How do I prevent this from occurring in our facility?

Let’s simply look at it from a different perspective.
<table>
<thead>
<tr>
<th>Item</th>
<th>Bldg.</th>
<th>Floor</th>
<th>Area Description</th>
<th>Deficiency Description</th>
<th>Corrective Measure</th>
<th>Date of Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMS_3</td>
<td>Your Facility</td>
<td>G</td>
<td>Engineering Department Cage Area</td>
<td>Improperly sealed EMT/Pipe penetrations.</td>
<td>Installed approved firestop system</td>
<td>WJ-1067 Completed On11-02-2006</td>
</tr>
</tbody>
</table>

**UL/ULC SYSTEM NO. WJ-1067**

**METAL PIPE THROUGH 1-HR OR 2-HR CONCRETE WALL OR CONCRETE BLOCK WALL ASSEMBLY**

- **F-Rating = 1-HR or 2-HR**
- **L-Rating at Ambient = Less than 1 CFM/50 FT**
- **T-Rating = 3-HR**
- **L-Rating at 40°F = 4 CFM/50 FT**

**FRONT VIEW**

1. **CONCRETE WALL ASSEMBLY (1-HR OR 2-HR F-RATING)**
   - LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL 1/2N 3-3/4" THICK, FOR 1-HR F-RATING.
   - LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE WALL 1/2N 5" THICK, FOR 2-HR F-RATING.
   - ANY UL/ULC CLASSIFIED CONCRETE BLOCK WALL.

2. **PENETRATING PIPE TO BE ONE OF THE FOLLOWING:**
   - MAXIMUM 3" NOMINAL DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   - MAXIMUM 3" NOMINAL DIAMETER CAST IRON PIPE.
   - MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   - MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   - MAXIMUM 4" NOMINAL DIAMETER STAB.
   - MINIMUM 5/8" DEPTH HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT.
   - MINIMUM 1/2" DEEP HILTI FS-ONE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

**NOTES:**
1. MAXIMUM DIAMETER OF OPENING = 3-3/4".
2. ANGULAR SPACE = MAXIMUM 1", MAXIMUM 2-1/4".
3. PIPE MAY BE INSTALLED WITH CONTINUOUS POINT OF CONTACT.
4. PIPE MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45° FROM PERPENDICULAR.
Agenda

Consequences of Building Fires

Fire Safe Building Construction

Firestop Code Requirements

Firestop System Testing & Listings

Beyond Fire Resistance – Secondary Attributes of Firestop

Validating Firestop Systems and Barrier Management Programs
Consequences of fires

A Fire Department responds to a fire every 23 seconds

Direct Property Loss $12+ Billion

Civilian Deaths 2,800+ Lives Lost

Source: NFPA Fire Loss Statistics 2012
Fire Statistics

Why must we contain Smoke, Toxic Gases and Fire?

3/4 of all fire deaths are caused by smoke inhalation.

Visibility: 47% of survivors caught in a fire could not see more than 12 feet.

Approximately 57% of people killed in fires are not in the room of the fire’s origin.

Smoke travels 120-420 feet per minute under fire conditions

Source: Hall, Jr. John R. NFPA Fire Analysis & Research, Quincy, MA. “Burns, Toxic Gases, and other Hazards”.

Source: NFPA Fire Protection Handbook, 18th Ed. Table 1-1P. Pg.1-15.

Source: NFPA Fire Protection Handbook, 18th Ed. Table 8-1P. Pg. 8-17.

Source: Estimate based upon ceiling jet velocity calculations for typical ceiling heights and heat release rates.
What is the leading killer in fires?

▪ **Smoke & Toxic Gases**
Agenda

Consequences of Building Fires

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Validating Firestop Systems and Barrier Management Programs
Balanced approach to fire protection

We cannot rely on any single action or safeguard to keep people safe
One globally applied principle for fire safety: **Compartmentation** (fire compartments)

The spread of fire can be restricted by dividing a building into separate compartments with fire-resistive walls and floors—increasing the availability of escape routes for occupants.

