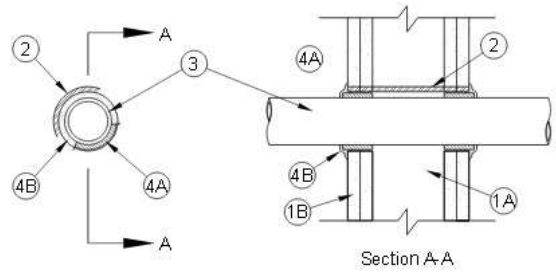
IF YOU WANT TH
TO TURN OUT, YO
TO FOLLOW THE I

System No. W-L-2478

F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Items 1 and 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* - The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 3 in. (76 mm).

   The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed except when optional steel sleeve is included (See Item 2).
2. Steel Sleeve - (Optional) - Nom 3 in. (76 mm) diam (or smaller) Schedule 40 (or thinner) steel pipe friction-fit into wall assembly, flush with both surfaces of wall. When steel sleeve is used, T Rating is 1 hr.
3. Through Penetrants - Nom 2 in. (51 mm) diam (or smaller) Type II high impact polyvinyl chloride (PVC) pipe having a nom wall thickness of 0.060 in. (1.6 mm) for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The annular space shall be min 1/4 in. (6 mm) to max 3/8 in. (10 mm). Pipe to be rigidly supported on both sides of the wall assembly.
4. Firestop System - The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material* - Wrap Strip - Nom 1/8 in. (3.2 mm) or 3/16 in. (4.8 mm) thick intumescent material faced on both sides with a plastic film, supplied in 2 in. (51 mm) wide strips or nom 1/4 in. (6 mm) thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. (38 mm) wide strips. Single layer of wrap strip wrapped around the through penetrant with the ends butted and held in place by means of foil tape. The wrap strip is slid along the through penetrant into annulus such that 1/4 in. (6 mm) of the wrap strip protrudes from the wall. One set of wrap strips to be installed on each side of wall. As an option when 1/8 in. (3.2 mm) thick wrap strip (BLU2) is used, the strips may be cut to a width of 1-1/2 in. (38 mm).

      SPECIFIED TECHNOLOGIES INC - SpecSeal BLU Wrap Strip, SpecSeal BLU2 Wrap Strip or SpecSeal RED Wrap Strip
   B. Fill, Void or Cavity Material* - Sealant - When an annular space is present between the wrap strip and the edge of the opening, a min 5/8 in. (16 mm) depth of sealant shall be installed in the annular space flush with each surface of the wall. A min 1/4 in. (6 mm) diam bead of sealant shall be applied at the gypsum board/wrap strip interface on both surfaces of wall.

      SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant

      *Bearing the UL Classification Mark

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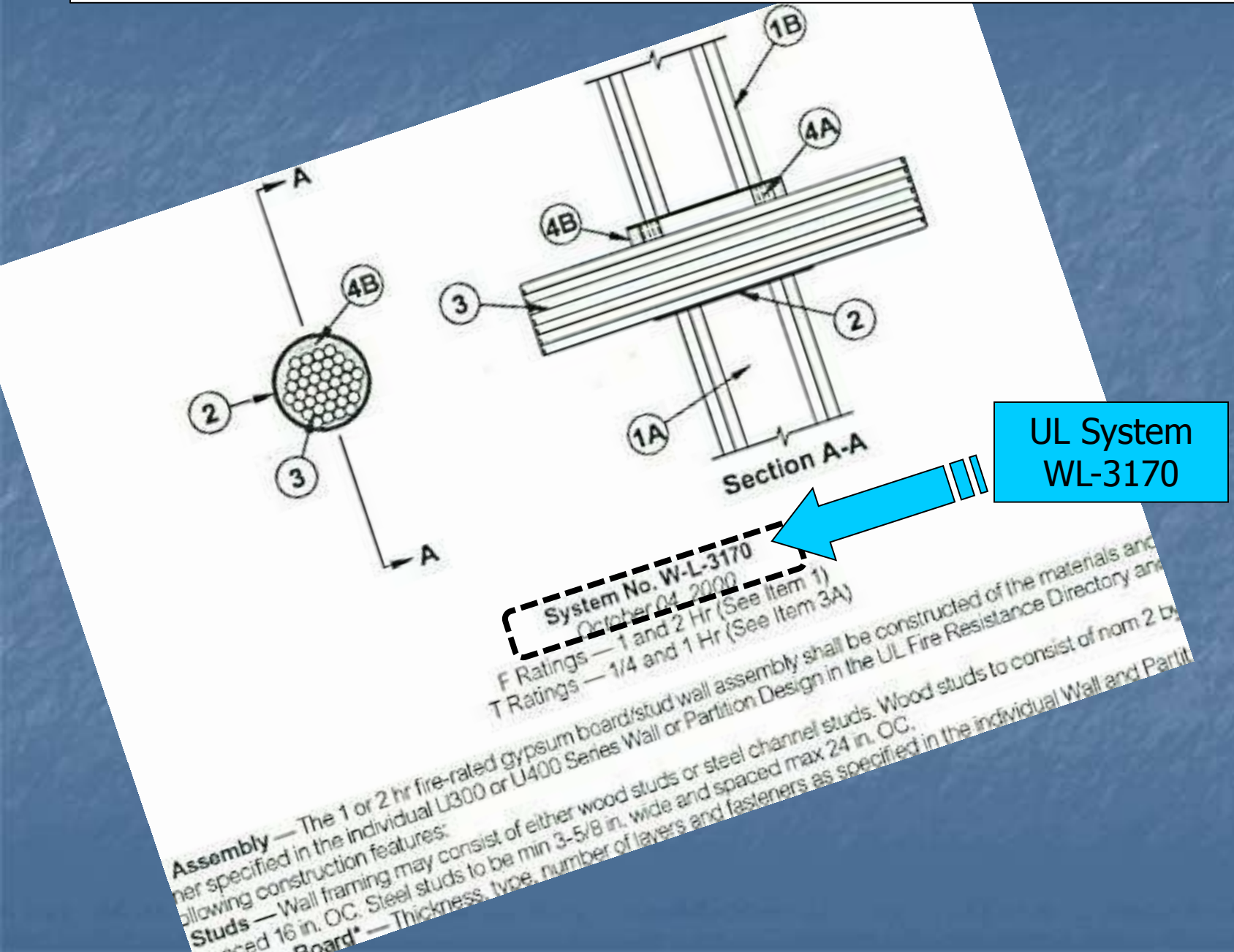
W-L-2478
PAGE 1 OF 1

APPROVED INSTALLATION INSTRUCTIONS



UL Fire Stop DESIGN NUMBERING

1st LETTER → **Rated Surface**

W = Wall **F** = Floor **C** = Combined Floor or Wall

2nd LETTER → **Surface Characteristics**

A = Concrete Floor <= 5" Thick
B = Concrete Floor > 5" Thick
C = Framed Floors
D = Deck Construction
J = Concrete/Masonry Wall <= 8" Thick
K = Concrete/Masonry Wall> 8" Thick
L = Framed Walls
M = Bulkheads

UL System WL-3170

(E-I, N-Z = Reserved for Future Use)

UL Fire Stop DESIGN NUMBERING

NUMBERS → **Penetrating Item**

1000's = Metal Pipe, Conduit, Tubing
2000's = Non-Metal Pipe, Conduit, Tubing
3000's = Cable
4000's = Cable Tray
5000's = Insulated Pipes
6000's = Misc Electrical & Mechanical
7000's = Duct
8000's = Multiple Items

UL System WL-3170

UL Fire Stop DESIGN NUMBERING

The system must match the situation

CAJ-5138 = Concrete floor/wall with an Insulated Pipe

WJ-3090 = Concrete wall with Cables **1st Letter**

CAJ-2292 = Concrete floor/wall with a Plastic Pipe

2nd Letter

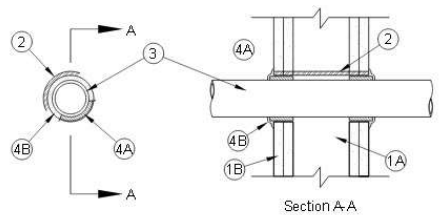
WL-5121 = Drywall wall with an Insulated Pipe

WL-7061 = Drywall wall with a Duct **Numbers**

UL Fire Stop DESIGN NUMBERING

One system is NOT applicable for all situations

System No. W-L-2478
F Ratings - 1 and 2 Hr (See Item 1)
T Ratings - 1 and 2 Hr (See Items 1 and 2)
L Rating At Ambient - Less Than 1 CFM/sq ft
L Rating At 400 F - Less Than 1 CFM/sq ft



Section A-A

1. Wall Assembly - The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400 or V400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
   B. Gypsum Board* - The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400 or V400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 3 in. (76 mm).

   The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed except when optional steel sleeve is included (See Item 2).
2. Steel Sleeve - (Optional) - Nom 3 in. (76 mm) diam (or smaller) Schedule 40 (or thinner) steel pipe friction-fit into wall assembly, flush with both surfaces of wall. When steel sleeve is used, T Rating is 1 hr.
3. Through Penetrants - Nom 2 in. (51 mm) diam (or smaller) Type II high impact polyvinyl chloride (PVC) pipe having a nom wall thickness of 0.060 in. (1.6 mm) for use in closed (process or supply) or vented (drain, waste or vent) piping systems. The annular space shall be min 1/4 in. (6 mm) to max 3/8 in. (10 mm). Pipe to be rigidly supported on both sides of the wall assembly.
4. Firestop System - The firestop system shall consist of the following:
   A. Fill, Void or Cavity Material* - Wrap Strip - Nom 1/8 in. (3.2 mm) or 3/16 in. (4.8 mm) thick intumescent material faced on both sides with a plastic film, supplied in 2 in. (51 mm) wide strips or nom 1/4 in. (6 mm) thick intumescent material faced on both sides with a plastic film, supplied in 1-1/2 in. (38 mm) wide strips. Single layer of wrap strip wrapped around the through penetrant with the ends butted and held in place by means of foil tape. The wrap strip is slid along the through penetrant into annulus such that 1/4 in. (6 mm) of the wrap strip protrudes from the wall. One set of wrap strips to be installed on each side of wall. As an option when 1/8 in. (3.2 mm) thick wrap strip (BLU2) is used, the strips may be cut to a width of 1-1/2 in. (38 mm).

      SPECIFIED TECHNOLOGIES INC - SpecSeal BLU Wrap Strip, SpecSeal BLU2 Wrap Strip or SpecSeal RED Wrap Strip
   B. Fill, Void or Cavity Material* - Sealant - When an annular space is present between the wrap strip and the edge of the opening, a min 5/8 in. (16 mm) depth of sealant shall be installed in the annular space flush with each surface of the wall. A min 1/4 in. (6 mm) diam bead of sealant shall be applied at the gypsum board/wrap strip interface on both surfaces of wall.

      SPECIFIED TECHNOLOGIES INC - SpecSeal Series SSS Sealant, SpecSeal LCI Sealant

      *Bearing the UL Classification Mark

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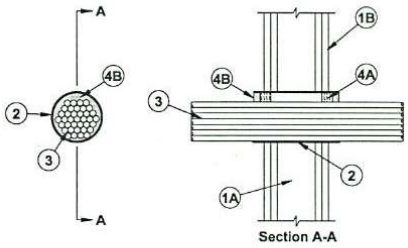


Section A-A

System No. W-L-3170
October 04, 2000
F Ratings — 1 and 2 Hr (See Item 1)
T Ratings — 1/4 and 1 Hr (See Item 3A)

1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
   A. **Studs** — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 3-5/8 in. wide and spaced max 24 in. OC.
   B. **Gypsum Board*** — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 6 in.

