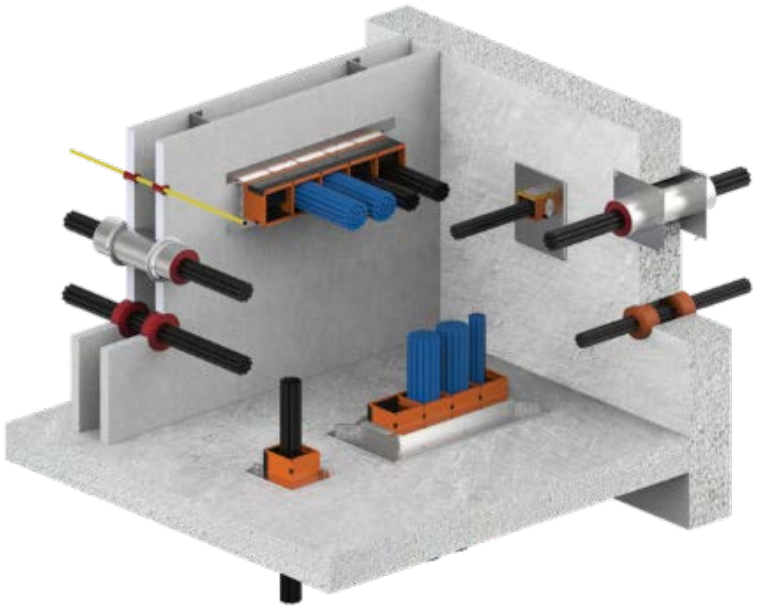
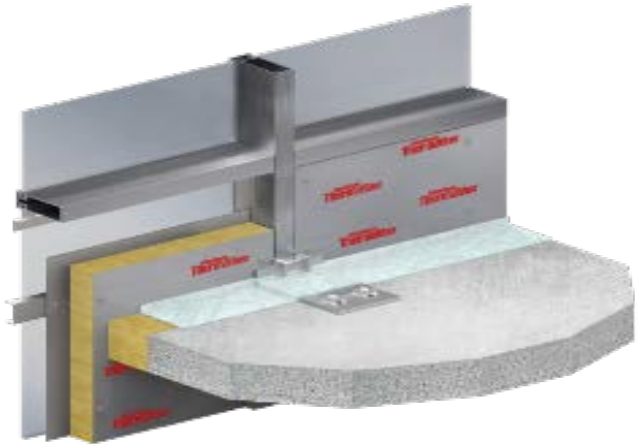
# Managing Fire & Smoke Barriers In Today's Healthcare Environment

Presented By: Kelly Mason
Director of Healthcare Partnerships
Specified Technologies Inc.

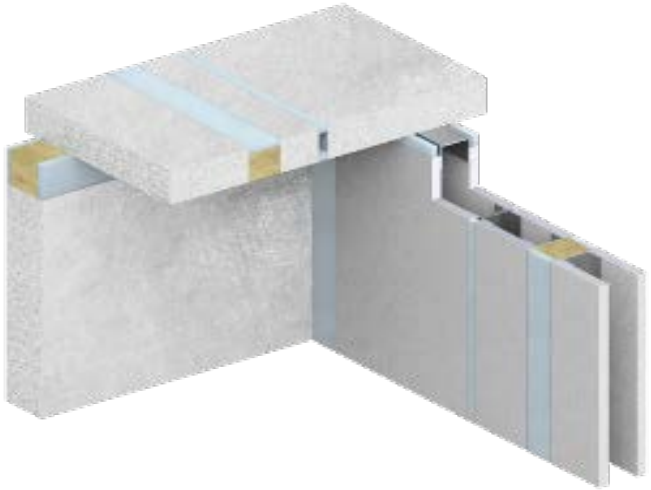
# Many Types of Applications

Cable Management



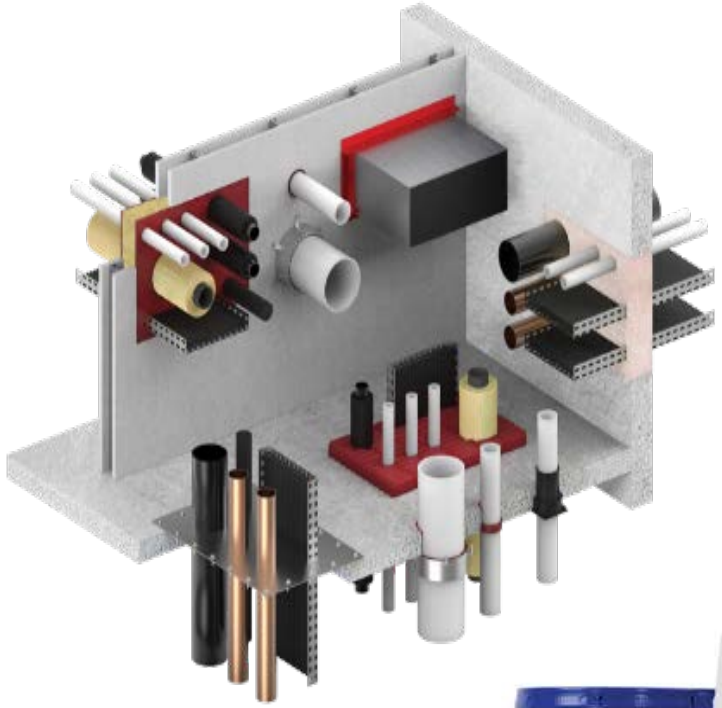


Curtain Wall



Construction Joints

Mechanical, Electrical, Plumbing



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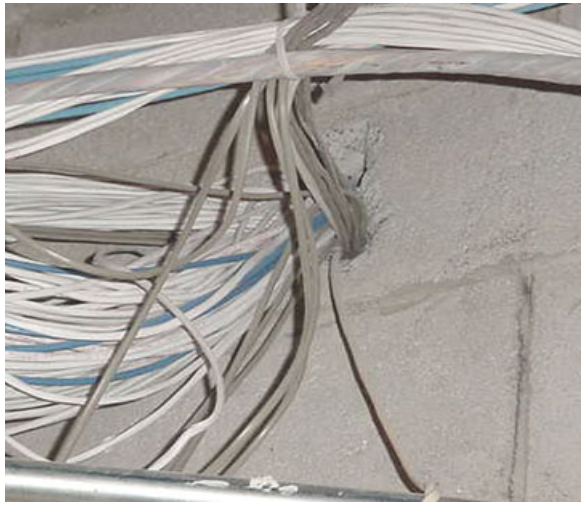
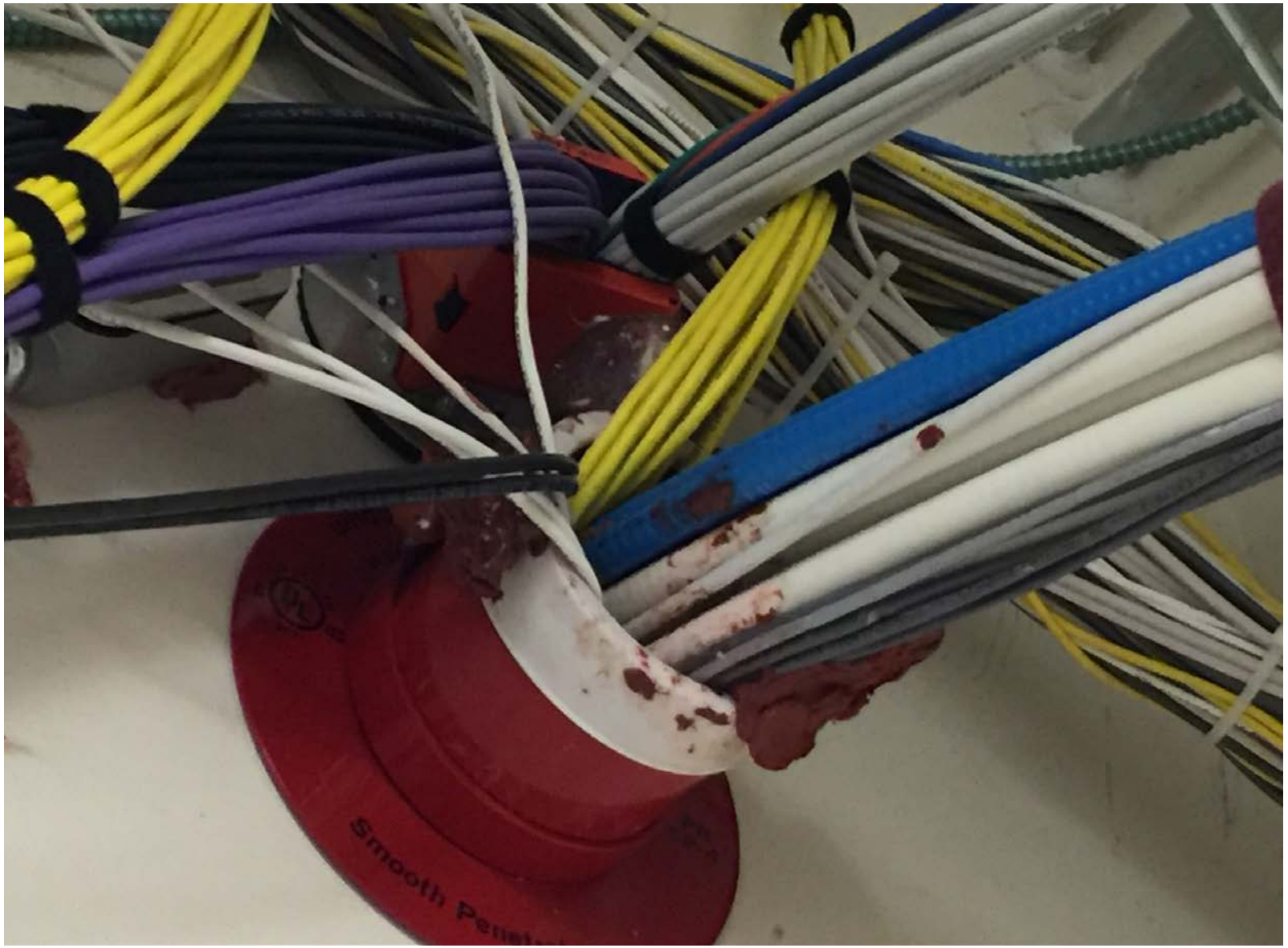
# In the world above the ceiling tiles…
# Out of sight can be out of mind!





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# Even when new!

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# U.L. Tested Rubber Matt?

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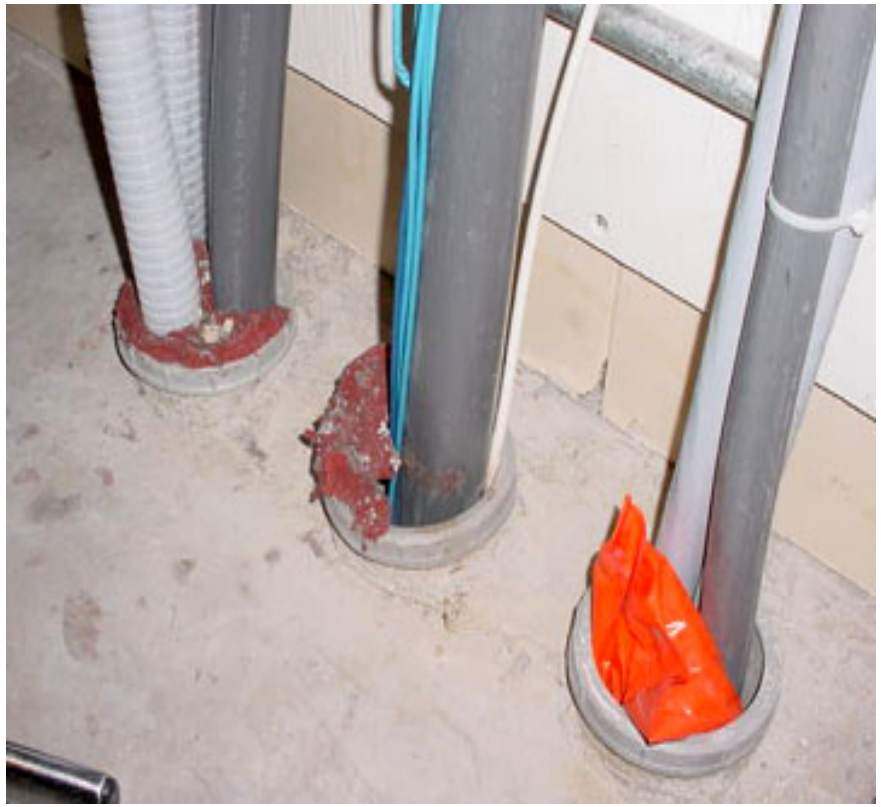
# Even when we have made the effort...