**Fire walls**

**Fire floors**

![Diagram of fire walls and fire floors]

FW = Fire-Rated Wall

FF = Fire Rated Floor
Types of Fire/Smoke wall assemblies

- Fire Walls
- Fire Barrier Walls
- Shaft Wall
- Smoke Barriers *(should be: Fire & Smoke Barrier)*
- Smoke Partitions *(usually called: Smoke & Acoustic Walls)*
Properties of a “Smoke Barrier”

- Vertical or horizontal continuous membrane that will restrict movement of smoke
  - 5.0 cfm per sq ft of penetration opening for each through penetration firestop system; or
  - Total cumulative leakage of 50 cfm for any 100 ft$^2$ of wall or floor area
  - Fire-Resistant Joint Systems in Smoke Barriers (§715.6)- L rating of in a smoke barrier or at the intersection of a horizontal smoke barrier and an exterior curtain wall shall not exceed 5 cfm per lineal foot of joint.

- 1-hour fire resistance rating
- Smoke Barriers divide hospitals into smoke compartments not exceeding 22,500 sq. ft. and prisons into blocks not exceeding 200 occupants.
Properties of a “Smoke Partition”

- No fire resistance
- Span Floor to floor or Floor to ceiling, if ceiling will limit the transfer of smoke
- Sealed windows
- No louvers in doors
- Doors not required to be self-closing
- Joints and penetrations “shall be filled with an approved material to limit the free passage of smoke”
- Most common use: Corridor walls in sprinklered hospitals
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Consequences of Building Fires

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Validating Firestop Systems and Barrier Management Programs
International Building Code 2012

Section 714.3.1.2 (Walls) – Through-penetration Firestop systems
“Through-penetrations shall be protected by an approved penetration Firestop system installed as tested in accordance with ASTM E 814 or UL 1479…”

Section 714.4.1.1.2 (Floors) – Through-penetration firestop system
“Through penetrations shall be protected by an approved through-penetration firestop system installed and tested in accordance with ASTM E 814 or UL 1479….

“The system shall have a F-rating and a T-rating of not less than 1 hour but not less than the required rating of the floor penetrated…

Exception: Floor penetrations contained and located within the cavity of a wall do not require a T- rating.
Firestop requirements in Life Safety Code (NFPA 101)

- **8.3.5.1* Firestop Systems and Devices Required.** Penetrations for cables, cable trays, conduits, pipes, tubes, combustion vents and exhaust vents, wires, and similar items to accommodate electrical, mechanical, plumbing, and communications systems that pass through a wall, floor, or floor/ceiling assembly constructed as a fire barrier shall be protected by a firestop system or device.

- The firestop system or device shall be tested in accordance with ASTM-E 814...
Joint protection requirements in Life Safety Code (NFPA 101)

8.3.6.5* Joints made within or between fire resistance–rated assemblies shall be protected with a joint system that is designed and tested to prevent the spread of fire for a time period equal to that of the assembly in which the joint is located. Such materials, systems, or devices shall be tested as part of the assembly in accordance with the requirements of ASTM E 1966, Standard Test Method for Fire-Resistive Joint Systems, or ANSI/UL2079, Standard for Tests for Fire Resistance of Building Joint Systems.
New for IFC 2009:
Annual inspection of rated assemblies

703.1 Maintenance. The required fire-resistance rating of fire-resistance-rated construction (including walls, firestop, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems) shall be maintained. Such elements shall be visually inspected by the owner annually and properly repaired, restored or replaced when damaged, altered, breached or penetrated. Where concealed, such elements shall not be required to be visually inspected by the owner unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space.
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Consequences of Building Fires

Fire Safe Building Construction

Firestop Code Requirements

Firestop System Testing & Listings

Beyond Fire Resistance – Secondary Attributes of Firestop

Validating Firestop Systems and Barrier Management Programs
Recognized and accredited third party test facilities in the United States

Intertek (Omega Point) Listings
Underwriters Laboratories Inc.
Warnock Hersey
Factory Mutual Standards Laboratories

Tests done to Code-required Standards – ASTM and UL

All “Nationally recognized Test Laboratories” are of equal status in regulations (code acceptance)

Each test lab publishes its own listing directory
Steps in fire test procedure

Assembly is placed on furnace.