   The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
2. **Steel Sleeve** — Cylindrical sleeve fabricated from 0.0125 in. thick (30 gauge) galv sheet steel and having a min 2 in. lap along the longitudinal seam. Length of the sleeve to be equal to or max 2 in. greater than the thickness of the wall. Sleeve installed by coiling the sheet steel to a diam smaller than the through opening, inserting the coil through the opening and releasing the coil to let it uncoil against the circular cutouts in the gypsum wallboard layers. The ends of the steel sleeve shall be flush with or extend a max 1 in. beyond each surface of the wall.
   As an alternate, steel sleeve may consist of nom 6 in. diam (or smaller) Schedule 5 (or heavier) steel pipe sleeve friction-fitted into circular cutouts in the gypsum board layers. The ends of the steel sleeve shall be flush with or extend a max 1 in. beyond each surface of the wall.
3. **Cables** — Max 4-1/2 in. diam tight bundle of cables to be installed eccentrically or concentrically within the opening. The annular space between the cables and the periphery of the opening shall be min 0 in. (point contact) to max 1-1/2 in. Cable bundle to be rigidly supported on both sides of the wall assembly. The following types and sizes of cables may be used:
   A. Max 200 pair No. 24 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacketing material.
   B. Max 1/C No. 350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene (XLPE) jacket.
   C. Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.
   D. Max 3/C No. 2/0 AWG (or smaller) copper or aluminum conductor SER cables with PVC insulation and jacket.
   E. Max 3/C No. 2/0 AWG (or smaller) copper conductor PVC jacketed aluminum clad or steel clad TEK cable.
   F. Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket.
   G. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable (Romex) with PVC insulation and jacket.
   H. Max RG/U coaxial cable with fluorinated ethylene insulation and jacket.
   I. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with Hylar jacket and insulation.

3A. **Through Penetrating Product*** — As an alternate to the cables (Item 3), max 4-1/2 in. diam tight bundle of max 4/C No. 2/0 AWG (or smaller) aluminum or steel **Armored Cable+** or **Metal Clad Cable+** installed within the opening. Annular space between through-penetrating products and periphery of opening to be min 0 in. (point contact) to max 1-1/2 in. Through penetrating product rigidly supported on both sides of wall assembly. **When Armored Cable or Metal Clad Cable is used, T Rating is 1/4 hr.**
   AFC CABLE SYSTEMS INC
4. **Firestop System** — The firestop system shall consist of the following:
   A. **Packing Material** — Min 1 in. thickness of 4 pcf mineral wool batt insulation compressed and tightly packed into each end of sleeve. Recess packing material as required to accommodate fill material (Item 4B).
   B. **Fill, Void or Cavity Material* — Sealant** — Min 1/2 in. thickness of fill material applied within annulus, flush with each end of steel sleeve. At point contact location, min 1/4 in. diam bead of fill material applied at cable bundle/steel sleeve interface on both sides of wall.

Engineering Judgments

Frequently there are unique situations that do not fit one of the UL Tested systems

Most Sealant Mfgrs will evaluate the situation and recommend a solution based on knowledge of their various tested systems

… this is an "Engineering Judgement" (EJ)

Inspectors DON'T always accept EJ's

Best to have a Wis registered Architect/Engr to stamp & seal their acceptance of an EJ

Fire Stopping

AGENDA

A. Why Fire Stopping Is Important
B. Code References
C. Life Safety Plans
D. Fire Stop Products
E. Approved Design Installation Sheets
F. Installation Fundamentals
G. Labeling
H. Penetration Management Program
I. Installer Qualifications
J. Inspection Guidelines

FIRE STOPPING - GENERAL [LSC 8.2.3.2.4; 8.3.6]

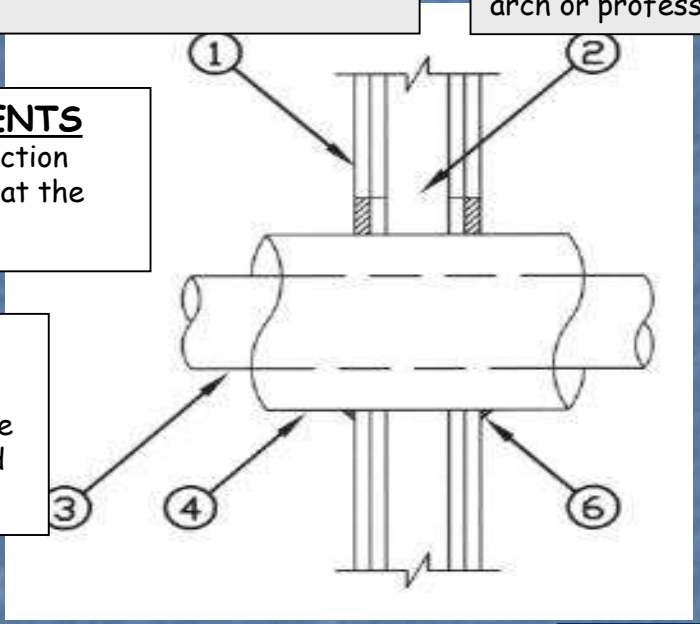
All penetrations through rated walls and floors must be sealed according to a UL (other listing agency) tested design. Typically, both sides of walls and the top side of floors must be stopped.

FOLLOW THE "RECIPE":

Always use the UL Design from the product vender for the precise method for each fire stop seal! Do NOT use the instructions on the tube!

ENGINEERING JUDGEMENT

If you can't find an EXACT match for your actual situation, your product supplier may be able to provide their educated opinion of how to adequately fire stop. However, many AHJ's will require a WI registered arch or professional engineer to stamp & sign the EJ.



1 & 2: RATED COMPONENTS

Show & describes the construction features of the floor or wall that the penetration is passing through.

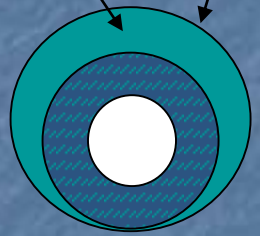
3 & 4: PENETRANTING ITEM

Shows & describes in detail the items that penetrate the Rated Component

RESTRICTIONS

Describes the

- maximum size of hole in the wall/floor and
- the minimum and maximum amount of annular gap



BEST PRACTICE:

Place an adhesive label to identify the important information by EACH fire stop penetrations, including

1). UL Design Used, 2). Brand & Produce Model Used, 3). Name of Installer & Company, 4). Date Installed

6: REQUIRED SEALANT

Describes

- the brand & model of fire stop product to use
- the thickness of the product, and
- the locations where it must be applied.

FIRE STOP-Plastic/Insulated Pipe

KEY CHECKS FOR PLASTIC or INSULATED PIPE

Fire stop material must

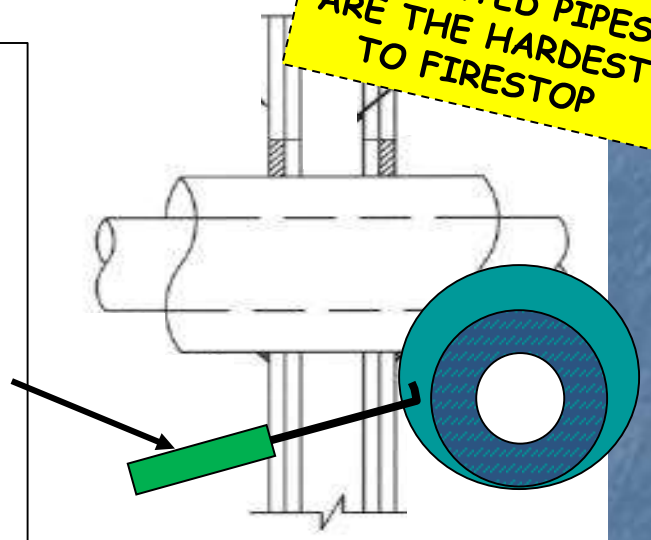
- Completely encircle the pipe (top is hardest)
- Must be IN wall between wall & penetrant
- Must Have an annular space on all sides of the pipe (the size depends on UL Design)
- Fill the annular space the thickness required by the UL Design (typically thickness of the GWB

PLASTIC & INSULATED PIPES ARE THE HARDEST TO FIRESTOP

Inspector may use a "PICK" tool to test for the size & location of the annular ring and the thickness of the fire stop sealant.

1. Poke around the perimeter of the hole to confirm that there is an annular gap
2. Work the "Pick" through the fire stop material until it is on the other side.
3. Rotate the "Pick" so it lines up with the annual gap and pull it outward until it hits against the "inside" of the fire stop material.
4. Place your thumb and index finger on the shaft of the "Pick" up against the exposed side of the fire stop product.
5. Without moving your fingers on the shaft, work the "Pick" out of the fire stop and look at the distance between the hood end of the "Pick" and your fingers. This is the approx thickness of the fire stop. It must approx match the thickness shown on the UL design.
6. If the thickness is not with 1/8" of the required thickness the fire stop should be rejected and repaired.

Check a significant quantity of seals by each vender until they have proven the ability to install acceptable seals.



INTUMESCENT SEALANT

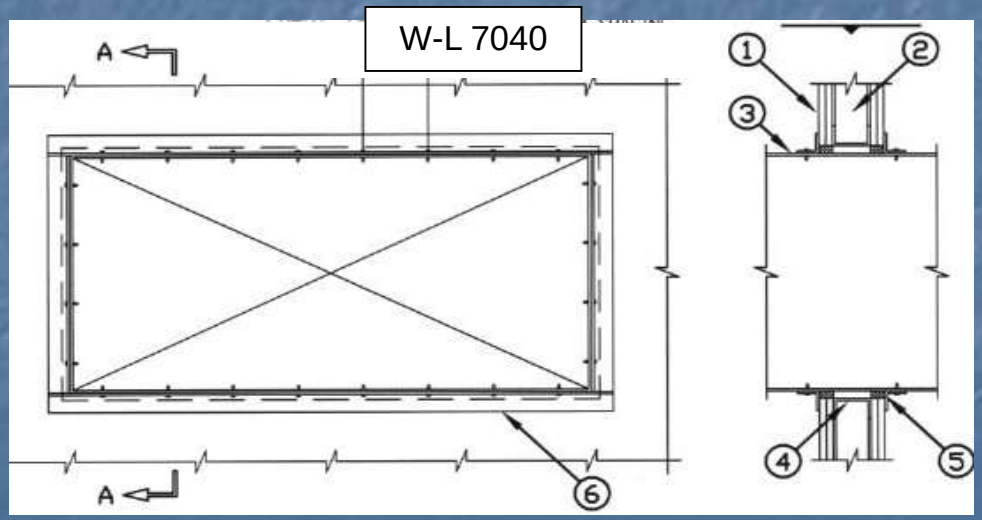
A fire stop sealant that will expand about 10 times when heated to seal materials that could have deformed & caused a hole when heated

FIRE STOP-Ducts

KEY CHECKS FOR DUCT FIRE STOPPING

- Fire stop material must completely encircle the duct.
- If insulated it must fill the annual space (typically 5/8" thick).
- If rectangular duct, framing must encircle the duct and angles installed all around, unless fire stop design shows otherwise

CAUTION: **Many UL approved designs limit the physical size of the ductwork that they cover. Confirm that the actual size of duct is within the UL Design limits.**