## Openings that once were sealed may no longer be.





# Scab Patches...Compliant?


4L1
CKT
31,32,33

# Giant Red Flag!




# UL Systems?????

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# The UL System Must Meet the Application

- Rating of the barrier
- Proper barrier construction
- Proper penetrating item
- Annular space requirements

**More Than Just Red Caulk!!!**

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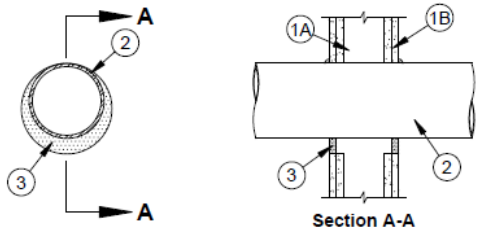
# U.L. Systems

**System No. W-L-1049**

| ANSI/UL1479 (ASTM E814) | CAN/ULC S115 |
|---|---|
| F Ratings - 1 and 2 Hr (See Item 1) | F Rating - 1 and 2 Hr (See Item 1) |
| T Rating - 0 Hr | FT Rating - 0 Hr |
| L Rating At Ambient - Less Than 1 CFM/sq ft | FH Rating - 1 and 2 Hr (See Item 1) |
| L Rating At 400 F - Less Than 1 CFM/sq ft | FTH Rating - 0 Hr |
| | 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 wallboard/stud wall assembly shall be constructed of the materials and in the manner described 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. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
   B. **Gypsum Board*** - 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls.

   **The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.**

1A. **Metallic Sleeve** - (Optional, Not Shown) - Cylindrical sleeve fabricated from min 0.016 in. (0.41 mm) to max 0.105 in. (2.7 mm) thick sheet steel. Length of steel sleeve to be equal to the thickness of wall. Longitudinal seam of sleeve welded or overlapped min 1 in. (25 mm). The ends of the steel sleeve shall be flush or recessed max 1/4 in. (6 mm) from wall surfaces.


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




Created or Revised: December 20,2013


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

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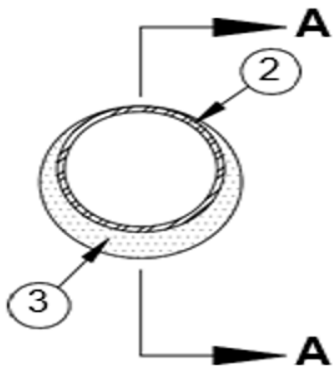
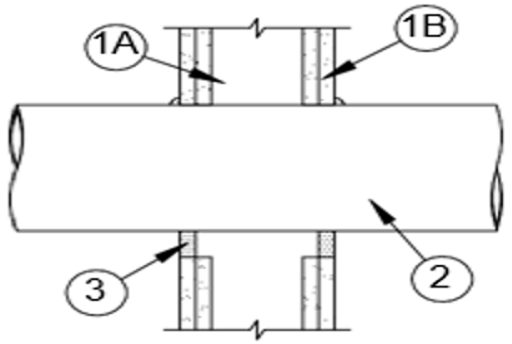
# The UL Design Has Parameters

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# System Details

2. **Through Penetrant -** One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). For maximum 16 in. (406 mm) diam (or smaller) pipes, annular space shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. **Steel Pipe -** Nom 36 in. (914 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. **Iron Pipe -** Nom 36 in. (914 mm) diam (or smaller) cast or ductile iron pipe.
   C. **Conduit -** Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing, nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
   D. **Copper Tubing -** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. **Copper Pipe -** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
3. **Fill, Void or Cavity Material* - Sealant -** Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrant and gypsum board, a min 3/8 in. (10 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall.

   **SPECIFIED TECHNOLOGIES INC** - SpecSeal Series SSS Sealant or SpecSeal LCI Sealant

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

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# Seems Easy Enough!
# Competent Installations Require Understanding:

1. The role of barriers/compartmentation
2. How barriers are compromised
3. Following a UL system approach
4. Understanding basic product installation


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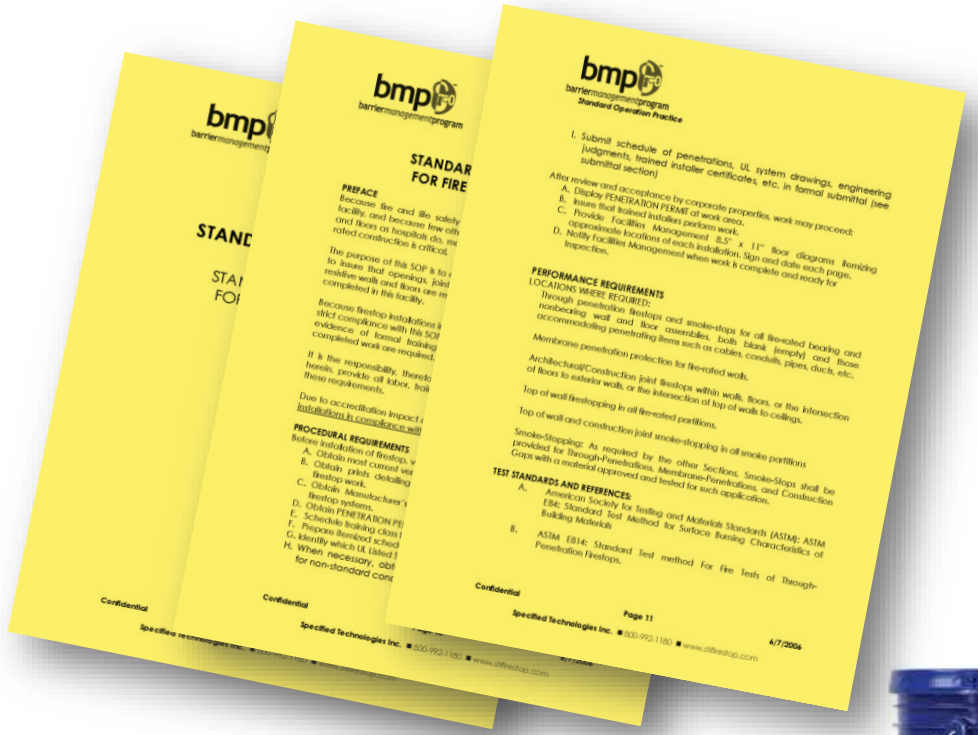
# Standard Operating Practice

- A full overview as to what is expected of anyone working in a rated barrier
- A part of the bid documents
- Procedural requirements
- Performance requirements
- Submittal requirements
- Installation requirements

***Failure of any vendor to meet your SOC will result in contract termination***

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# Make Expectations Clear!

- Because firestop installations in this facility are surveyed for strict adherence to code requirements, and to insure compliance, submittals, evidence of formal training for the installer, and destructive inspections of completed work are required. It is the responsibility, therefore, of the vendor to understand the requirements herein, provide all labor, training, materials, and equipment necessary to meet these requirements.
- Due to the critical nature of these life-safety systems, failure to provide firestop installations in compliance with this SOP is cause for contract termination.

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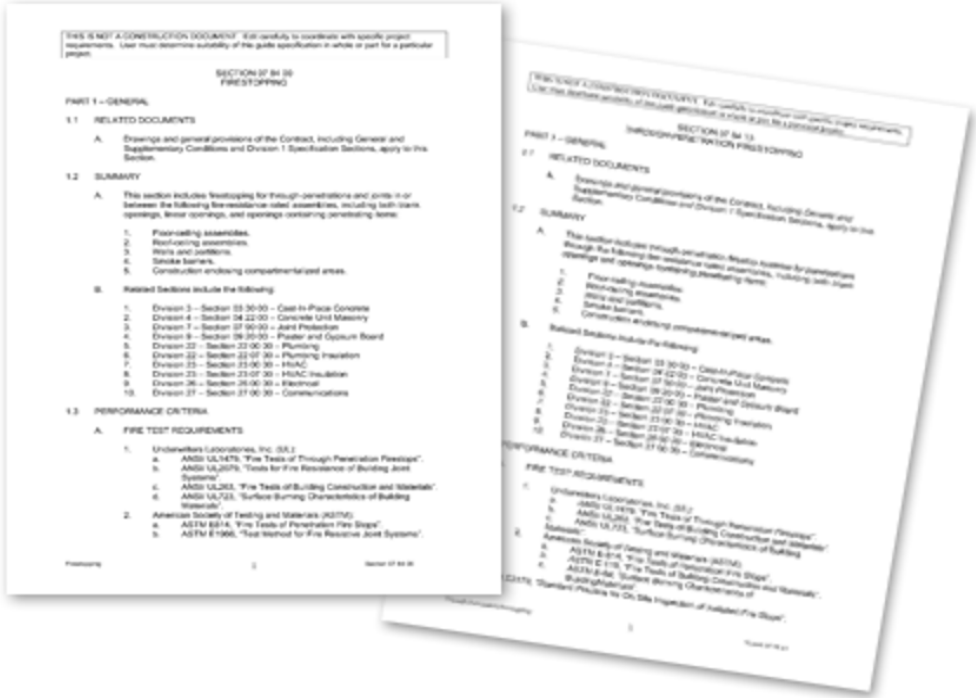
# Guide Specs

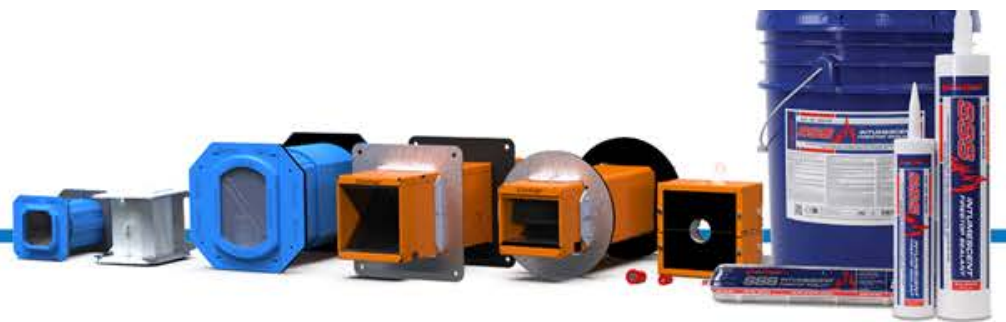
## MasterFormat® 2004 Edition

- General Firestopping (07 84 00)
- Section Penetration Firestopping (07 84 13)
- Joint Systems (07 84 43)
- Building Perimeter Firestopping (07 84 53)
- Division 22 Specification – Plumbing Firestopping
- Division 23 Specification – HVAC Firestopping
- Division 26 Specification – Electrical Specification
- Division 27 Specification – Communications Firestopping
- Canadian General Firestopping (07 84 00)



## Specification Review Services

Did you know that many specifications for firestopping reference older fire test standards or obsolete products? Let our firestop experts assist by reviewing your firestop specifications and making appropriate recommendations. STI provides this service free of charge.