Assembly is exposed to fire test.

Assembly is subjected to hose stream test.

Assembly results after hose stream.
Within 10 minutes of testing, the temperature has reached 1300° F
Melting points of common materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Melting Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVC Plastic</td>
<td>413 °F</td>
</tr>
<tr>
<td>Fiberglas® Insulation</td>
<td>1,100 °F</td>
</tr>
<tr>
<td>Aluminum</td>
<td>1,220 °F</td>
</tr>
</tbody>
</table>

Combustible materials typically require specialized firestop products
Hose stream test verifies mechanical integrity of system after fire exposure

Stream delivered through 2-1/2 inch hose with a straight-bore nozzle at:

- 30 psi - 1, 2 & 3-hour tests
- 45 psi - 4-hour test

The time duration is calculated based upon the area of the test assembly and the fire resistance period.

Intense pressure can develop during a fire from the heating of air/gases
**F-Rating**

The duration of time in which flames do not pass through the system.
T-Rating

The time period that the penetration firestop system, including the penetrating item, limits the maximum temperature rise to 325°F (163°C) above its initial temperature through the penetration on the non-fire side when tested in accordance with ASTM E 814.

Not a pass/fail criterion
T-rating Example

Final System with T-rating: Mineral wool, Sealant, Insulation.

Mineral Wool + Sealant

Mineral Wool
**System No. C-AJ-1610**

<table>
<thead>
<tr>
<th>ANSIUL 1479 (ASTM E814)</th>
<th>CAN/ULC S115</th>
</tr>
</thead>
<tbody>
<tr>
<td>F Rating — 2 hr</td>
<td>F Rating — 2 hr</td>
</tr>
<tr>
<td>T Rating — 2 hr</td>
<td>FT Rating — 2 hr</td>
</tr>
<tr>
<td>L Rating — Less Than 1 CFM/sq ft</td>
<td>PH Rating — 2 hr</td>
</tr>
<tr>
<td>L Rating — 400°F — Less Than 1 CFM/sq ft</td>
<td>FTH Rating — 2 hr</td>
</tr>
<tr>
<td>W Rating — Class 1 (See Item 4)</td>
<td>L Rating — Less Than 1 CFM/sq ft</td>
</tr>
<tr>
<td>L Rating — 400°F — Less Than 1 CFM/sq ft</td>
<td></td>
</tr>
</tbody>
</table>

1. **Floor or Wall Assembly** — Min 4-1/2 in. (114 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m³) concrete. Wall may also be constructed of any UL Classified Concrete Blocks. Max dia of opening is 8 in. (162 mm).

   See Concrete Blocks (CAB) category for names of manufacturers.

2. **Through Penetration** — One metallic pipe or conduit to be installed either concentrically or eccentrically within the Firestop system. The annular space between the through penetration and the periphery of opening shall be min 0 in. (point contact) to a max of 1-1/2 in. (38 mm). Through penetrants to be tightly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipe or conduit may be used:

   A. Steel Pipe — Nom 4 in. (102 mm) diam (or smaller) Schedule 40 (or heavier) steel pipe.
   B. Iron Pipe — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.
   C. Steel Conduit — Nom 4 in. (102 mm) diam (or smaller) rigid steel conduit.

3. **Packaging Material** — Min 4 in. (102 mm) thickness of min 4 pcf (64 kg/m³) mineral wool firmly packed into opening as a permanent form. Packaging material to be covered with 1-1/2 in. (13 mm) from top of concrete floor or from both ends of wall to accommodate the required thickness of fill material (Item 4).

4. **Fill, Void or Cavity Material** — Sealant — Fill material applied to a min depth of 1/2 in. (13 mm) flush with top surface of floor or with both surfaces of wall. A min ¼ in. (6 mm) bead of fill material to be applied at area of point contact.