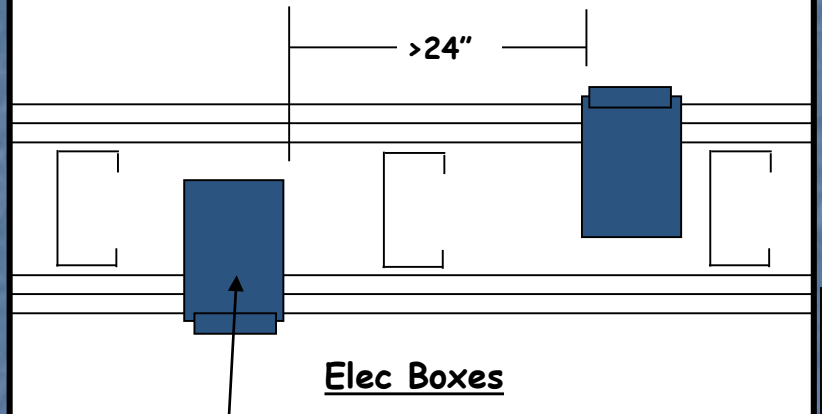


1.Gyp Brd Wall (2 hr shown)
2. Metal studs
3.Max 24"x48" rect duct, min 24g (no damper)
max hole 1244si, 49"long;
annular 1/4" to 1"
4.Metal stud framed opening
5.Min FS-1:5/8" for 1hr/1-1/4" for
2 hr; on both sides;
6.Steel angle(1-1/2" legs, 16g) on four sides;
attached to duct (not wall) w/#8x3/4" screws

FIRE STOP-Pipes, Cables & Electrical

Elec Boxes in Rated Walls

Elec Boxes must be > 24" apart (unless using "putty pads); never acceptable back-to-back [IBC 711.3.2(3)]



Elec Boxes

- Max 16 sq.inch box (2 gang) per 100 sq.inch for any 100 sq.ft of wall space [IBC 711.3.2]
- Max 100 sq.in./100 sq.ft.
- Max 1/8" annular space

EASIEST TO FIRE STOP

KEY CHECKS FOR METAL PIPES

1. Fire stop material must completely encircle the pipe.
2. If there is an annular space the sealant must fill the space (typically 5/8" thick)

MOST FREQUENTLY CITED FIRE STOP

KEY CHECKS FOR CABLES

a. Firestop seal must completely encircle the cable and must fill the annual space (typically 5/8" thick).

b. There must be an annular space on 3 sides of the cable.

c. Must have fewer than the max quantity of cables shown in the approved design, which is usually <50% fill of the hole/sleeve. (actual fill% = ~ half of visual fill %)

Handy Fire Stop Tips

1-Know WHICH WALLS Require Penetrations to be Fire Stopped (Use a Life Safety Plan; Doing all wastes time/money; inspector knows you don't know the rules)

2-Keep COPIES of all UL Designs Used in Bldg

3-Walls Must be Sealed on BOTH sides

4-Floors are typically Sealed on the TOP side

5-On Drywall, Seals are typically the SAME THICKNESS as the drywall (but confirm UL Design)

Handy Fire Stop Tips

6-TOO MUCH SEALANT is an indication of poor installation

7-Check especially on the TOP SIDE of hard to reach ducts and pipes

8-DO NOT MIX fire stop products in the same penetrations … it will void all

9-Ducts & Multiple Penetrations typically REQUIRE FRAMING around the penetrations

Fire Stopping

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Fire Stop Labels

NOT Mandatory

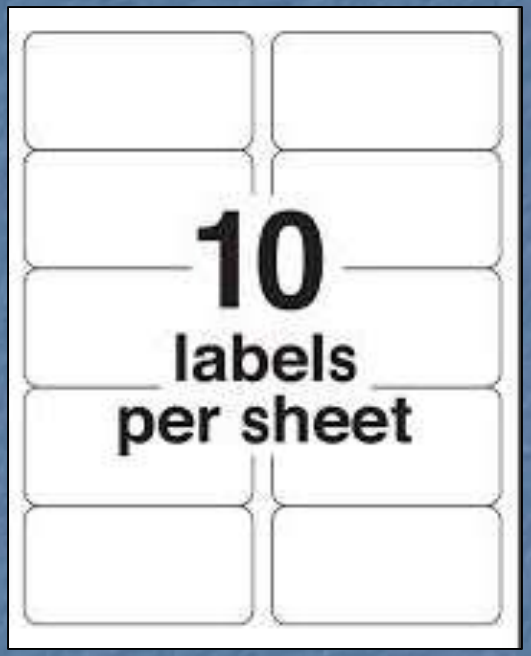
But GOOD Citation Protection & Quality Control

Fire Stop Labels

Sealant Companies Typically Have Labels

Fire Stop Labels

Recommend make your own on 2x4 Avery Labels



- **Smaller to fit in tight spaces**
- **Customize to your needs**
- **Hand-Out with approved Fire Stop Permit**

Fire Stop Labels

Items a Good Label should contain

FIRE STOP ID LABEL

1. Fire Permit #_____
2. UL Design #_____
3. Mfgr of Product_____
4. Product Name_____
5. Installer Name_____
6. Installer Co_____
7. Date Installed_____

Fire Stop Labels

FIRE STOP ID LABEL

1.Fire Permit #_____

2.UL Design #_____

3.Mfgr of Product_____

4.Product Name_____

5.Installer Name_____

6.Installer Co_____

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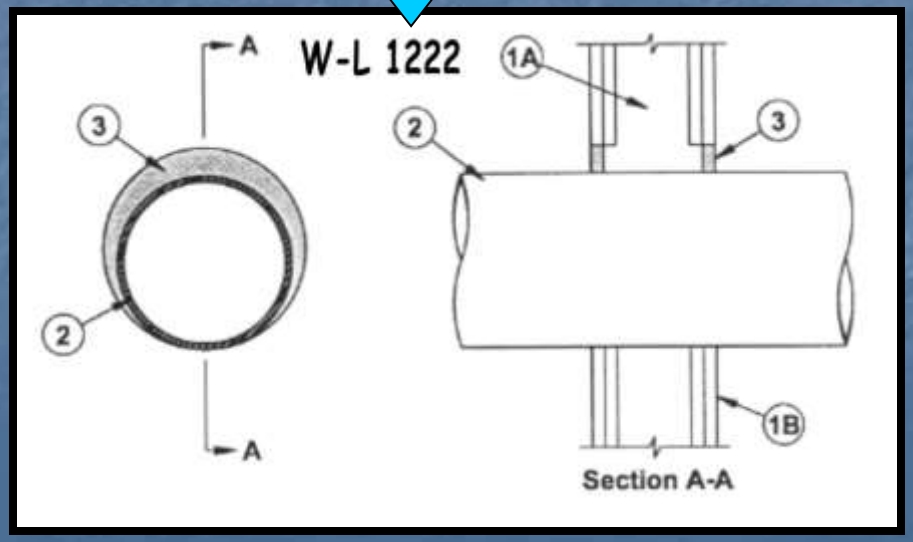

At each penetration WRITE the <u>UL Design #</u> of the UL system used for the seal

Fire Stop Labels

Knowing the numbering system, an inspector can tell if the UL number matches the situation

This is for a:

- **WL (drywall wall)**
- **1000 series (metal pipe)**

Fire Stopping

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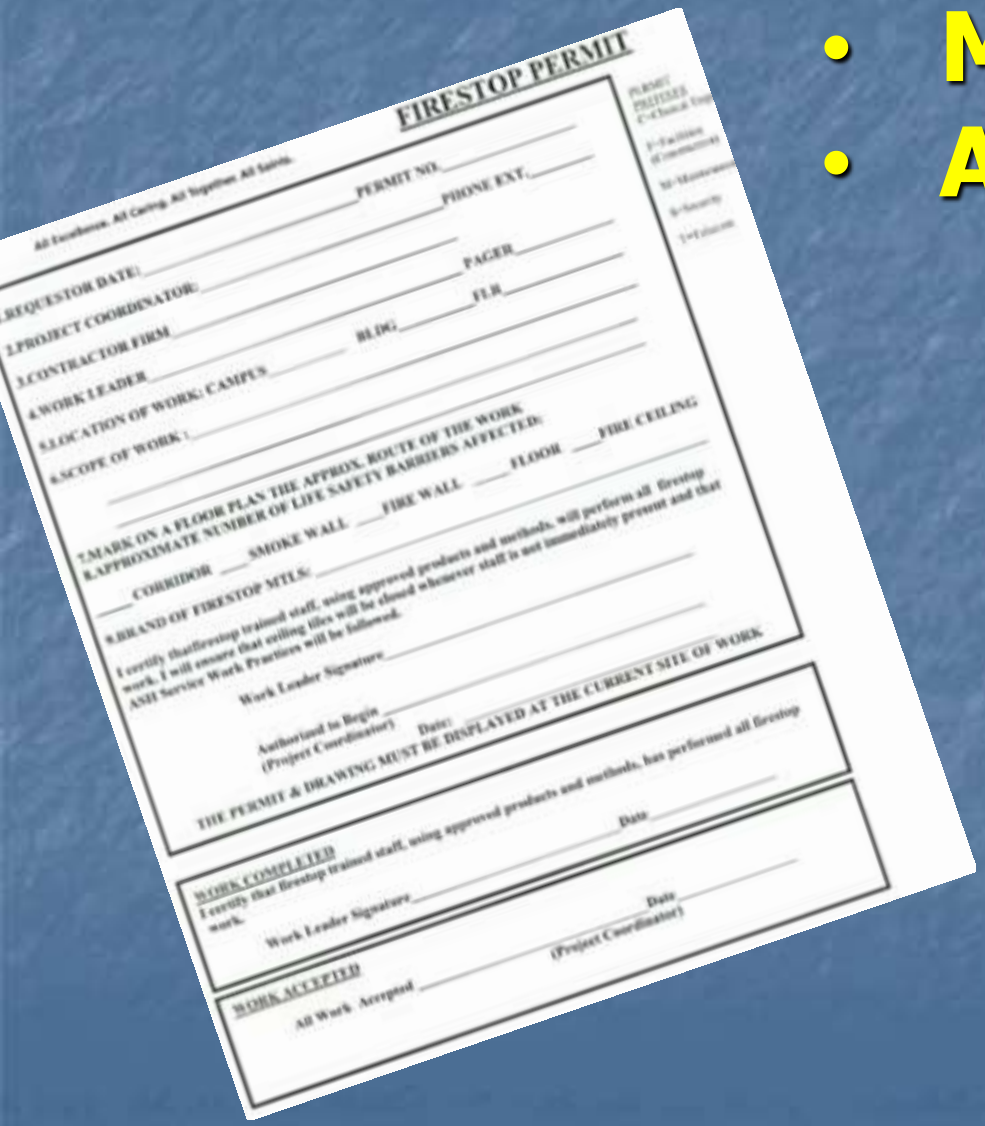
Barrier Management Program


FIRESTOP PERMIT

All Freedoms, All Caring, All Together, All Saints.

PERMIT NO.

1.REQUESTOR DATE: PHONE EXT.:

2.PROJECT COORDINATOR: PAGER

3.CONTRACTOR FIRM

4.WORK LEADER BLDG. FLR

5.LOCATION OF WORK: CAMPUS

6.SCOPE OF WORK :

7.MARK ON A FLOOR PLAN THE APPROX. ROUTE OF THE WORK
8.APPROXIMATE NUMBER OF LIFE SAFETY BARRIERS AFFECTED:

___ CORRIDOR ___ SMOKE WALL ___ FIRE WALL ___ FLOOR ___ FIRE CEILING

9.BRAND OF FIRESTOP MTLS:

I certify that firestop trained staff, using approved products and methods, will perform all firestop work. I will ensure that ceiling tiles will be closed whenever staff is not immediately present and that ANI Service Work Practices will be followed.