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# Procedural Requirements For Personnel Entering Barriers

- Obtain S.O.P.
- Obtain prints detailing rated construction
- Obtain manufactures application guide
- Achieve certification for installers (FIT-I)
- Prepare itemized schedule of penetrations
- Select U.L. systems that meet the applications
- Submit in a formal submittal format

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# Submittal Of U.L. Assemblies

- UL Tested Systems: Submit drawings showing typical installation details for the methods of installation.
- Indicate which firestop materials will be used and requirements for different hourly ratings.
- Submit manufacturer's product literature for each type of firestop material to be installed. Literature shall indicate product characteristics, typical uses, performance and limitation criteria, and test data.
- Approved Applicator: Submit documents to demonstrate capability to perform intended work. (FIT Certification)

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# Combine UL System Coverage With Complete Product Solutions....

- Outline A Customized System Matrix For The Facility.

## SCHEDULE OF REQUIRED UL FIRESTOP SYSTEMS

*NOTE TO INSTALLERS: Only The Following UL Classified Firestop Systems Shall Be Accepted In This Facility*

| MECHANICAL PENETRATIONS | Sleeved | Insulated | Product(s) | Concrete Floor | Concrete Wall | GWB Wall |
|---|---|---|---|---|---|---|
| Bare Metallic | No | No | SSS Sealant | CAJ-1079 | CAJ-1079 | WL-1049 |
| Bare Metallic | Yes | No | SSS Sealant | CAJ-1217 | CAJ-1217 | WL-1079 |
| Fiberglass Insulated Pipe | Optional | Yes | SSS Sealant | CAJ-5087 | CAJ-5087 | WL-5014 |
| ABI/PVC Foam Insulated Pipe | No | Yes | SSS Sealant | CAJ-5133 | CAJ-5133 | WL-5054 |
| Multiple Metallic | No | No | SSS Sealant | | | WL-1168 |
| Multiple Metallic | Yes | No | SSS Sealant | | | WL-1127 |
| Multiple Mixed | No | Optional | SSS Sealant | CAJ-8053 | CAJ-8053 | WL-8003 |
| Multiple Mixed Pipe | No | No | Pillows | CAJ-8093 | CAJ-8093 | |
| Fire Retardant Poly Propylene Pipe | No | No | SSS/SSCollars | CAJ2045 | CAJ2045 | WL2029 |
| Fire Retardant Poly Propylene Pipe | Optional | No | Wrap Strip Tuck In | FA2077 | WJ2020 | WL2048 |
| All Plastics 1.5"-6"" (Collar Device Only) | No | No | SSS/SSCollars | CAJ2125 | CAJ2125 | WL-2074 |
| **ELECTRICAL PENETRATIONS** | **Sleeved** | **Re-Enterable** | **Product(s)** | **Concrete Floor** | **Concrete Wall** | **GWB Wall** |
| Single Conduit | No | No | SSS Sealant | CAJ-1079 | CAJ-1079 | WL-1049 |
| Multiple Metallic | No | No | SSS Sealant | | | WL-1093 |
| Multiple Metallic | No | No | SSS Sealant | | | WL-1168 |
| Multiple Mixed Conduits and Tubing | No | Yes | Pillows | CAJ-8093 | CAJ-8093 | |
| Multiple Metallic | No | No | SSS Sealant | CAJ-8053 | CAJ-8053 | WL-8003 |
| Flush-mounted electrical and VDV outlet boxes | | No | Putty Pads | | | CLIV |
| **COM/DATA PENETRATIONS** | **Sleeved** | **Re-Enterable** | **Product(s)** | **Concrete Floor** | **Concrete Wall** | **GWB Wall** |
| Single Cable Bundle | No | Yes | Single EZ-Path | CAJ-3214 | C-AJ-3214 or WJ3099 | WL3219 |
| Multiple Cable Bundles | No | Yes | Ganged EZ-Paths | F-A-3015 | WJ3098 | WL3218 |
| Center hung cable tray | No | Yes | Pillows | | WJ-4021 | WL-4029 |
| Open ladder cable tray | No | Yes | Pillows | CAJ-4029 | CAJ-4029 | WL-4008 |
| Single Innerduct | Optional | No | SSS Sealant | CAJ-2140 | CAJ-2140 | WL-2093 |
| Multiple Innerduct | Yes | Yes | Pillows | | WJ-2054 | WL-2178 |
| **GROUPED PENETRATIONS IN EXISTING BARRIERS** | **Sleeved** | **Re-Enterable** | **Product(s)** | **Concrete Floor** | **Concrete Wall** | **GWB Wall** |
| Multiple Mixed | | Yes | Pillows | CAJ-8093 | CAJ-8093 | |
| Multiple Mixed | | No | SSS Sealant | CAJ-8113 | CAJ-8113 | |
| Multiple Mixed | | No | SSM Mortar | CAJ-8114 | CAJ-8114 | |
| Multiple Mixed | | No | SSM Mortar | CAJ-8115 | CAJ-8115 | |
| **HVAC PENETRATIONS** | **Sleeved** | **Re-Enterable** | **Product(s)** | **Concrete Floor** | **Concrete Wall** | **GWB Wall** |
| Non-Dampered Rectangular duct | No | | SSS Sealant | | WJ-7007 | WL-7025 |
| Non-Dampered Flat oval duct | No | | SSS Sealant | | WJ-7013 | WL-7033 |
| Non-Dampered Spiral duct | No | | SSS Sealant | | WJ-7005 | WL-7026 |
| Non-Dampered Insulated duct | No | | SSS/SSW | | WJ-7011 | WL-7028 |
| **SHAFT WALLS** | | | **Product(s)** | **Concrete Floor** | **Concrete Wall** | **GWB Wall** |
| Metallic Pipe, Sealed from one side | | | SSS Sealant | | | WL-1251 |
| PVC Pipe, Sealed from one side | | | SSS Sealant | | | WL-2257 |
| Cable Bundle, Sealed from one side | | | SSS Sealant | | | WL-3178 |
| Round Non-Dampered HVAC, Sealed from one side | | | SSS Sealant | | | WL-7060 |
| Rectangular Non-Dampered HVAC, Sealed from one side | | | SSS Sealant | | | WL-7060 |
| Cable Tray, Sealed | | | ES Sealant | | | WL-4184 |
| **ARCHITECTURAL JOINTS & BLANK OPENINGS** | | | **Product(s)** | **Concrete Floor** | **Concrete Wall** | **GWB Wall** |
| Walls to Flat Concrete Deck | | | ES Sealant | | HWD-1006 | HWD-0079 |
| Walls to Flat Concrete Deck | | | AS Spray | | HWD-1005 | HWD-0044 |
| Walls to Fluted Metal Deck | | | ES Sealant | | HWD-0038 | HWD-0034 |
| Walls to Fluted Metal Deck | | | AS Spray | | HWD-0086 | HWD-0043 |
| Walls to Fluted Metal Deck, Fireproofing, I-Beams | | | AS Spray | | HWD-0140 | HWD-0099 |
| Gypsum Walls to Fluted Metal Deck, Castle Cut | | | ES Sealant | | | HWD-0153 |
| Wall to Wall Joint | | | ES Sealant | WWD-0004 | | |
| Perimeter Joint, Gyp. Sheathed Stud Wall,Vision Glass | | | AS Spray | CWS-1002 | | |
| Perimeter Joint, Spandrel Glass,Vision Glass | | | AS Spray | CWS-2003 | | |
| Floor to Floor Joint | | | ES Sealant | FFD-1008 | | |
| Blank Openings | | | SSS Sealant | CAJ-0014 | CAJ-0014 | |
| Blank Openings | | | Pillows | CAJ-0061 | CAJ-0061 | WL-0010 |
| **PERIMETER FIRE CONTAINMENT SYSTEMS** | | | **Product(s)** | **System** | | |
| 3 Hour Spandrel Glass | | | AS Spray | CW-S-2049 | | |
| 3 Hour Concrete | | | AS Spray | CW-S-2048 | | |

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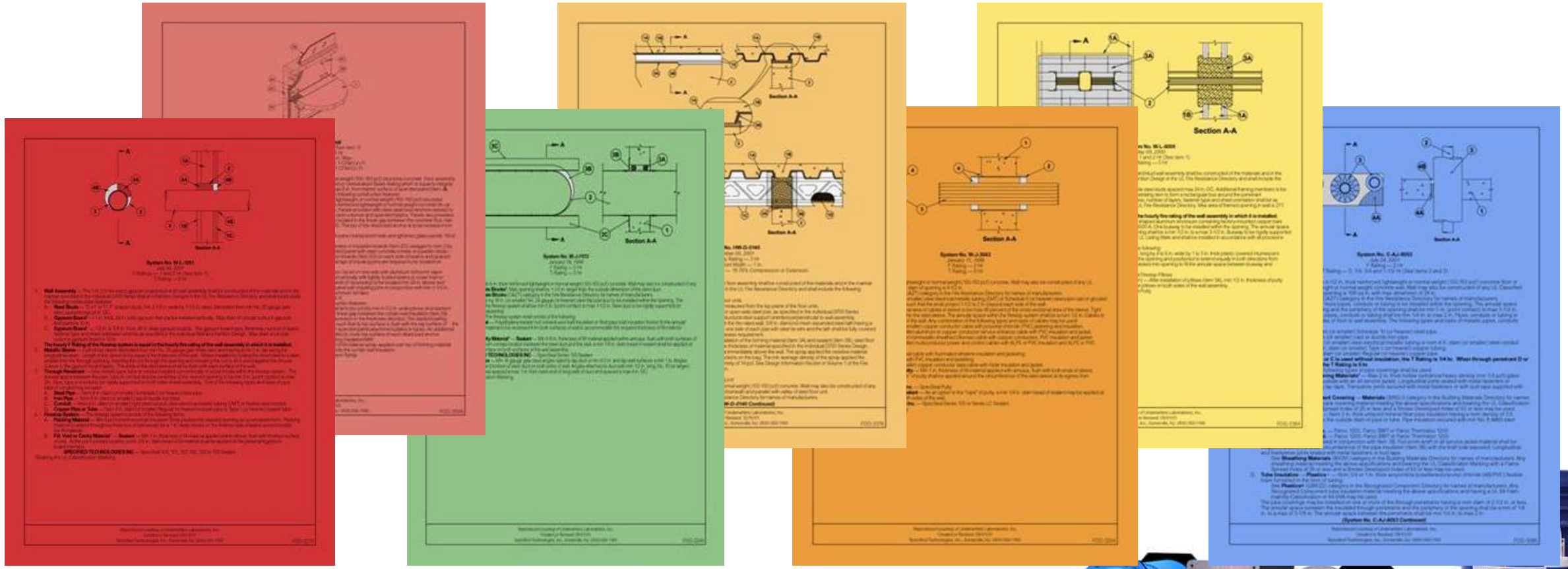
# BMP: Standardized System Base Documentation



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# Penetration Permit Form

- This permit will be given with a designated start. Determined by the facility
- Will allow access above the ceiling
- Will be displayed at all times

**NOT CONSIDERED A CLOSEOUT!**


bmp
barriermanagementprogram

RESTRICTED SPACE ACCESS PERMIT

FOR OFFICIAL USE ONLY DO NOT WRITE BELOW THIS LINE

Confidential Page 39 6/7/2006

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# Firestop Installer Worksheet

- This document would be picked up and returned to the firestop office
- List all information of the installation
- A log of who, what, when and how
- Use as an inspection tool
- Accountability!


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# Penetration Labels – Accountability?