   Hilti CONSTRUCTION CHEMICALS, DIV OF Hilti INC — CB Issure Sealant (Floors Only), CFS-S SIL GG, CFS-S SIL SL (Floors only), CP068 Sealant, FS-ONE Sealant or FS-ONE MAX Intumescent Sealant. Note: W Rating applies only when CFS-S SIL GG, CFS-S SIL SL (Floors only), CP068 Sealant or FS-ONE MAX Intumescent Sealant is used.

5. **Batts and Blankets** — Two layers of non 2 in. (51 mm) thick fiberglass duct wrap, min 1 pcf (16 kg/m³), tightly wrapped around penetrant and tightly butted to the top surface of the floor or both sides of wall to extend min 12 in. (305 mm) above floor or past both sides of wall. All longitudinal seams of both layers of duct wrap are to be sealed with foil tape.

   See Batts and Blankets (BKNV) category in the Building Materials Directory for names of manufacturers. Any batts and blankets material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.
**L-Rating**

- Measures amount of air leakage through the firestop system
- Tested at ambient and 400°F
- Measured in CFM - the lower the number, the better
**W-Rating** (optional)

- Determines effectiveness of a firestop system to restrict flow of water.
- Tested to resist up to 3 feet of water column for 72 hours.
- Fully fire-tested after water exposure - must perform as well as non water-tested assembly.
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Consequences of Building Fires

Fire Safe Building Construction

Firestop Code Requirements

Firestop System Testing & Listings

Beyond Fire Resistance – Secondary Attributes of Firestop

Validating Firestop Systems and Barrier Management Programs
Firestop products can provide additional benefits to meet your project needs

Proper Installation  Air Tightness  Movement  Water Resistance  Sound Attenuation

<table>
<thead>
<tr>
<th>System Selection</th>
<th>Smoke &amp; Toxic Gas</th>
<th>TOW (Vertical Loads)</th>
<th>Constructability</th>
<th>Privacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Selection</td>
<td>Infection Control</td>
<td>EOS (Horizontal &amp; Vertical Loads)</td>
<td>Containment</td>
<td>Health and Safety</td>
</tr>
<tr>
<td>Training/ Certification</td>
<td>Energy Savings</td>
<td>Penetrations (Expansion/ Contraction)</td>
<td>Contamination (mold)</td>
<td></td>
</tr>
<tr>
<td>Inspection</td>
<td>Pressure (+/-) Control</td>
<td></td>
<td>Seismic</td>
<td></td>
</tr>
<tr>
<td>Documentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Water resistance helps combat damage due to rain or plumbing disasters

Whether water is introduced during construction or after occupancy, the damage to the building can have a significant impact.
Mold/mildew resistant sealants provide a healthier environment

Mold Resistance: Provide firestopping with mold and mildew resistance rating ≤ 1 as determined by:


<table>
<thead>
<tr>
<th>Rating</th>
<th>Observed growth on specimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>1</td>
<td>Trace of growth (&lt; 10%)</td>
</tr>
<tr>
<td>2</td>
<td>Light Growth (10% - 30%)</td>
</tr>
<tr>
<td>3</td>
<td>Medium Growth (30% - 60%)</td>
</tr>
<tr>
<td>4</td>
<td>Heavy Growth (60% - full coverage)</td>
</tr>
</tbody>
</table>
Air resistant sealants can restrict the movement of smoke, airborne pathogens, and sound.

Smoke penetration

Air Leakage results in:
- Moisture damage
- Hot/Cold spots
- Disease transmission

Sound transmission
Leakage Rating (L-Rating) determines suitability to restrict passage of smoke

- Optional test per UL 1479
- Measures amount of air leakage through the firestop system
- Test conducted at two temperature ranges:
  - Ambient temperature (simulates cold smoke away from fire origin)
  - 400°F (simulates warm smoke near fire origin)
- Measured in CFM: the lower the number, the better the L-Rating

Even with smoke as the leading killer in fires, this rating varies greatly by product.
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Consequences of Building Fires

Fire Safe Building Construction

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Beyond Fire Resistance – Secondary Attributes of Firestop

Validating Firestop Systems and Barrier Management Programs
Complying with code requirements

IBC 2012 Section 107.2.2 Fire protection system shop drawings. “Shop drawings for the fire protection system(s) shall be submitted to indicate conformance to this code and the construction documents and shall be approved prior to the start of system installation. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9.”