Work Leader Signature

Authorized to Begin
(Project Coordinator) Date:

THE PERMIT & DRAWING MUST BE DISPLAYED AT THE CURRENT SITE OF WORK

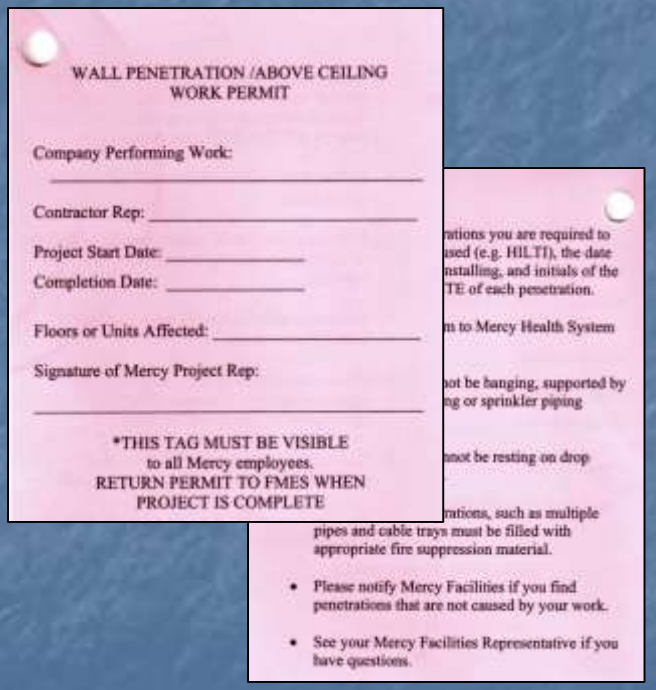
WORK COMPLETED
I certify that firestop trained staff, using approved products and methods, has performed all firestop work.

Work Leader Signature Date

WORK ACCEPTED

All Work Accepted Date
(Project Coordinator)

- **Many Formats**
- **Available On-Line**


WALL PENETRATION /ABOVE CEILING
WORK PERMIT

Company Performing Work:

Contractor Rep:

Project Start Date:

Completion Date:

Floors or Units Affected:

Signature of Mercy Project Rep:

*THIS TAG MUST BE VISIBLE
to all Mercy employees.
RETURN PERMIT TO FMES WHEN
PROJECT IS COMPLETE

rations you are required to
sed (e.g. HILTI), the date
nstalling, and initials of the
TE of each penetration.

n to Mercy Health System

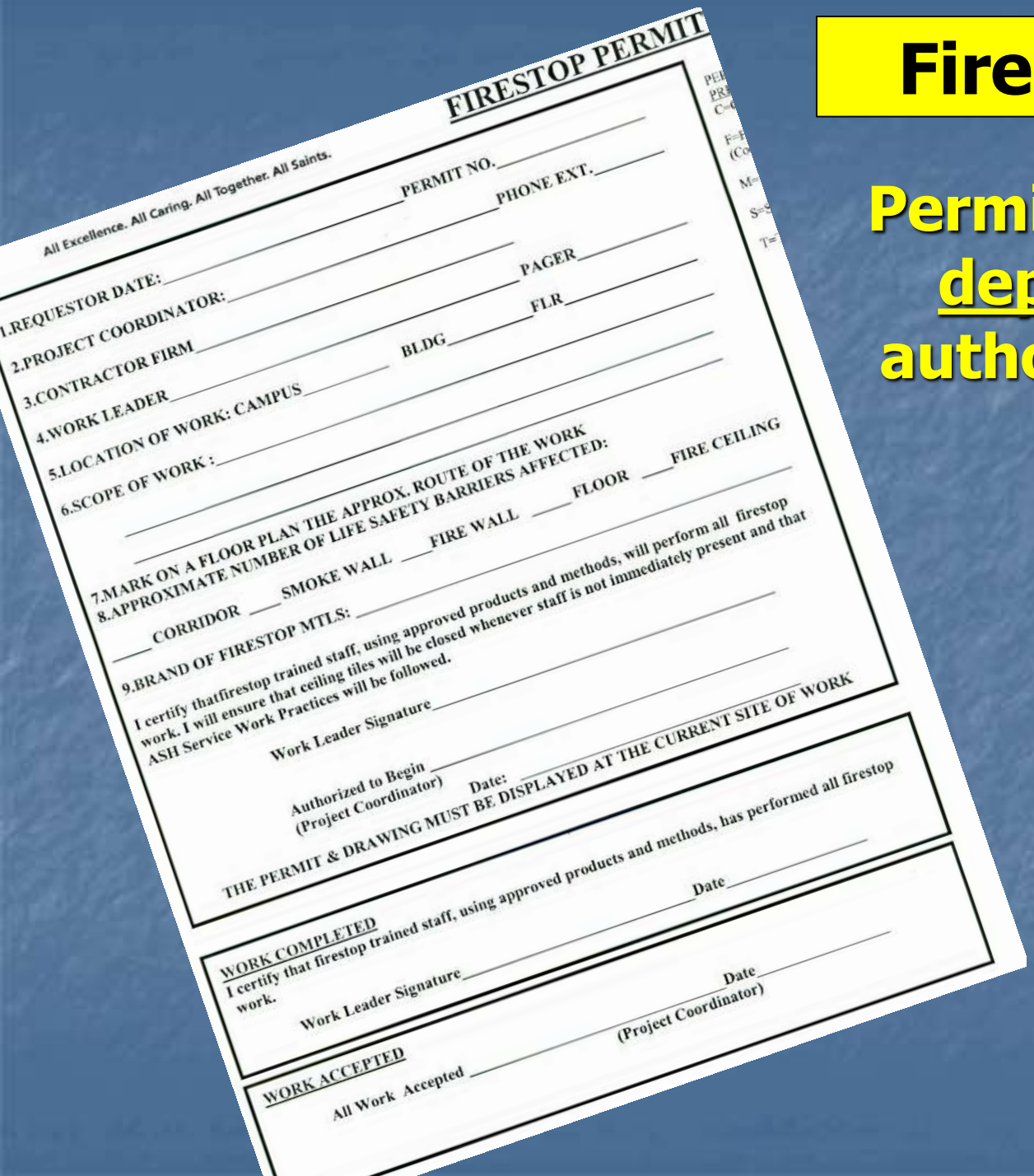
ot be hanging, supported by
g or sprinkler piping

not be resting on drop

rations, such as multiple
pipes and cable trays must be filled with
appropriate fire suppression material.

- Please notify Mercy Facilities if you find penetrations that are not caused by your work.
- See your Mercy Facilities Representative if you have questions.

Fire Stop Permit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Work Leader Signature _____

Authorized to Begin _____ Date: _____
(Project Coordinator)

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WORK COMPLETED
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Work Leader Signature _____ Date _____

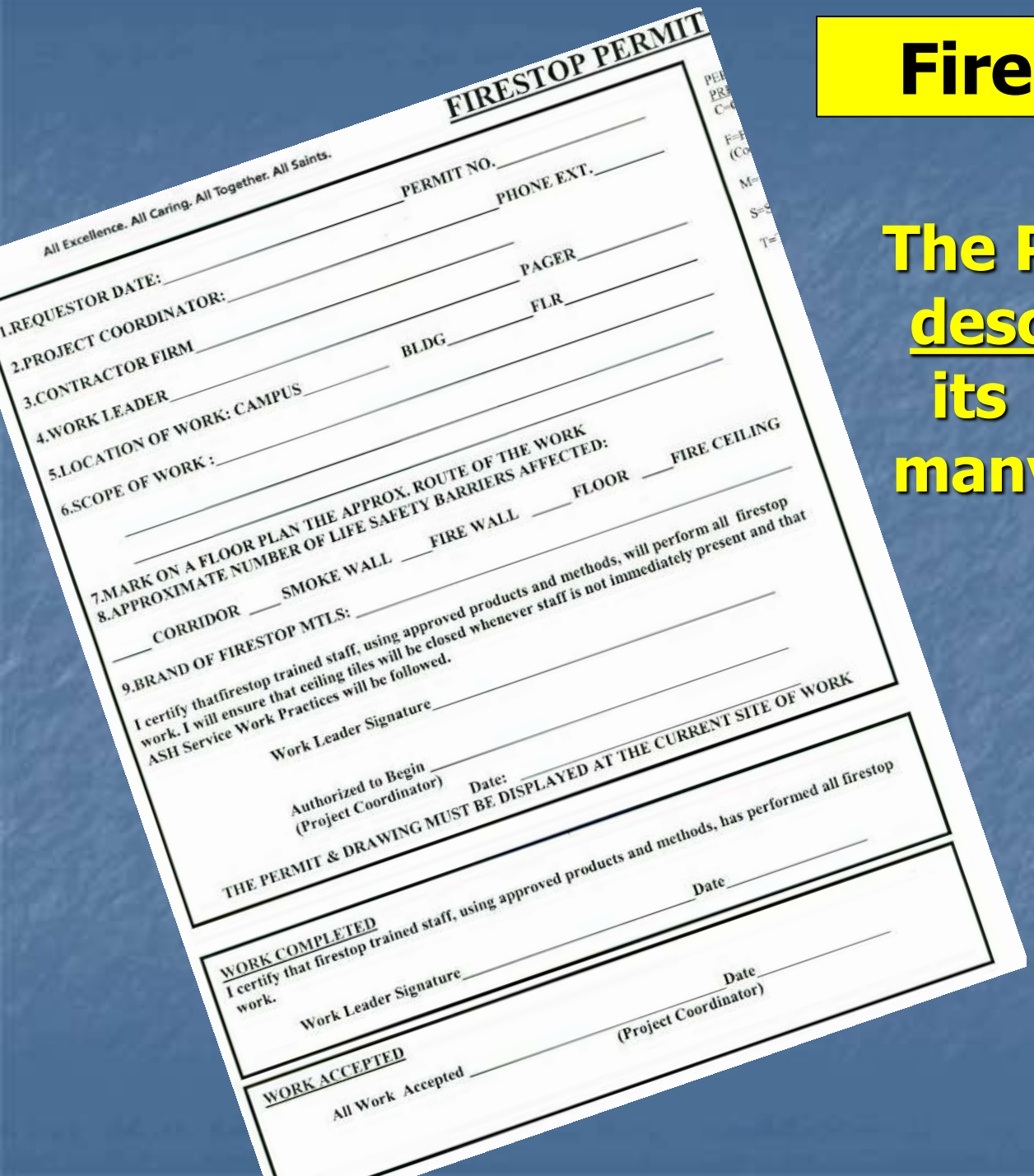
WORK ACCEPTED

All Work Accepted _____ Date _____
(Project Coordinator)

Permit issued by the department that authorized the work

- **Telecom**
- **Info Systems**
- **Security**
- **Maintenance**
- **Clinical Engr**
- **Construction**

Fire Stop Permit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Work Leader Signature _____

Authorized to Begin _____ Date: _____
(Project Coordinator)

THE PERMIT & DRAWING MUST BE DISPLAYED AT THE CURRENT SITE OF WORK

WORK COMPLETED
I certify that firestop trained staff, using approved products and methods, has performed all firestop work.