- Product used
- Date of installation
- Contractor information
- UL System#


# Specialized Training

- Outline topics include:
  - Firestop fundamentals
  - Containment
  - Fire-rated construction
  - Firestop penetrations — proper products selection
  - Proper installations
  - High traffic/re-Enterable applications
  - UL® firestop system parameters and testing
  - Construction joints
  - Myths about firestop

FIRESTOP INSTRUCTIONAL TRAINING

**Firestop Instructional Training I and II**

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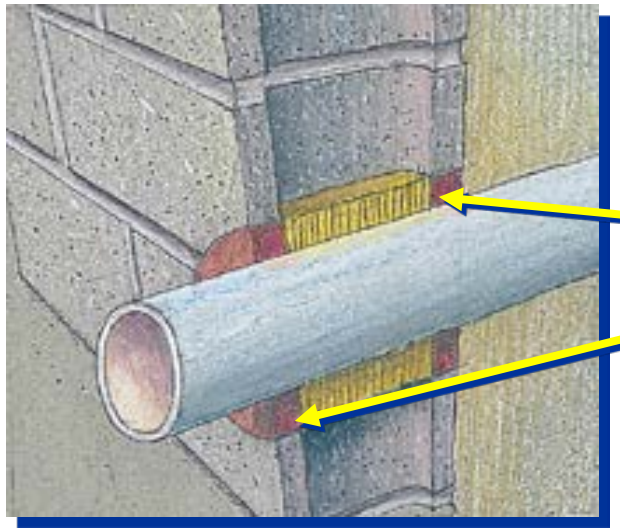
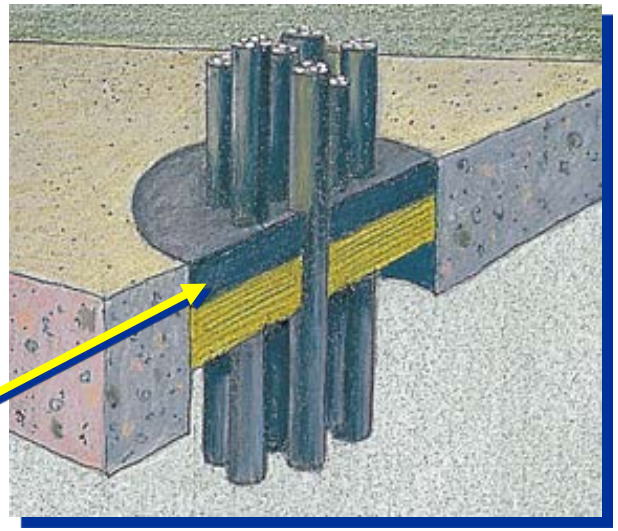
# Installing Firestop

## Where does it go...



Wall penetrations , by contrast, almost always require a symmetrical installation, sealing both sides of the wall



Floor penetrations generally require only a seal from one side

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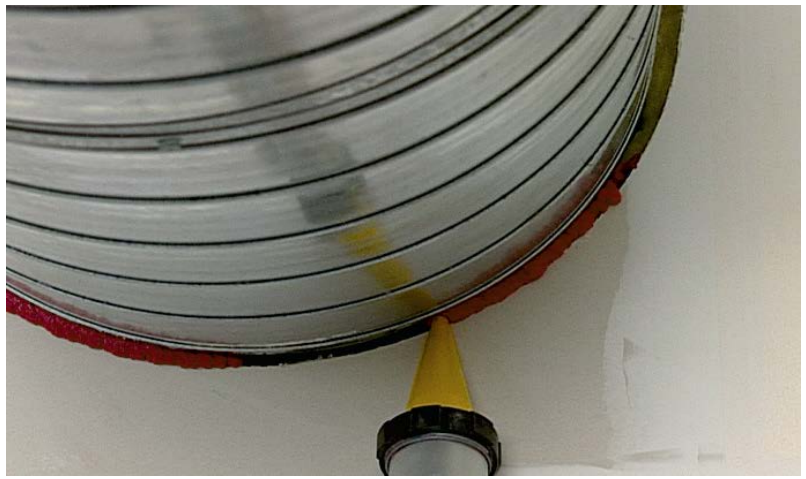
# Through-Penetrations

- Are there combustibles?
- Is there need for movement?



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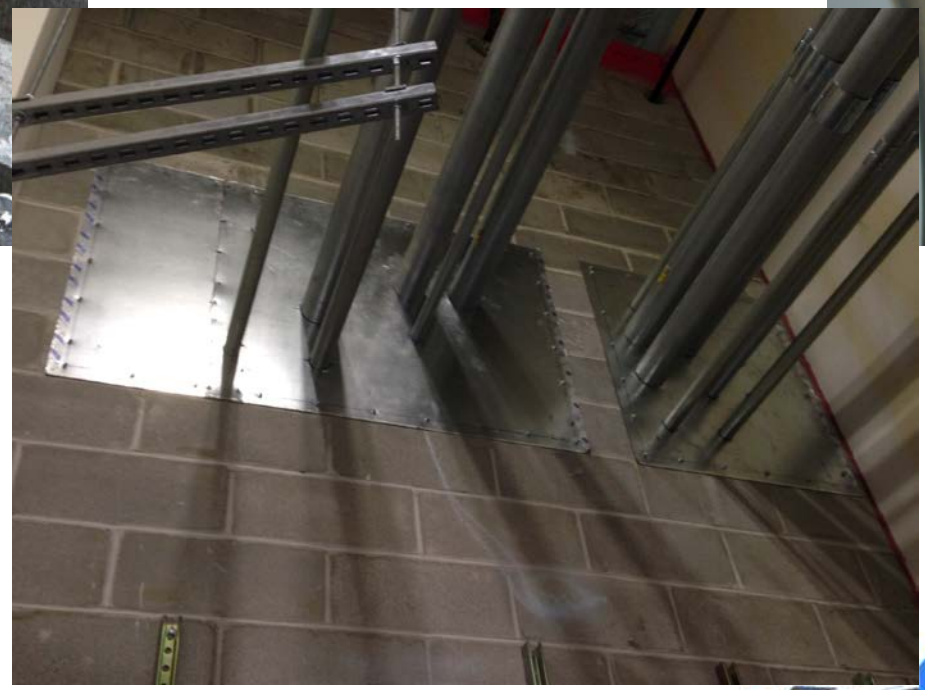
# Composite Sheet For large Openings

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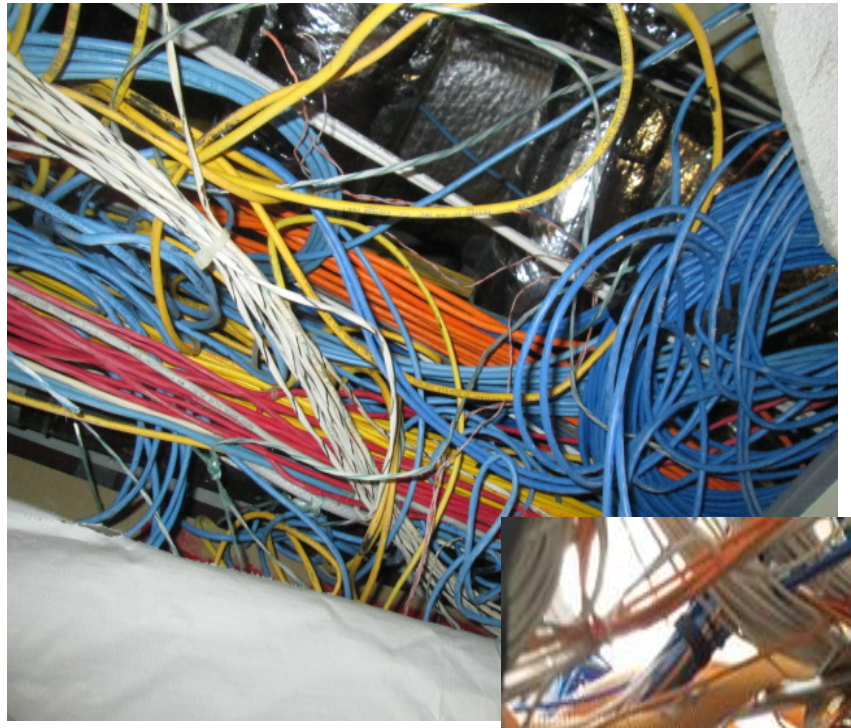
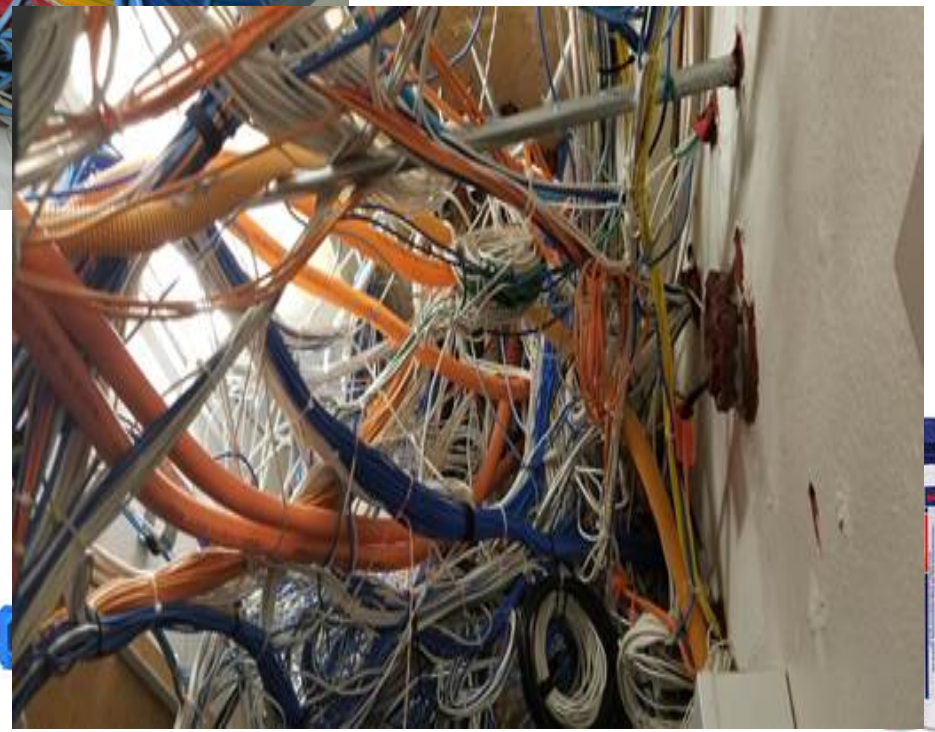
# Specific Issues

## High Traffic Openings

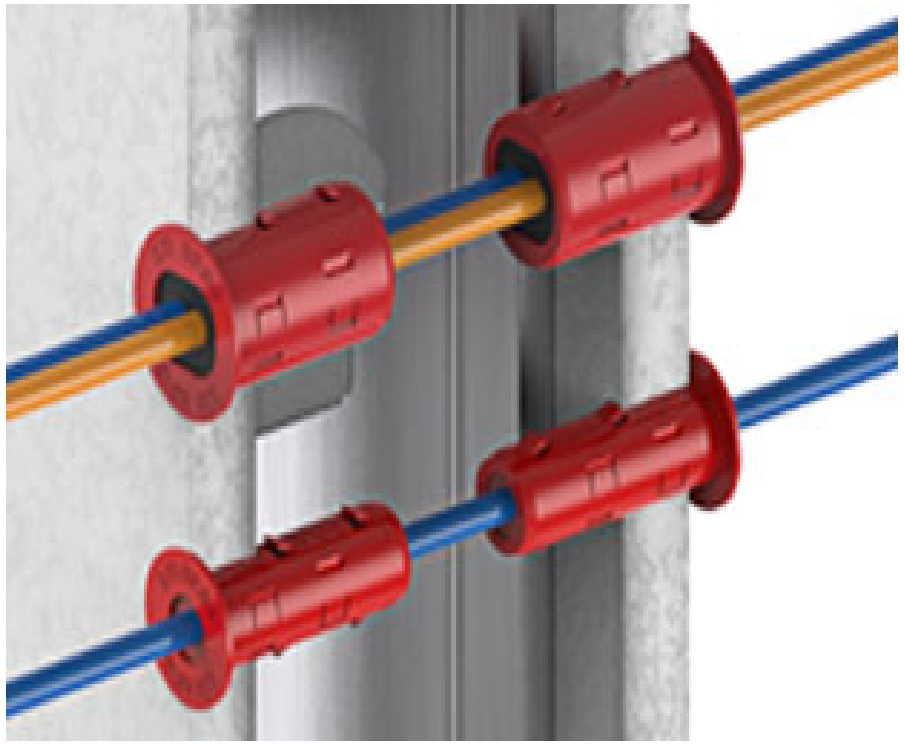
- Cable penetrations are large percentage of Issues
- Infection control and acoustics?
- Fire barrier management over time is a significant challenge!