Suggested detail(s) that should be included in the construction documents for plan review process (sample provided):
• Schedule of systems by assembly, penetration or joint

• Sample UL System details – most common applications

• Specifications to include current standards relative to issue date of the construction documents
Pre-Construction Meetings: Key firestop details

- Review contract document requirements
- Review firestop submittals
- Coordination of trades (if no single FSC)
- Color code wall types in field
- Review applications for engineering judgments
  - Obtain approvals
  - Discuss constructability issues
- Establish inspection guidelines & expectations
  - Mock-up of each application for reference
  - Submittal with UL details available for every inspection
- Schedule installer training (if no single FSC)
Single source manufacturer of firestop products helps ensures consistency and compatibility

Six (6) different firestop products by three (3) different manufacturers
Labeling and Documentation of each firestop application improves quality assurance

Label and record

Create Documentation
Third-party inspection of firestop installations verifies compliance

Part 3 Execution > Field Quality Control

Inspection of installed firestop applications shall be performed in accordance with:

- **ASTM E 2174**, “Standard Practice for On-Site Inspection of Installed Fire Stops”

- **ASTM E 2393**, “Standard Practice for On-Site Inspection of Installed Fire Resistive Joints and Perimeter Fire Barriers”

IBC 2012 now includes mandatory provisions for third-party inspections for joints and penetrations.
Barrier Management Components
Barrier Management Components

Construction Specifications / Facility Policies
Current Life Safety Prints
Manufacturer Training Record for all Installers
Comprehensive Permit Process
Quality Control Inspection
Annual Building Inspection Record
Construction Coordination Plan
Documentation, Documentation, Documentation
<table>
<thead>
<tr>
<th>Def #</th>
<th>Def Date</th>
<th>Building Section</th>
<th>Floor</th>
<th>Room #</th>
<th>Pic #</th>
<th>Physical Deficiency Description</th>
<th>MWFS Issue</th>
<th>Hosp Issue</th>
<th>Correction Date</th>
<th>Work Order #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12/28/16</td>
<td>Annex</td>
<td>1</td>
<td>Stairwell</td>
<td>1</td>
<td>No firestop around sprinkler pipes</td>
<td></td>
<td></td>
<td>02/02/17</td>
<td>N/A</td>
</tr>
<tr>
<td>2</td>
<td>12/28/16</td>
<td>Annex</td>
<td>1</td>
<td>Stairwell</td>
<td>2</td>
<td>No firestop around pipe</td>
<td></td>
<td></td>
<td>01/25/17</td>
<td>N/A</td>
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<tr>
<td>3</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Data Center 3-143</td>
<td>(3-10)</td>
<td>Several penetrations not sealed at ceiling tile</td>
<td></td>
<td></td>
<td>02/02/17</td>
<td>N/A</td>
</tr>
<tr>
<td>4</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Electric 3-111</td>
<td>11</td>
<td>Nonrated door in 1 hour wall</td>
<td></td>
<td></td>
<td></td>
<td>S8390</td>
</tr>
<tr>
<td>5</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Electric 3-111</td>
<td>(12-17)</td>
<td>Several walls marked smoke but plans say 1 hour</td>
<td></td>
<td></td>
<td></td>
<td>(58390A)</td>
</tr>
<tr>
<td>6</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Electric 3-111</td>
<td>18</td>
<td>Nonrated door in a 1 hour wall</td>
<td></td>
<td></td>
<td></td>
<td>(58390B)</td>
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<tr>
<td>7</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Mechanical 3-124 door</td>
<td>19</td>
<td>Exposed wires coming out of door frame</td>
<td></td>
<td></td>
<td></td>
<td>S8676</td>
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<tr>
<td>8</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Electric 3-120</td>
<td>20</td>
<td>Firestop removed from end of sleeve</td>
<td></td>
<td></td>
<td>02/02/17</td>
<td>N/A</td>
</tr>
<tr>
<td>9</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Elevator Equipment 3-119</td>
<td>21</td>
<td>Cable bundle needs firestopped</td>
<td></td>
<td></td>
<td>02/02/17</td>
<td>N/A</td>
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<tr>
<td>10</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Telecom 3-133</td>
<td>22</td>
<td>Firestop removed from end of sleeve (Floor penetration)</td>
<td></td>
<td></td>
<td>02/21/17</td>
<td>N/A</td>
</tr>
<tr>
<td>11</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Telecom office 3-125</td>
<td>23</td>
<td>EMT and cable not sealed at ceiling tile</td>
<td></td>
<td></td>
<td>02/02/17</td>
<td>N/A</td>
</tr>
<tr>
<td>12</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Mechanical 3-110</td>
<td>(24-27)</td>
<td>The plans say this is a 1 hour wall, but wall is stenciled as a smoke partition. The joint is done in acoustical sealant and the penetrations are smoke sealed in a firestop product.</td>
<td></td>
<td></td>
<td></td>
<td>(58390C)</td>
</tr>
<tr>
<td>13</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Mechanical 3-110</td>
<td>28</td>
<td>No cover on junction box</td>
<td></td>
<td></td>
<td></td>
<td>S8673</td>
</tr>
<tr>
<td>14</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Mechanical 3-110</td>
<td>(29 &amp; 30)</td>
<td>Nonrated doors in a 1 hour wall</td>
<td></td>
<td></td>
<td></td>
<td>(58675D)</td>
</tr>
<tr>
<td>15</td>
<td>12/28/16</td>
<td>Pavilion</td>
<td>3</td>
<td>Mechanical 3-110</td>
<td>31</td>
<td>Junction box is recessed in the wall with no cover on it</td>
<td></td>
<td></td>
<td></td>
<td>S8675</td>
</tr>
</tbody>
</table>
## Corrective Deficiency Report