Work Leader Signature _____ Date _____

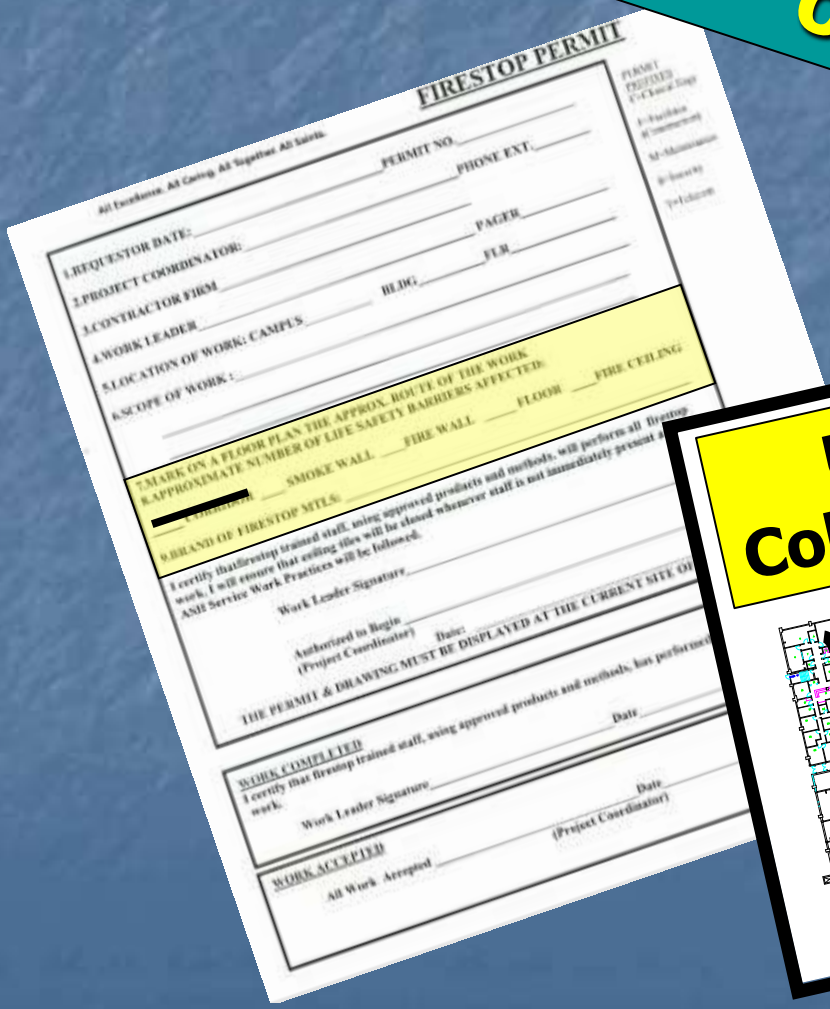
WORK ACCEPTED

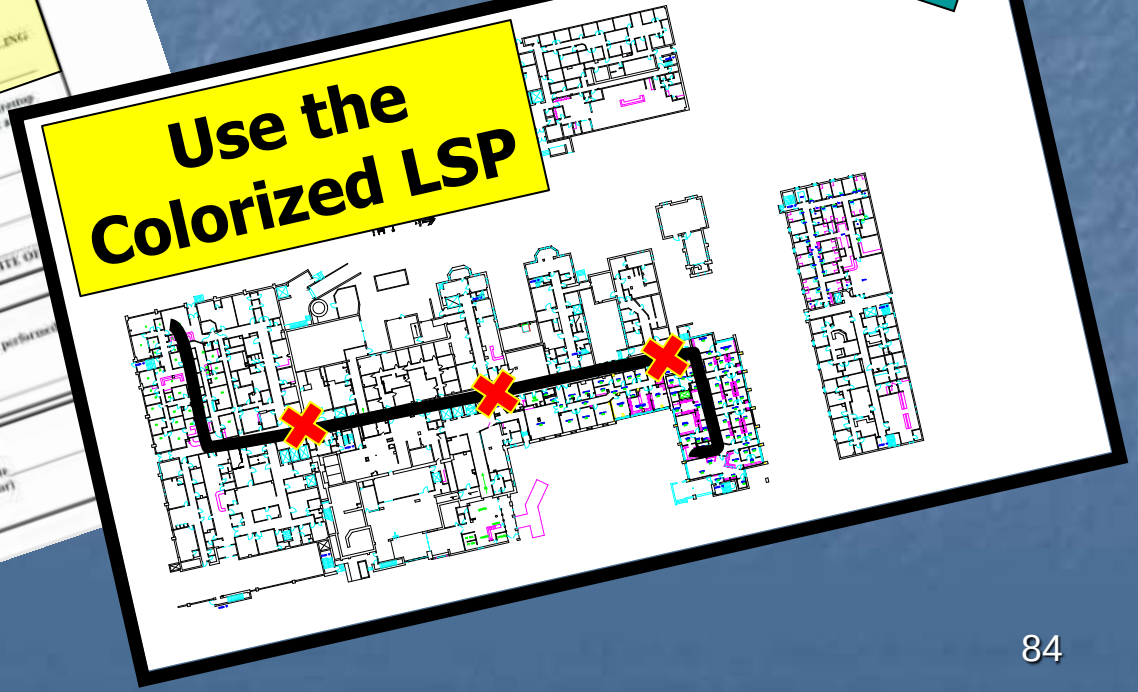
All Work Accepted _____ Date _____
(Project Coordinator)

The Permit contains a <u>description of work</u>, its location & how many barriers will be affected

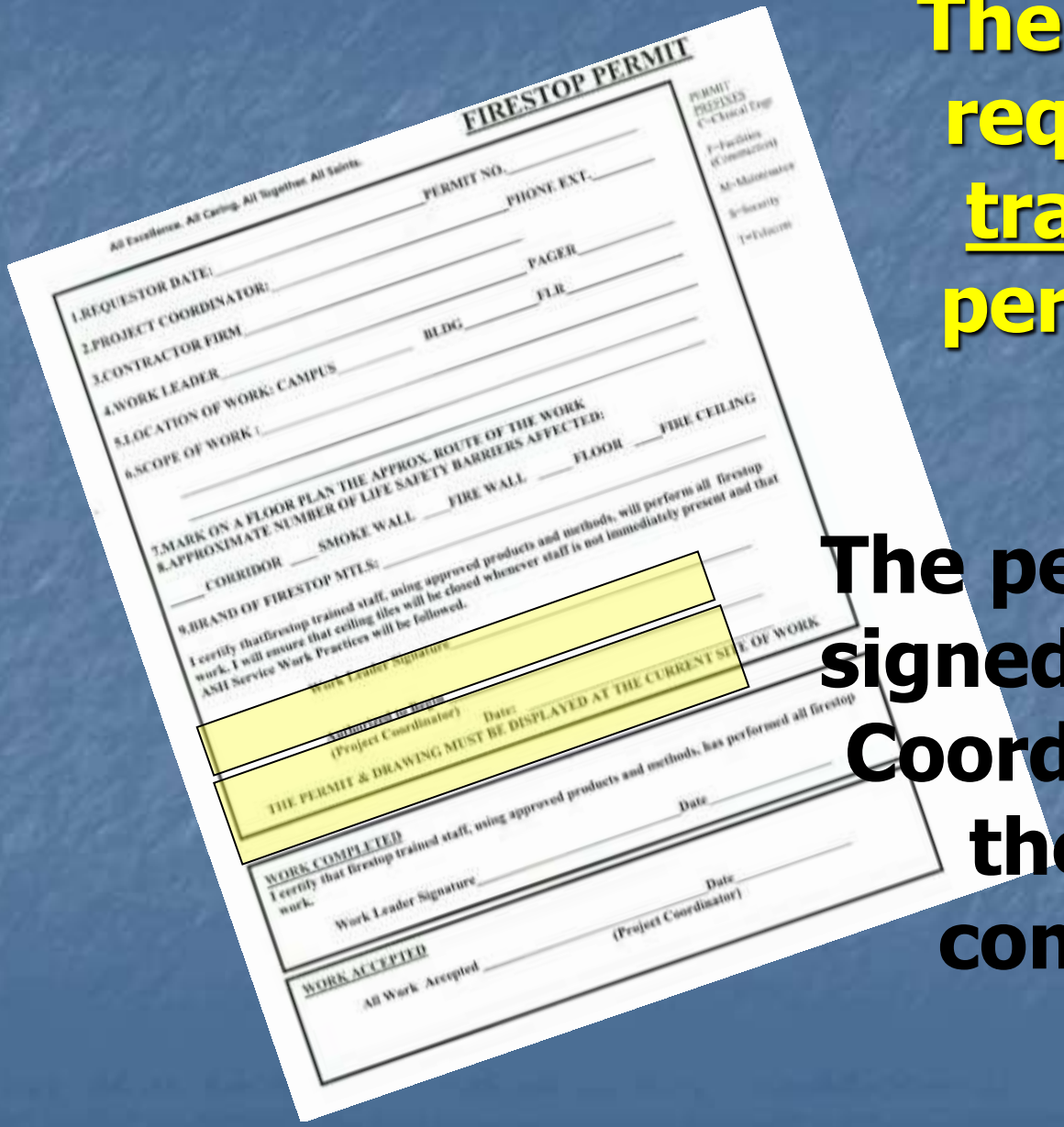
Fire Stop Permit

The route of the work should be shown on a drawing





Fire Stop Permit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BLDG FLR

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Work Leader Signature

Authorization Date

(Project Coordinator) Date:

THE PERMIT & DRAWING MUST BE DISPLAYED AT THE CURRENT SITE OF WORK

WORK COMPLETED

I certify that firestop trained staff, using approved products and methods, has performed all firestop work.

Date

Work Leader Signature

Date

WORK ACCEPTED

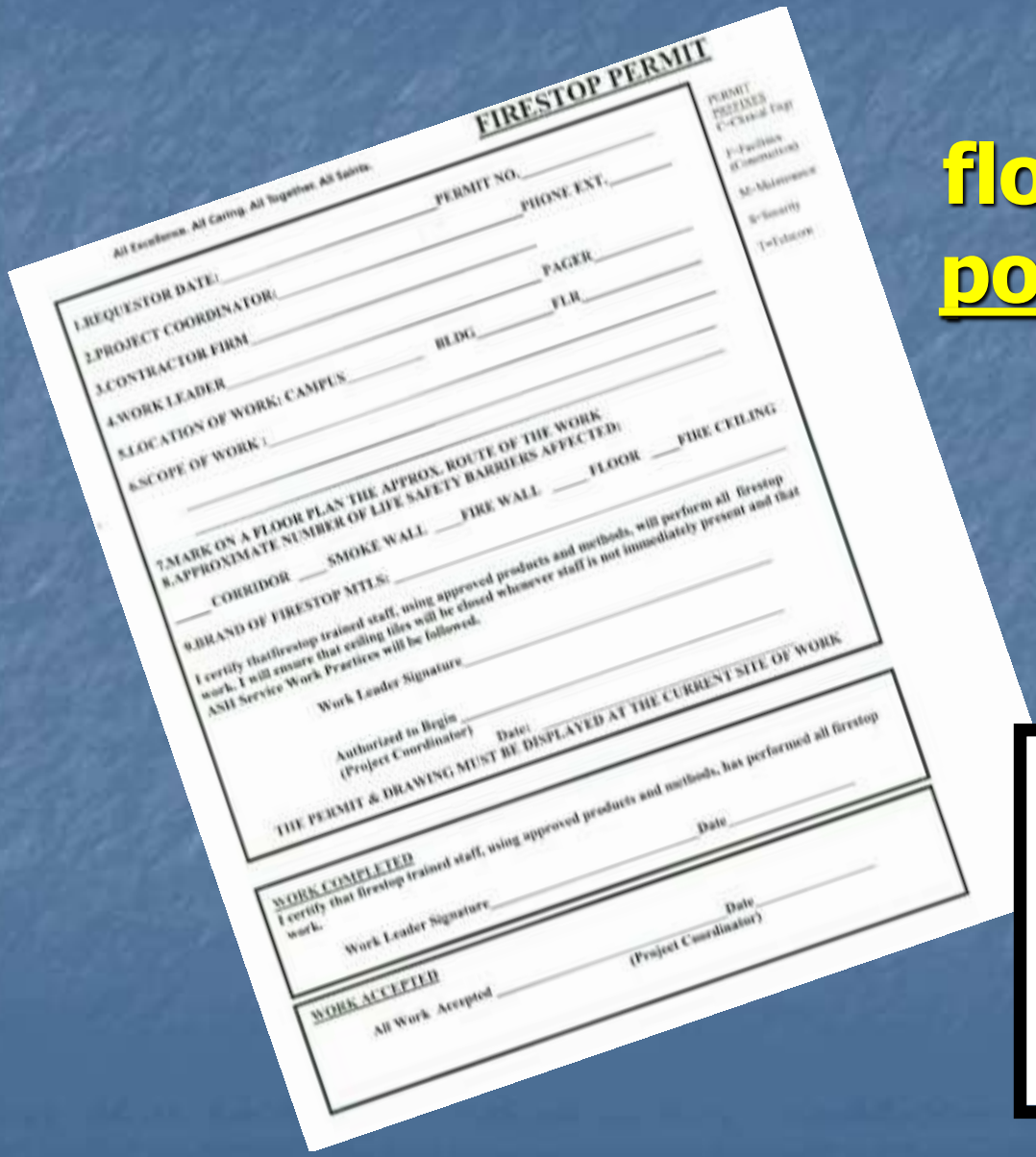
All Work Accepted

(Project Coordinator)