Long term sustainable designs are the key!





# Small Cable Applications



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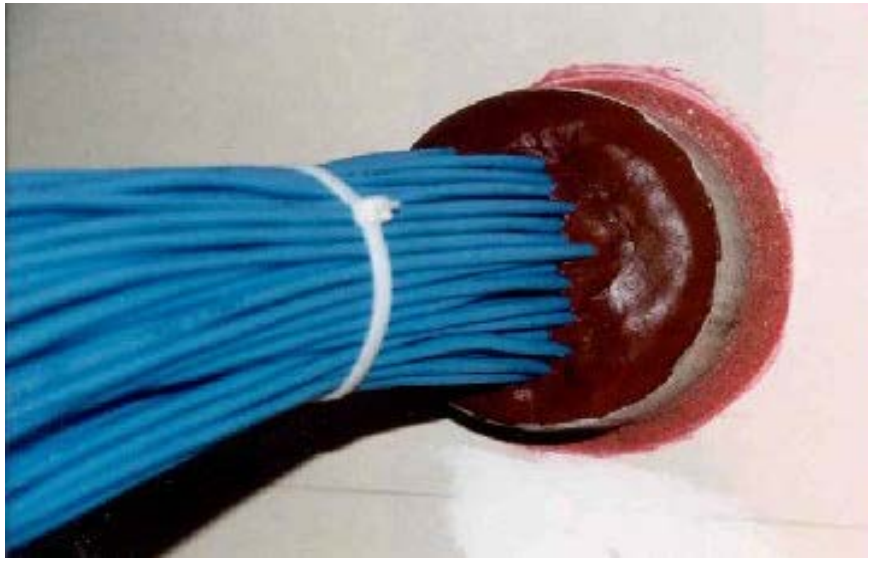
# Traditional Methods For HTO's

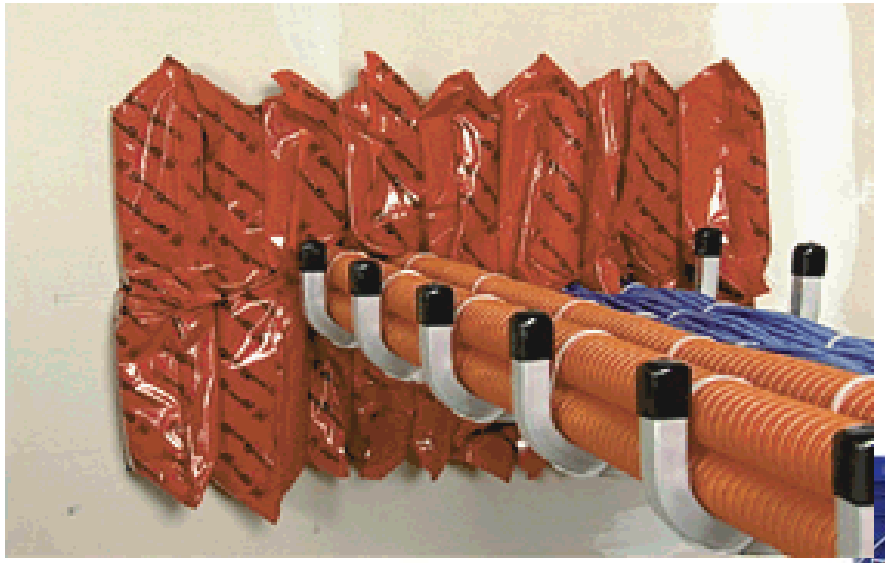
## Small Opening:

- Run sleeves through the wall or floor
- Firestop using sealant or putty



## Medium to Large Openings:

- Stop tray before wall and run multiple sleeves
- Run tray through opening and use pillows



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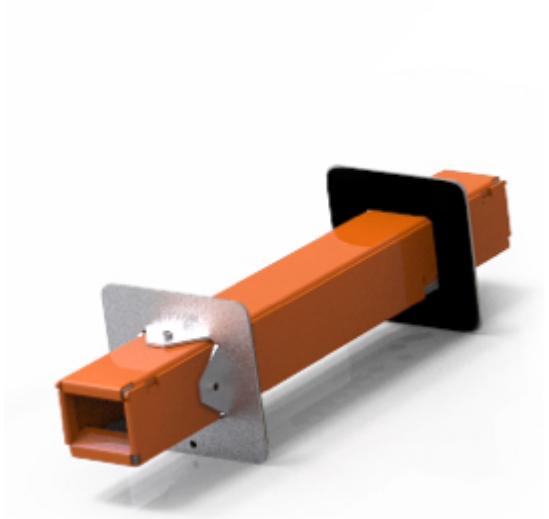
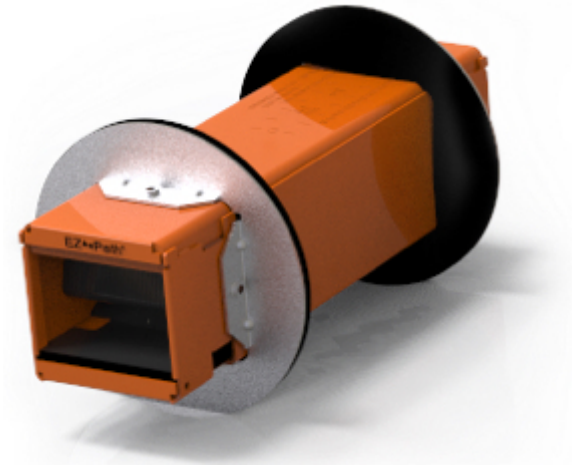
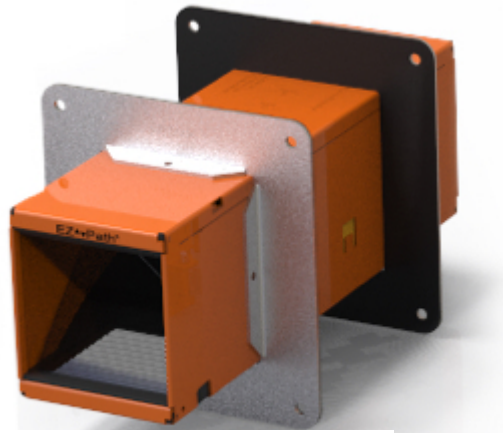
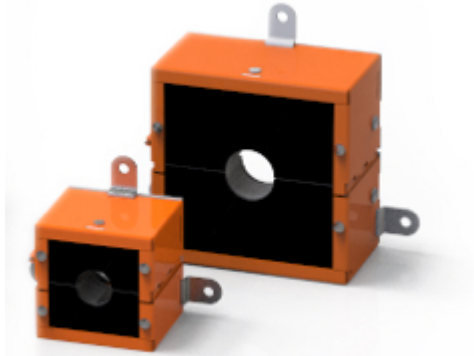
# Maintenance Free Devices
# (Pre Diagnosed Materials)









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# Where High Traffic Will Be An Issue Or Real Estate Is An Issue

# Future Proof The Building

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# No Requirement To Open, Close or Plug

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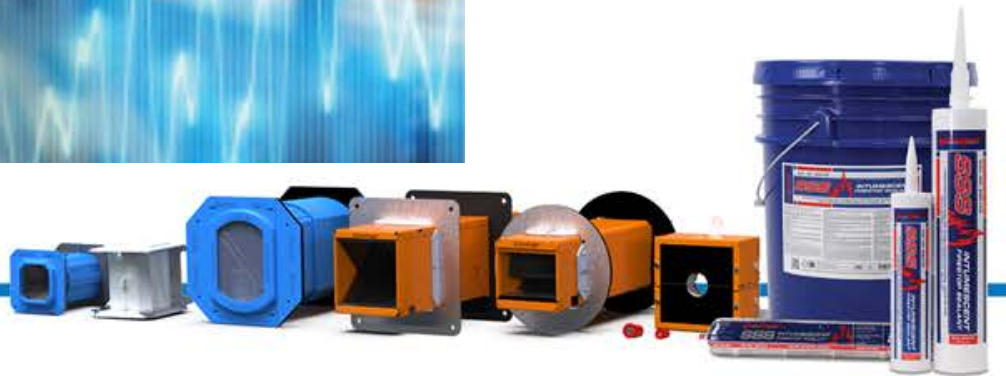
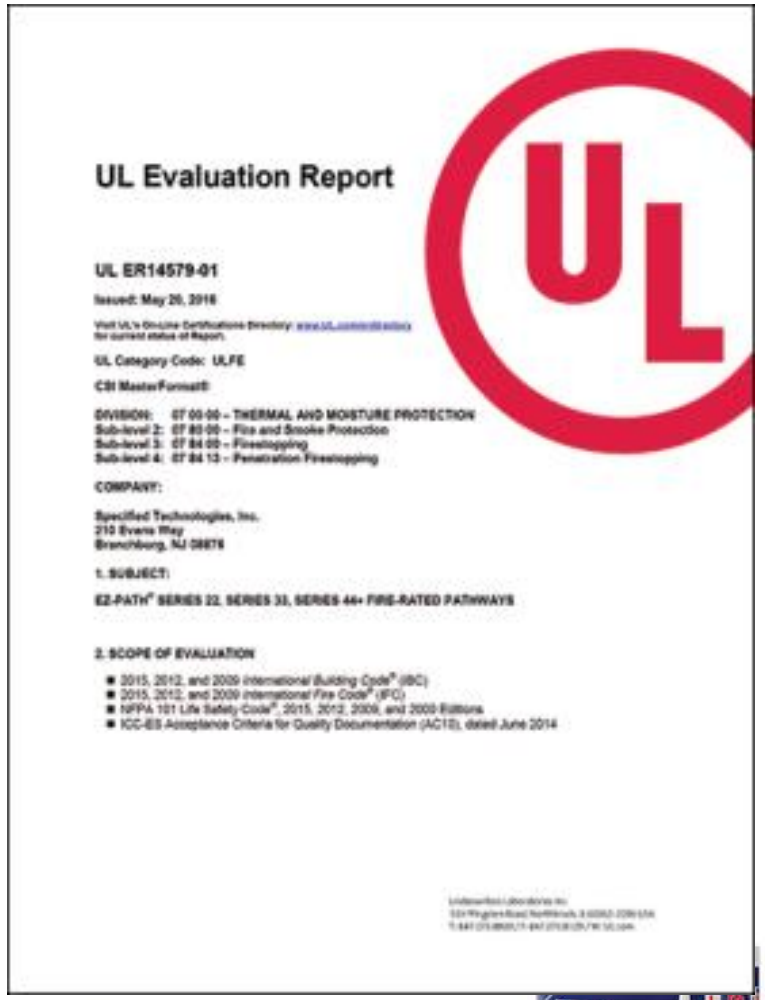


# Don’t Just Take our Word for it

Issued by UL® Confirming Code Compliance of EZ-Path® to:

- International Building Code® (IBC)
- International Fire Code® (IFC)
- NFPA 101: Life Safety Code®
- IFC and LSC Include Requirements For Inspection And Maintenance Of Any Fire Protective Element In The Building.