<table>
<thead>
<tr>
<th>Deficiency</th>
<th>ID Date</th>
<th>Floor</th>
<th>Room</th>
<th>Building Section</th>
<th>Corrective Action</th>
<th>Date Corrected</th>
<th>Quantity</th>
<th>Installer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsealed/ Inadequately firestopped and/or documented penetration(s)</td>
<td>2/11/2015</td>
<td>3</td>
<td></td>
<td>WS Center Door# 63</td>
<td>WL-3065</td>
<td>2/11/2015</td>
<td>7</td>
<td>Midwest</td>
</tr>
<tr>
<td>Unsealed/ Inadequately firestopped and/or documented penetration(s)</td>
<td>2/12/2015</td>
<td>3</td>
<td></td>
<td>WS Center Door #64</td>
<td>Firestop Repair</td>
<td>2/12/2015</td>
<td></td>
<td>Midwest</td>
</tr>
<tr>
<td>Unsealed/ Inadequately firestopped and/or documented penetration(s)</td>
<td>2/12/2015</td>
<td>3</td>
<td></td>
<td>WS Center Door #64</td>
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## Corrective Deficiency Report with Picture Log

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<th>Pic #</th>
<th>Letter on Plan</th>
<th>Room Number</th>
<th>Physical Deficiency Description</th>
<th>UL System’s / EJ’s Installed</th>
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<td>Your Facility</td>
<td>G</td>
<td>Engineering Department Cage Area</td>
<td>Improperly sealed EMT/Pipe penetrations.</td>
<td>Installed approved firestop system</td>
<td>WJ-1067 Completed On11-02-2006</td>
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**Diagram:**

UL/CUL SYSTEM NO. WJ-1067

**Notes:**
1. Maximum diameter of openings = 32-1/4".
2. Annular space = minimum 1", maximum 2-1/4".
3. Pipe may be installed with continuous point of contact.
4. Pipe may be installed at an angle not greater than 45° from perpendicular.
Permit Examples