The permit should require that only <u>trained persons</u> perform fire stop work

The permit should be signed by the Project Coordinator & show the installer's company name

Fire Stop Permit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I certify that firestop trained staff, using approved products and methods, has performed all firestop work.

Work Leader Signature Date

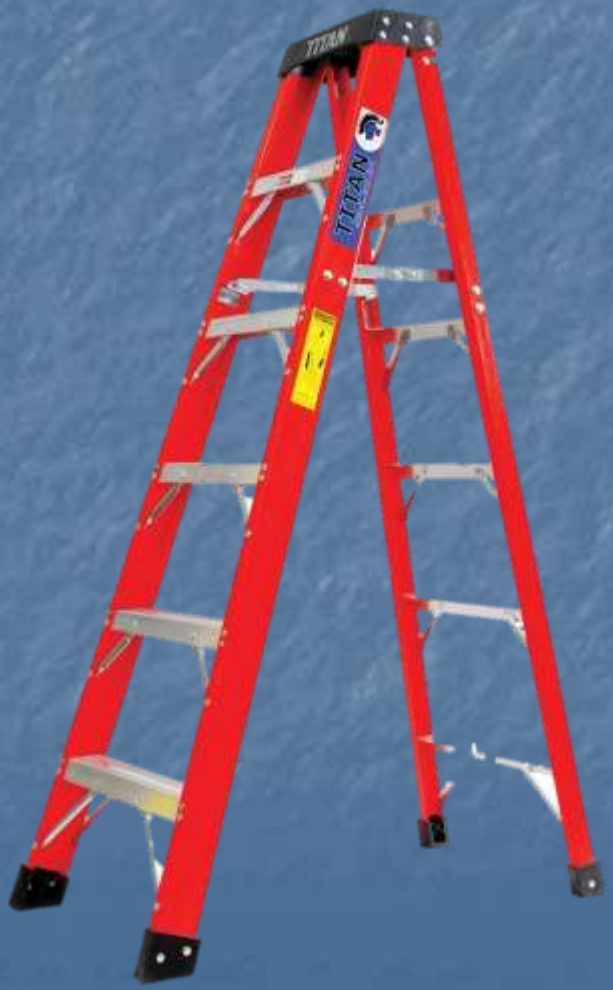
WORK ACCEPTED

All Work Accepted Date
(Project Coordinator)

The permit and floor plan should <u>be posted</u> at the site of work

Fire Stop Permit

Remember to <u>CLOSE CEILING TILES</u>



- Before the ladder is moved
- Before leaving the site for any reason

Recommendations

Owner should have a Written Penetration & Above Ceiling WORK PERMIT SYSTEM

Owner should reserve the right to DESTRUCTIVELY TEST seals to ensure the installation complies with the UL design

Owner should specify

- **the PRODUCT USED in their own facility,**
- **the UL DESIGN SYSTEMS to be used**

Owner should mandate

- **the use of FIRE STOP LABELS, provide the labels & Fill-in with BLACK SHARPEE**

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FIRE STOP QUALITY CONTROL

. . . Use the correct <u>people</u>

Frequently
The newest trainee is handed a caulk gun & told to cover the holes, with little training

FIRE STOP QUALITY CONTROL

"Certification" is NOT Mandatory

Installers should be trained to ensure they know the UL Installation Instructions

Destructively TEST seals until you are confident that an installer can do it right on a consistent basis (no charge for repairs)

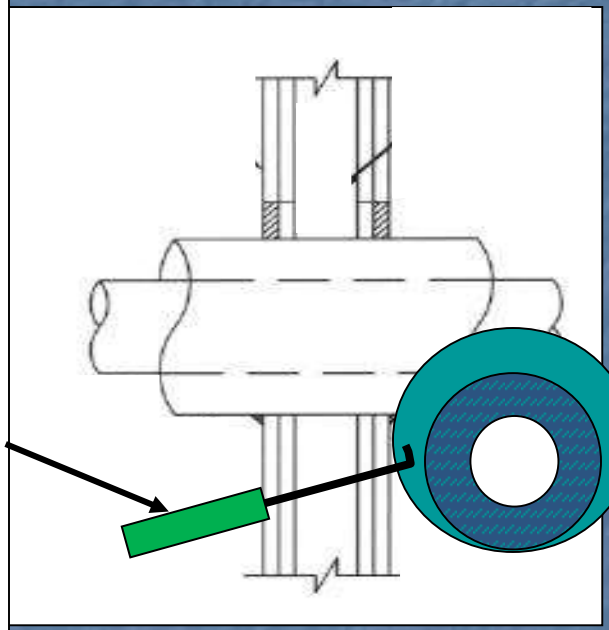
Destructively TEST seals

FIRE STOP QUALITY CONTROL

Inspector may use a "PICK" tool to test for the size & location of the annular ring and the thickness of the fire stop sealant.

1. Poke around the perimeter of the hole to confirm that there is an annular gap
2. Work the "Pick" through the fire stop material until it is on the other side.
3. Rotate the "Pick" so it lines up with the annual gap and pull it outward until it hits against the "inside" of the fire stop material.
4. Place your thumb and index finger on the shaft of the "Pick" up against the exposed side of the fire stop product.
5. Without moving your fingers on the shaft, work the "Pick" out of the fire stop and look at the distance between the hood end of the "Pick" and your fingers. This is the approx thickness of the fire stop. It must approx match the thickness shown on the UL design.
6. If the thickness is not with 1/8" of the required thickness the fire stop should be rejected and repaired.

Check a significant quantity of seals by each vender until they have proven the ability to install acceptable seals.



This method does NOT destroy a seal

Fire Stopping

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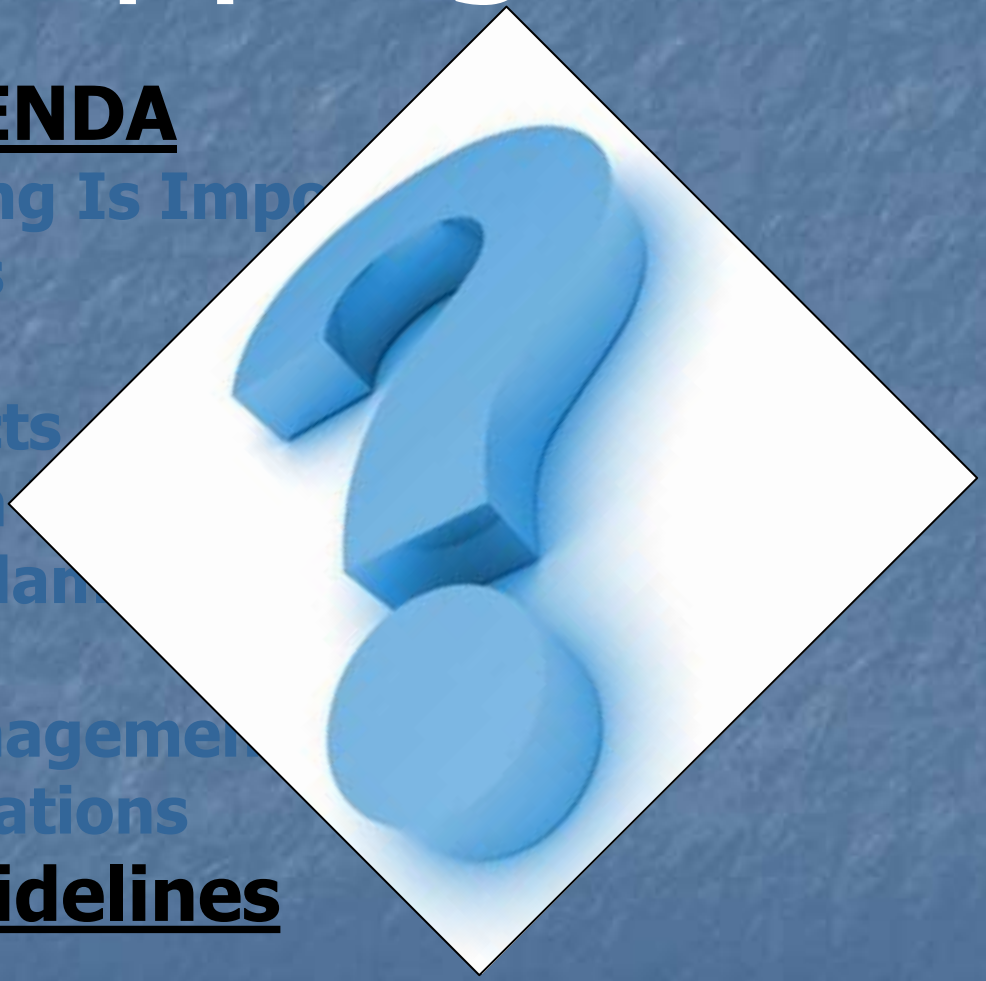
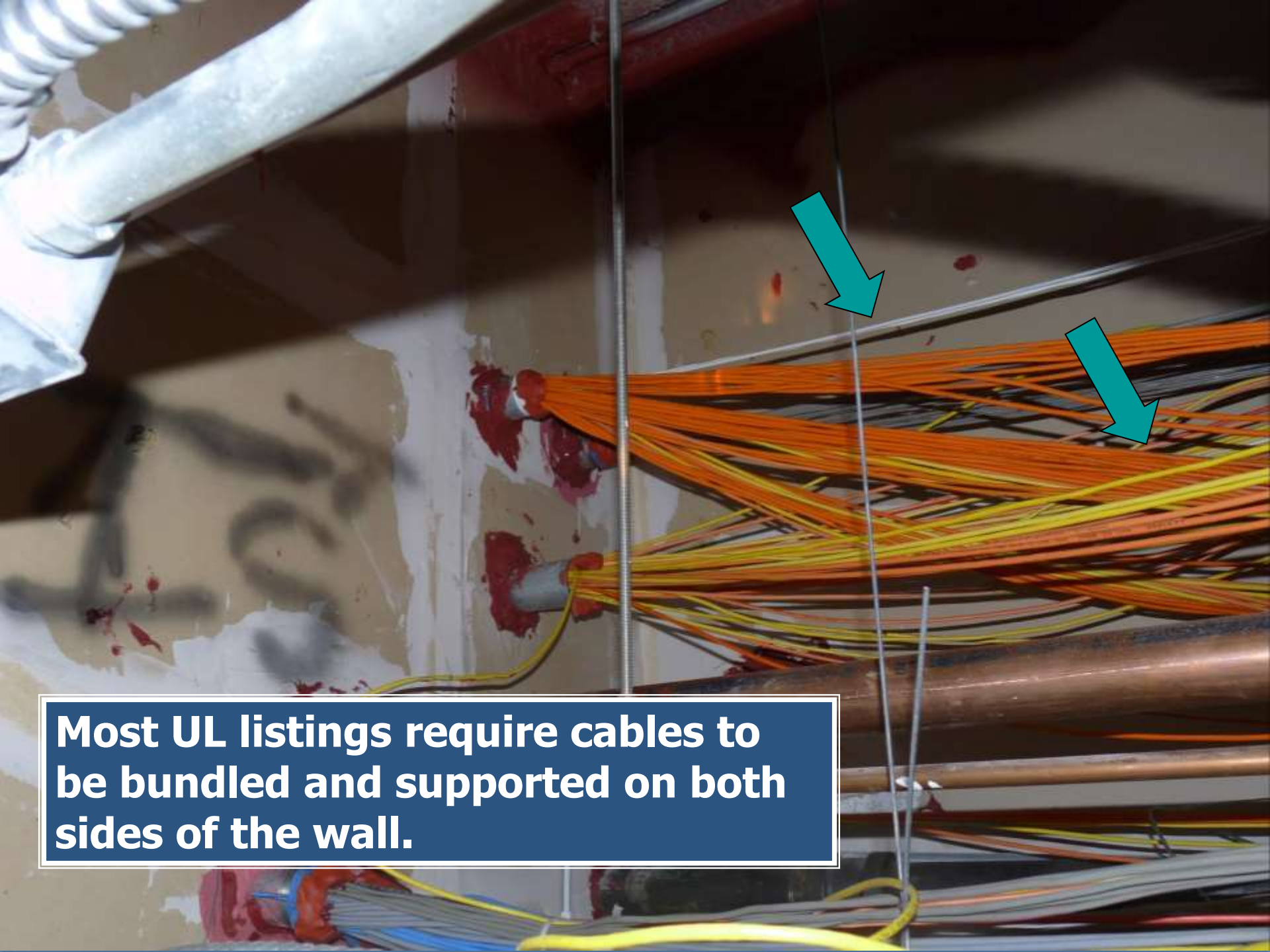