*“The EZ-Path® Series 22, 33, and 44+ Fire-Rated Pathways do not require regular maintenance…”* (UL ER14579-01 Section 6.1)



UL Evaluation Report

UL ER14579-01

Issued: May 20, 2016

UL Category Code: ULFE

CSI MasterFormat®:

DIVISION: 07 00 00 – THERMAL AND MOISTURE PROTECTION
Sub-level 2: 07 80 00 – Fire and Smoke Protection
Sub-level 3: 07 84 00 – Firestopping
Sub-level 4: 07 84 13 – Penetration Firestopping

COMPANY:

Specified Technologies, Inc.
210 Evans Way
Branchburg, NJ 08876

1. SUBJECT:

EZ-PATH® SERIES 22, SERIES 33, SERIES 44+ FIRE-RATED PATHWAYS

2. SCOPE OF EVALUATION

- 2015, 2012, and 2009 International Building Code® (IBC)
- 2015, 2012, and 2009 International Fire Code® (IFC)
- NFPA 101 Life Safety Code®, 2015, 2012, 2009, and 2000 Editions
- ICC-ES Acceptance Criteria for Quality Documentation (AC10), dated June 2014

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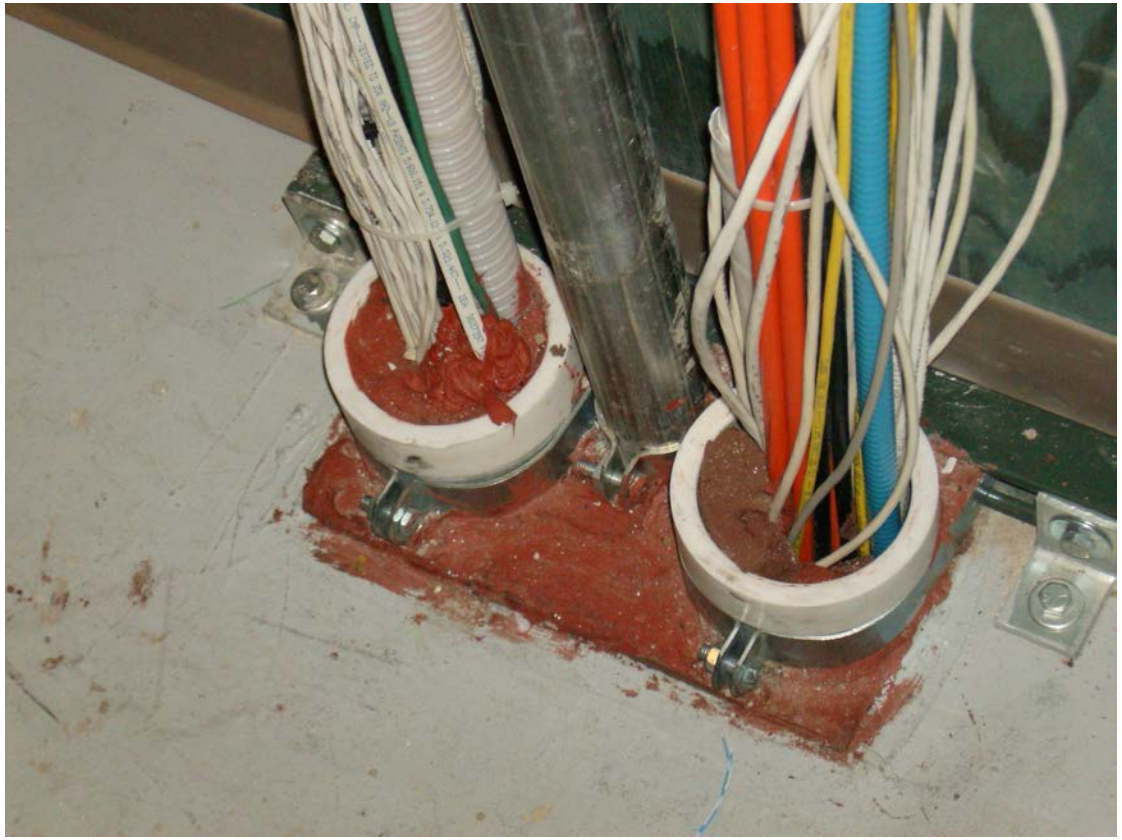
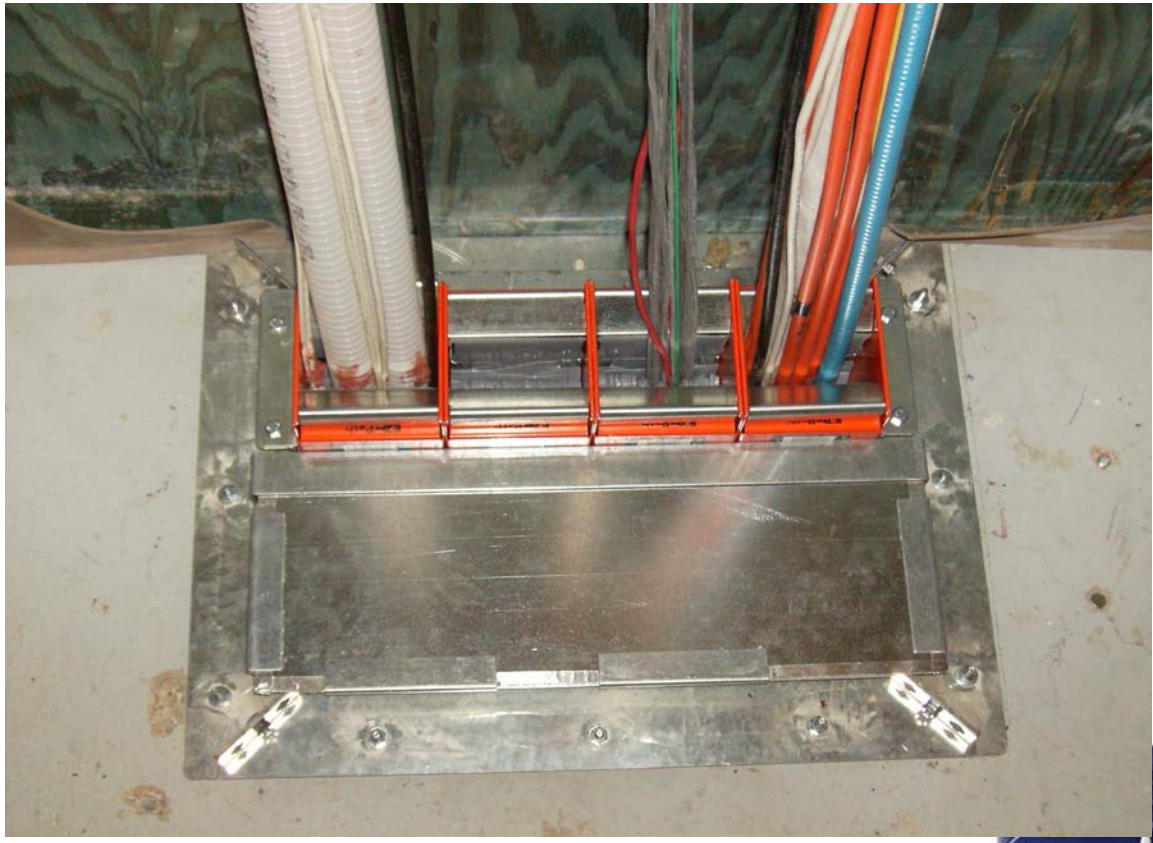
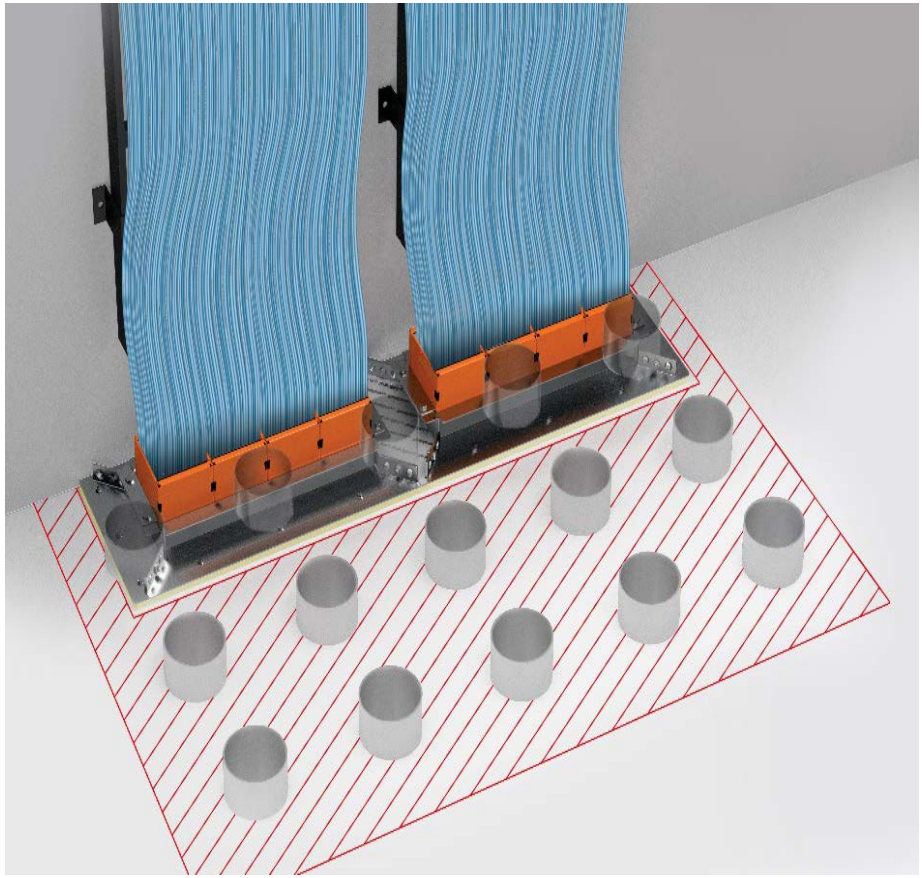
# Floor Grid: Before and After





# More Cable In A Concentrated Area



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# In Combination With Other Products

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# Future Proof In The Design

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# Cost Of Ownership

## Key Assumptions:

### Penetrations

Reset

**Number of Penetrations** (Computed based on EZ-Path Capacity) 100

### Devices

| Device | # of Devices | Hours to Install | Re-Entry Hours |
|---|---|---|---|
| EZ-Path® 44+ | 100 | 0.5 | 0.5 |
| Twist Sleeve | 125 | 0.75 | 1.5 |
| Steel Sleeve & Putty | 200 | 1 | 2 |