Attachment N
Above Ceiling / Work Permit

Date: ______________ Permit No: ______________ Work Order No: ______________

Company Name: __________________________ Company Phone #: __________________

Employee(s) Name(s): ______________________

Building: __________________________ Floor: __________________________

Area or Location: __________________________ Room Identifier or Number: __________________

Job Description: __________________________

Department Requesting Work: __________________________ Date Work is to be Completed: __________________

Date Work is to Commence: __________________ Communication Closets Affected: __________________

Are more than four (4) ceiling tiles going to be removed? YES NO

Were any Fire Rated or Smoke Rated Walls Penetrated? YES NO

Was anything run through a floor or ceiling? YES NO

By signing below, The Contractor and all Subcontractors agree to the following:

- A copy of the permit policy has been received.
- The Contractor and all Subcontractors understand and will adhere to the permit policy.
- Failure to comply with the permit policy can result in removal from the job site for the day.
  Continued failure to comply with the policy can result in removal from the project and/or
  permanent dismissal from Riverside Health System.

__________________________________________
Company Representative (Print Name)        Midwest Firestop Representative (Print Name)

__________________________________________
Company Representative (Signature)          Midwest Firestop Representative (Signature)

Internal Use only

Inspection Date: __________________ Inspector’s Name: __________________

Was Additional Work Order Generated? YES NO Work Order #: __________________

Midwest Firestop, Inc. Contact Numbers:

Office - 757-595-5680 Fax - 757-595-5678 Field Rep. 757-913-7020 or 304-610-3833
Typical Application

Block Wall
F-Rating = 2 Hrs
Steel Pipe 2”
Annular Space
Min: Point of contact (top)
Max: 2.0” (below the pipe)
Barrier Management Assessment Worksheet

Do you have firestop or life-safety concerns? If so, take a moment to assess your facility’s risk management by answering a few pointed questions:

Do you presently have a fire and smoke barrier management program?  
Yes  No

Do you have a facility or healthcare network barrier management specification?  
Yes  No

Do you have a specified firestop products manufacturer that you utilize in your facility?  
Yes  No

Do you have current Life Safety prints?  
Yes  No

Do you work with a code consultant?  
Yes  No

If Yes, Name ________________________________________  Ph #: ____________________

Do you understand UL Systems and their purpose?  
Yes  No

Do you have documented all the UL Systems that have been installed in your facility?  
Yes  No

Do you understand Engineering Judgments and their purpose?  
Yes  No

Have you documented all the Engineering Judgments installed in your facility?  
Yes  No

Do you label walls with their designated Fire or Smoke rating?  
Yes  No

Do you tag or label firestop penetrations?  
Yes  No

Do you tag or label fire rated joints?  
Yes  No

Do you have a ceiling/penetration permit?  
Yes  No

Do you require contractors to be manufacturer trained?  
Yes  No

Do you have your contractors’ installer’s training cards on file?  
Yes  No

Do you have a Key Responsible Person (KRP) to oversee firestop installation?  
Yes  No

Do you have a QC program implemented for your Fire and Smoke rated walls?  
Yes  No

Do you do surveys of all fire and smoke rated walls to find potential deficiencies?  
Yes  No

If yes, how often? ______________________________________

Do you utilize any maintenance software?  
Yes  No

If yes, what program?____________________________________

Do you barcode maintenance items?  
Yes  No

Do you generate work orders when you find potential deficiencies, or work solely off a generated Statement of Conditions?  
_______________________________________________________

Do you have an Infection Disease Control Policy (IDCP) that includes above ceiling or light renovation work?  
Yes  No

Do you implement Interim Life Safety Measures on your Fire and Smoke rated walls if work to correct deficiencies can’t be completed immediately?  
Yes  No

How much liability are you exposed to without a comprehensive Barrier Management Program?
Bad vs. Good
QUESTIONS?

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Newport News, VA 23608
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F: 757-595-5678
E: mwfs1@comcast.net
W: midwestfirestopinc.com