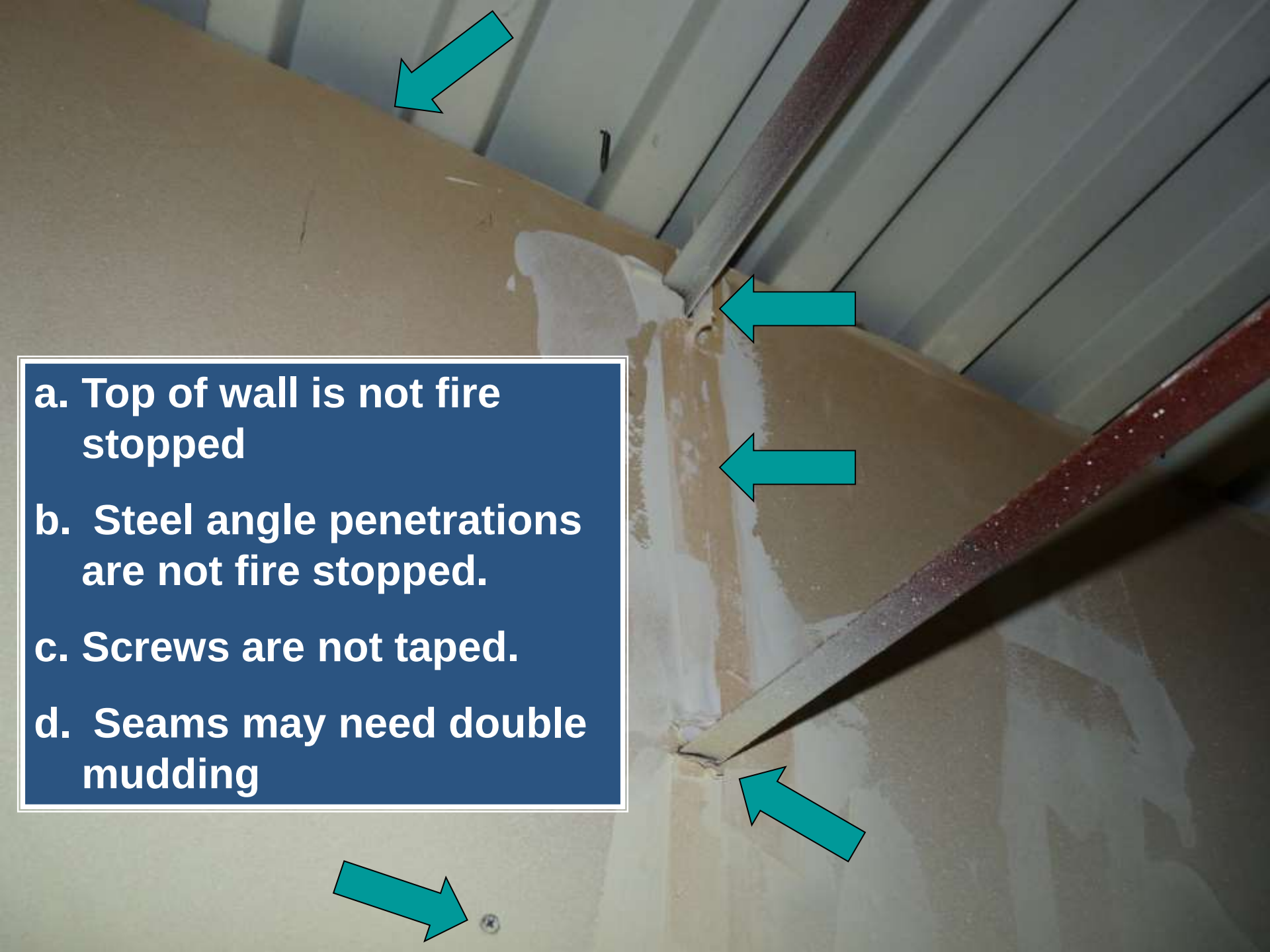
Photos from Actual Survey Inspections

Can You Spot the Problem?

All Illustrated Walls are Rated


Most UL listings require cables to be bundled and supported on both sides of the wall.

Unsealed penetrations through the floor.



a. Top of wall is not fire stopped

b. Steel angle penetrations are not fire stopped.

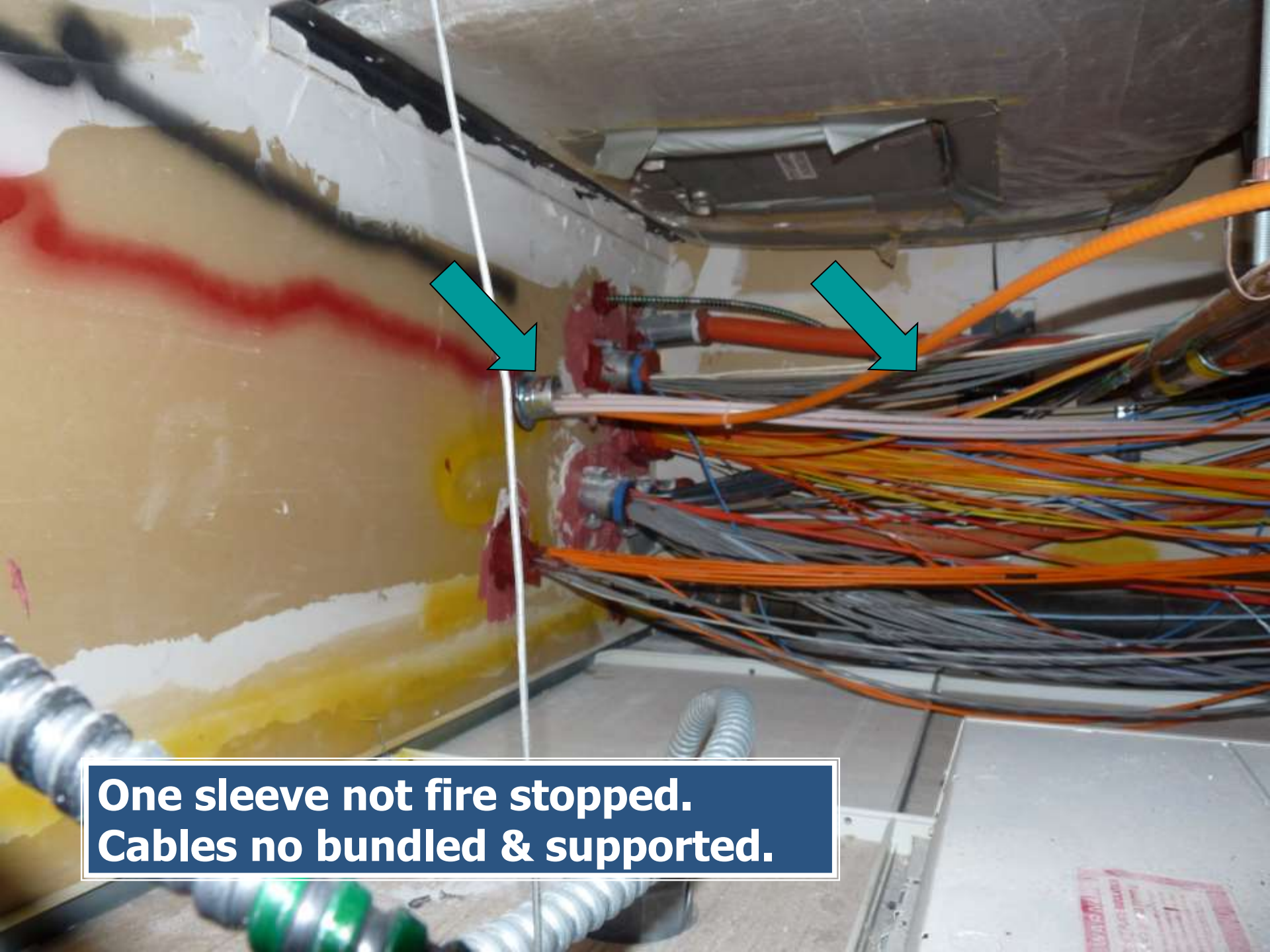
c. Screws are not taped.

d. Seams may need double mudding


All floor penetrations must be fire stopped per a UL/FM listed design. Cables are typical issues.