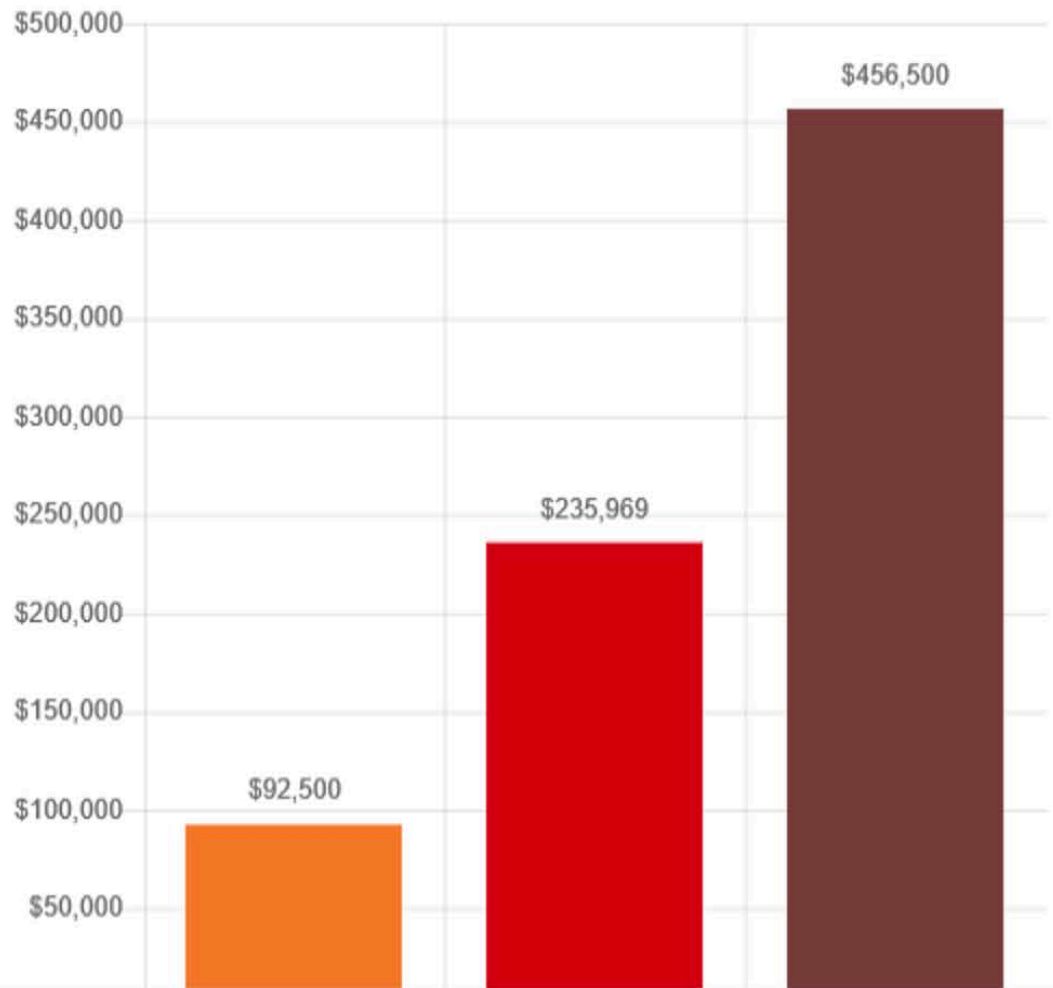
### Labor

**Labor Cost per Hour to Install/Re-Enter** $ 90

**Number of Re-Entries per Year** 4

## Saving Advantages:

### 5 Year Life Cycle Cost of...



# Adjust The Numbers To Fit Your Project

## Labor

| | |
|---|---|
| Labor Cost per Hour to Install/Re-Enter | $ 90 |
| Number of Re-Entries per Year | 4 |
| % Original Penetrations to Re-Enter | 50% |
| Cost per Hour to Inspect | $ 65 |
| % Inspection Cost Allocated to Penetrations | 25% |
| Allocated Cost per Hour to Inspect | $ 16.25 |
| % Penetrations to Inspect | 100% |

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## Ongoing Inspection Cost per Year

| Device | # of Devices | % Penetrations to Inspect | Labor Hours per Opening | Number of Sides to Inspect | Hourly Cost to Inspect | Annual Inspection Cost | Cost of Inspections 5 Years | Cost of Inspections 10 Years |
|---|---|---|---|---|---|---|---|---|
| EZ-Path® 44+ | 100 | 100% | 0 | 0 | $16 | $0 | $0 | $0 |
| Twist Sleeve | 125 | 100% | 1 | 1 | $16 | $2,031 | $10,156 | $20,313 |
| Sleeve & Putty | 200 | 100% | 1 | 2 | $16 | $6,500 | $32,500 | $65,000 |

## Re-Entry Costs

| Device | # of Devices | Re-entry Hours per Opening | Per Hour Labor Charge | Cost per Re-Entry | # Re-Entries per Year | % Original Penetrations Re-Entered | Annual Cost of Re-Entry | Cost of Re-Entry 5 Years | Cost of Re-Entry 10 Years |
|---|---|---|---|---|---|---|---|---|---|
| EZ-Path® 44+ | 100 | 0.5 | $90 | $45 | 4 | 50% | $9,000 | $45,000 | $90,000 |
| Twist Sleeve | 125 | 1.5 | $90 | $135 | 4 | 50% | $33,750 | $168,750 | $337,500 |
| Sleeve & Putty | 200 | 2 | $90 | $180 | 4 | 50% | $72,000 | $360,000 | $720,000 |

# Bottom Line Cost Of Not Using EZ-Path!

## 5 Year Life-Cycle Cost

| Device | # of Devices | Inital Cost | Inspection | Re-Entry | Total | EZ-Path® Advantage: Life-Cycle Cost Savings |
|---|---|---|---|---|---|---|
| EZ-Path® 44+ | 100 | $43,000 | N/A | $45,000 | $88,000 | - |
| Twist Sleeve | 125 | $40,188 | $10,156.25 | $168,750 | $219,094 | $131,093.75 |
| Sleeve & Putty | 200 | $28,000 | $32,500.00 | $360,000 | $420,500 | $332,500.00 |

## Bottom Line

Here's what you'll save ***per device*** when you use EZ-Path® instead of:

| (Per Device) | Five Years | Ten Years |
|---|---|---|
| Twist Sleeve | $1,049 | $2,120 |
| Sleeve & Putty | $1,663 | $3,400 |

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# You Can Take It Out To 10 Year Life Cycle Cost

## 10 Year Life-Cycle Cost

| Device | # of Devices | Inital Cost | Inspection | Re-Entry | Total | EZ-Path® Advantage<br>Life-Cycle Cost Savings |
|---|---|---|---|---|---|---|
| EZ-Path® 44+ | 100 | $43,000 | N/A | $90,000 | $133,000 | - |
| Twist Sleeve | 125 | $40,188 | $20,312.50 | $337,500 | $398,000 | $265,000.00 |
| Sleeve & Putty | 200 | $28,000 | $65,000.00 | $720,000 | $813,000 | $680,000.00 |

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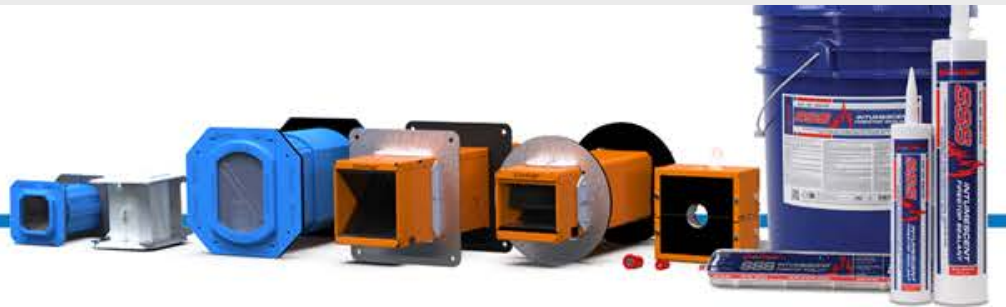
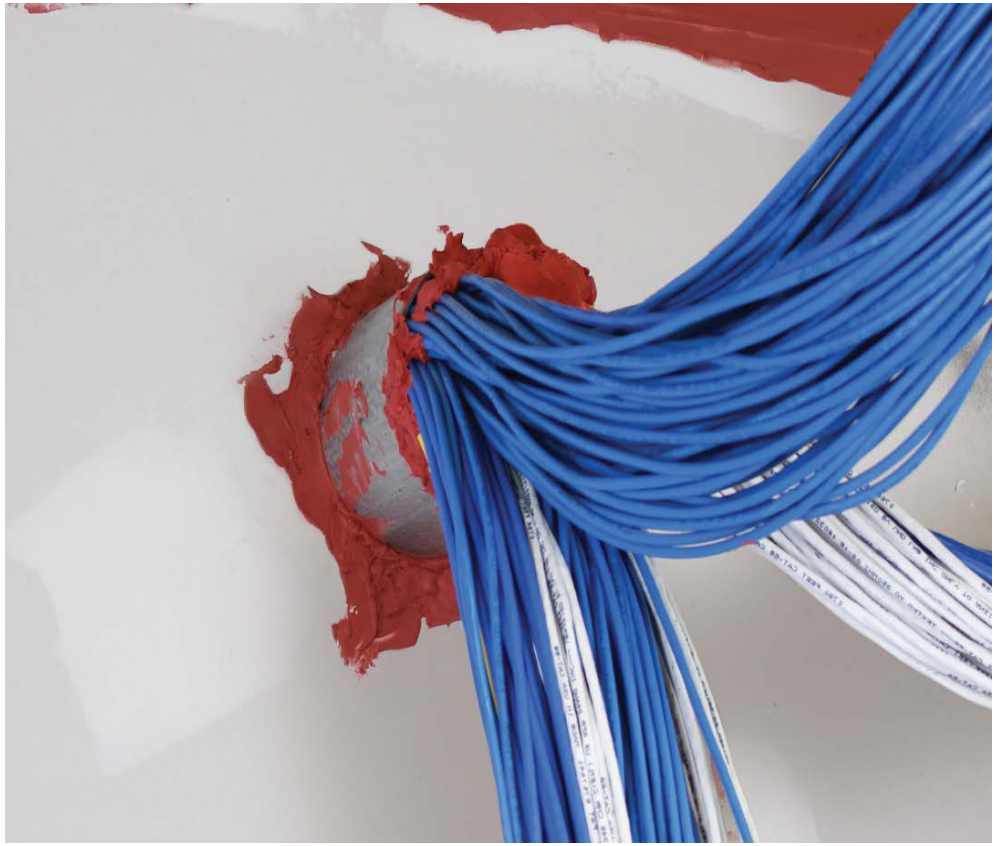
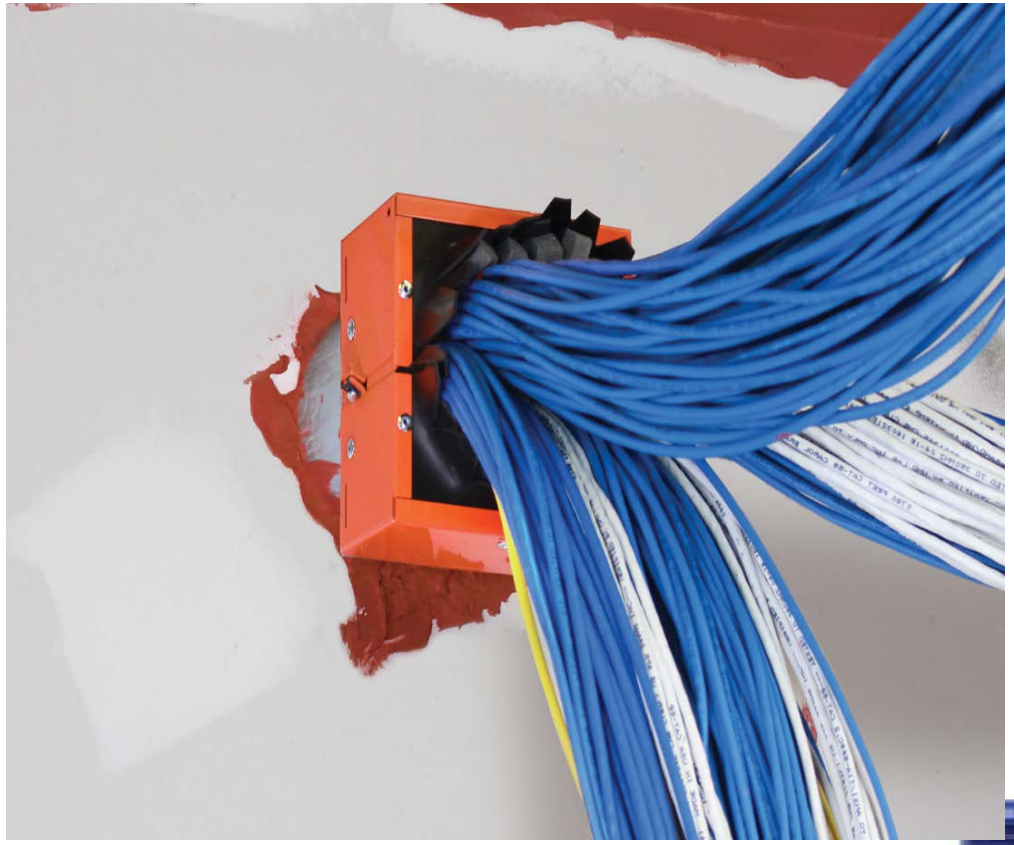