Cable tray was not fire stopped

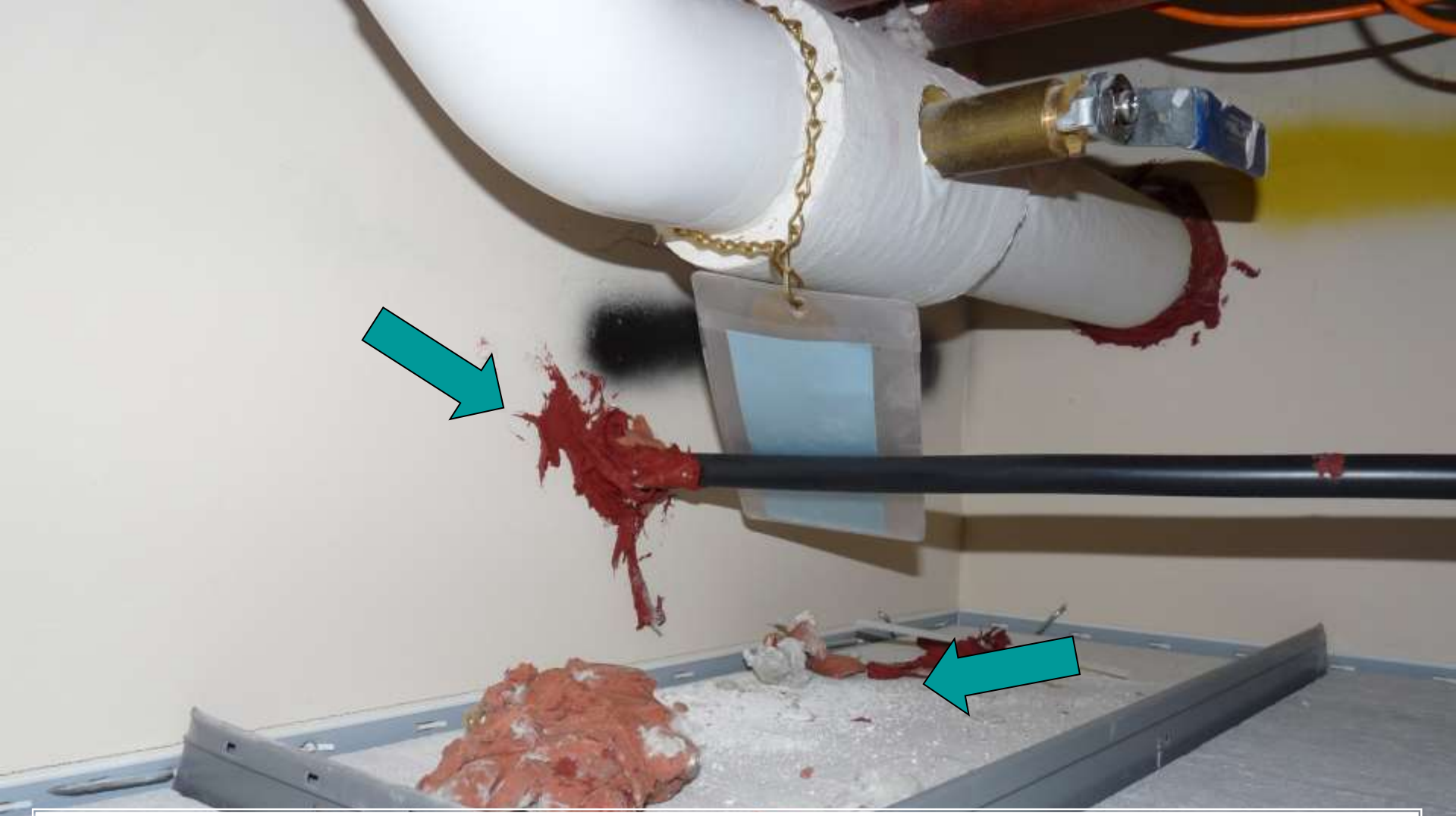
Cannot install any new utilities in an exit stairwell


One sleeve not fire stopped.
Cables no bundled & supported.

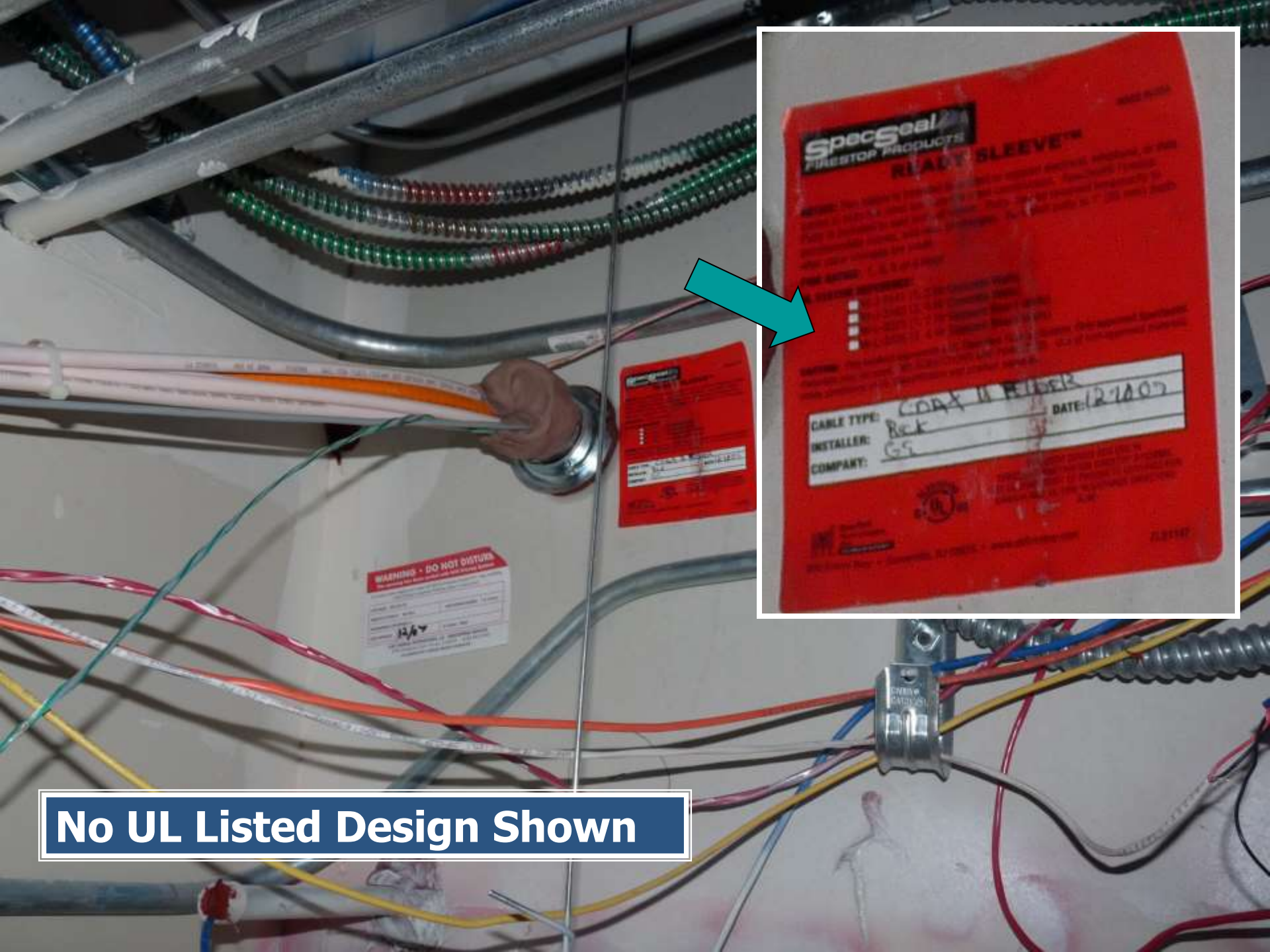

Fire stop putty
wasn’t pushed
into sleeve.

ANSWER:

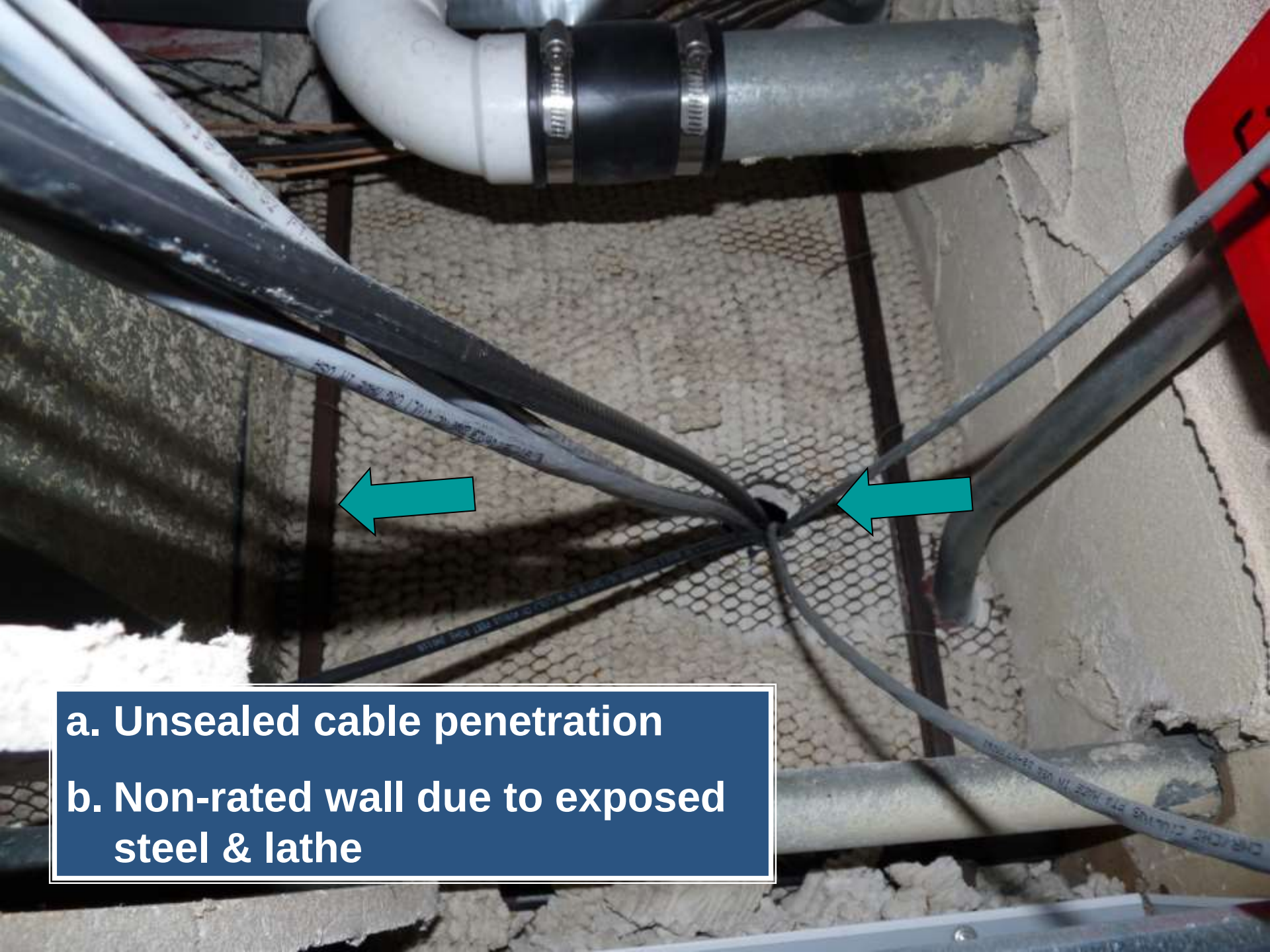
No fire stop through the rated concrete floor.



Sloppy Fire Stop installation makes it questionable how much is on the inside, where it counts. Note the Debris in the ceiling. An infection control requirement to provide a safe patient environment



No UL Listed Design Shown



a. Unsealed cable penetration

b. Non-rated wall due to exposed steel & lathe

Hole with an unsealed cable penetration.

Fire Stopping

AGENDA

a. Why fire stopping is importa
b. Code references
c. Life Safety Plans
d. Fire stop products
e. Approved Design i
f. Installation funda
g. Labeling
h. Penetration Managem
i. Installer qualifications
j. Inspection guidelines

FIRE STOPPING

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