# Over Filled Sleeves





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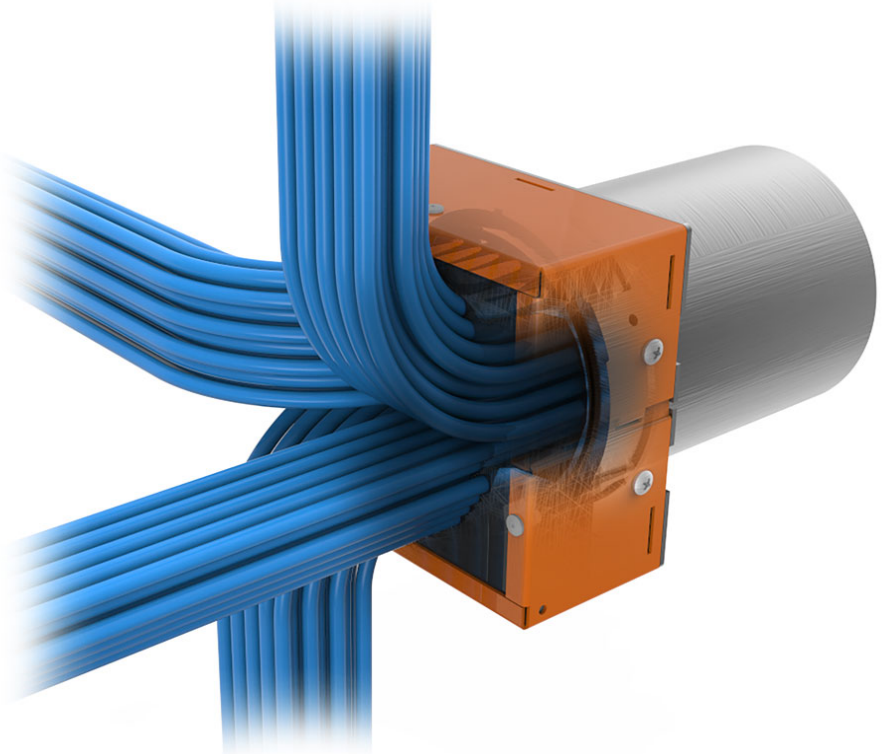
# Clamp It For Compliance



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# UL Burn Test (AFTER)

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# Drop Ceiling Issues!


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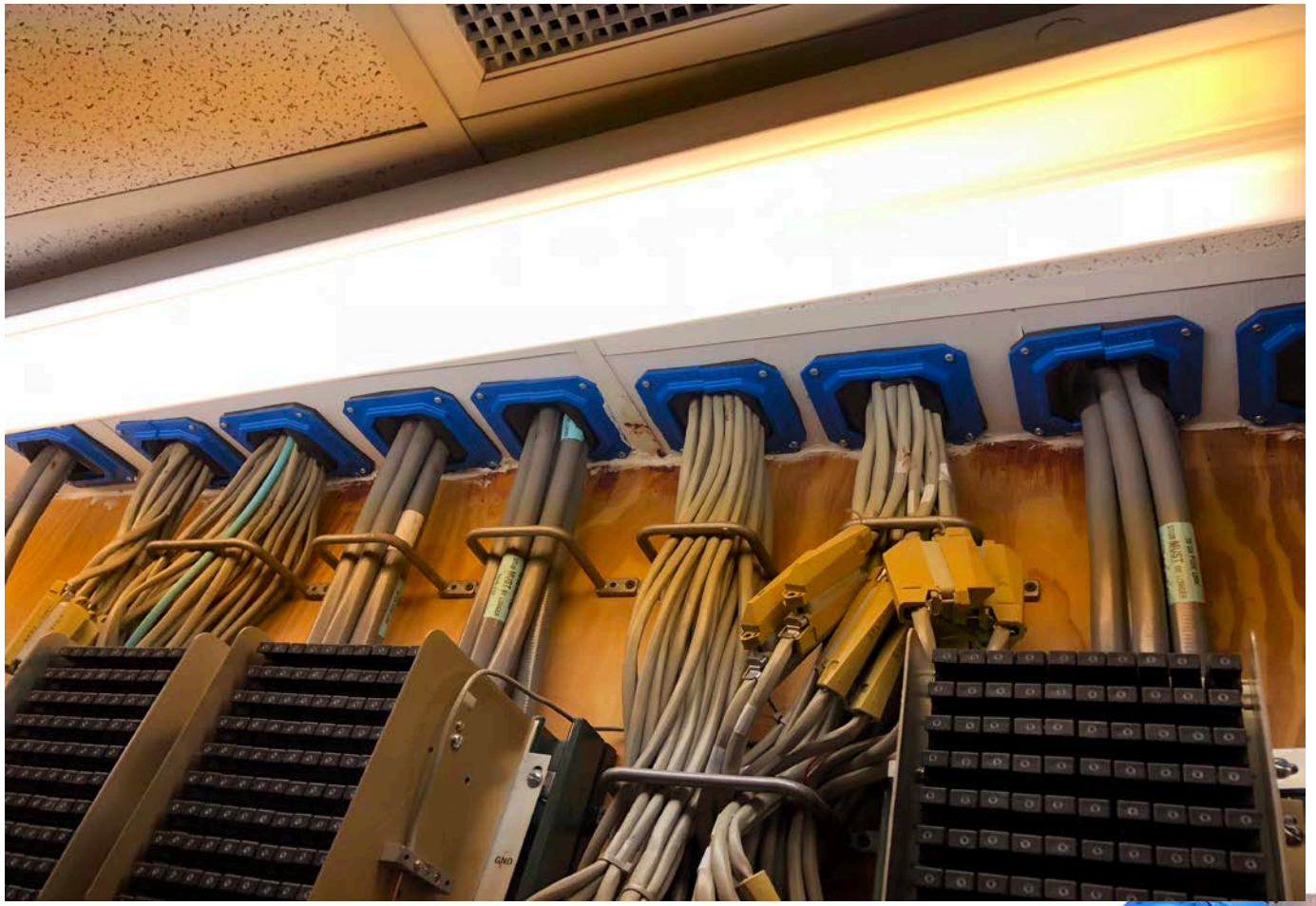
# Clean Cable Management Approach



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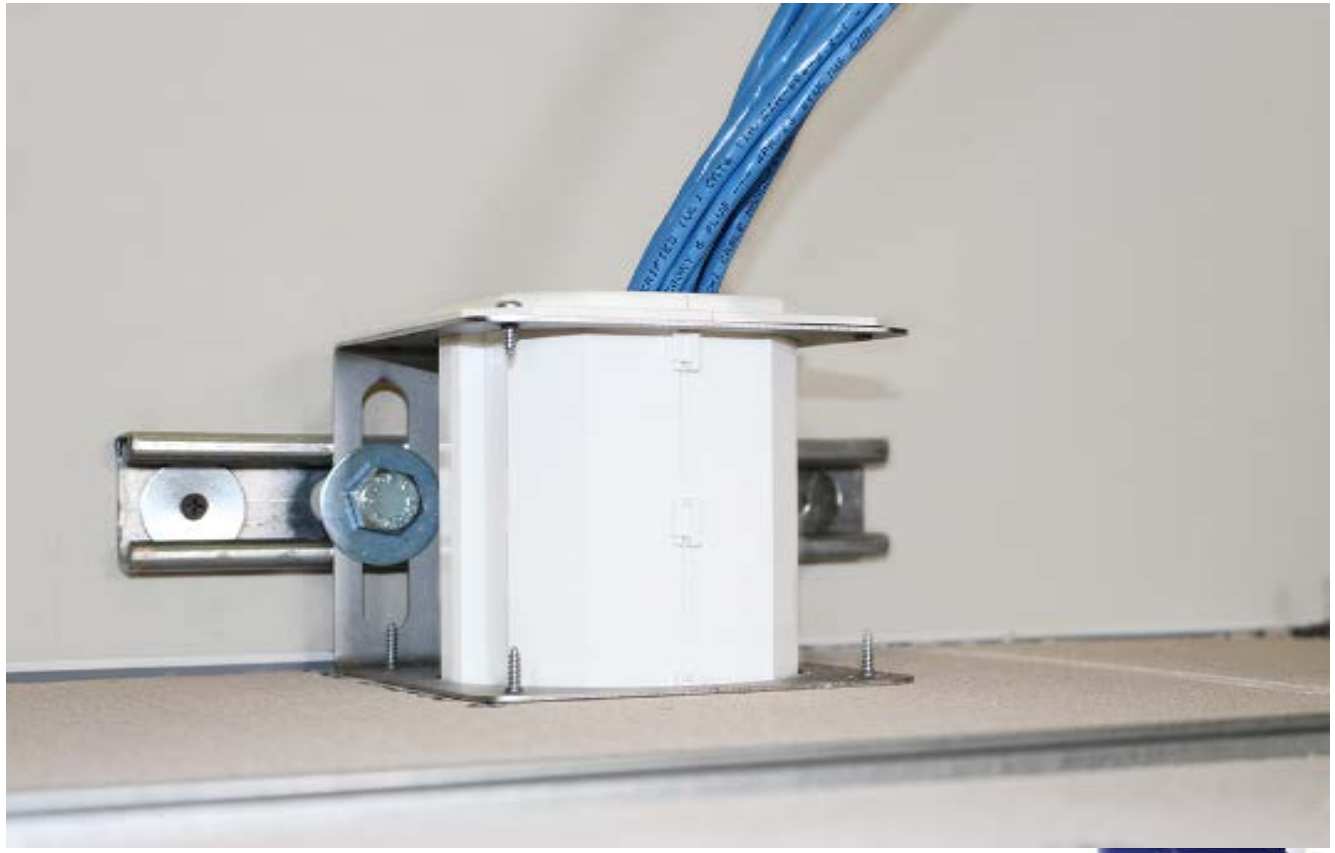
# Clean Application For Tiles



Cable Management

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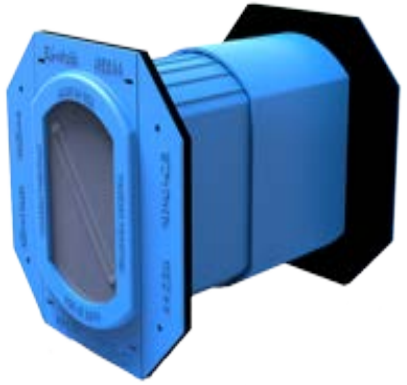
SPECIFIED TECHNOLOGIES INC.

# Series 44 NEZ



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# Containment
# Construction Joints

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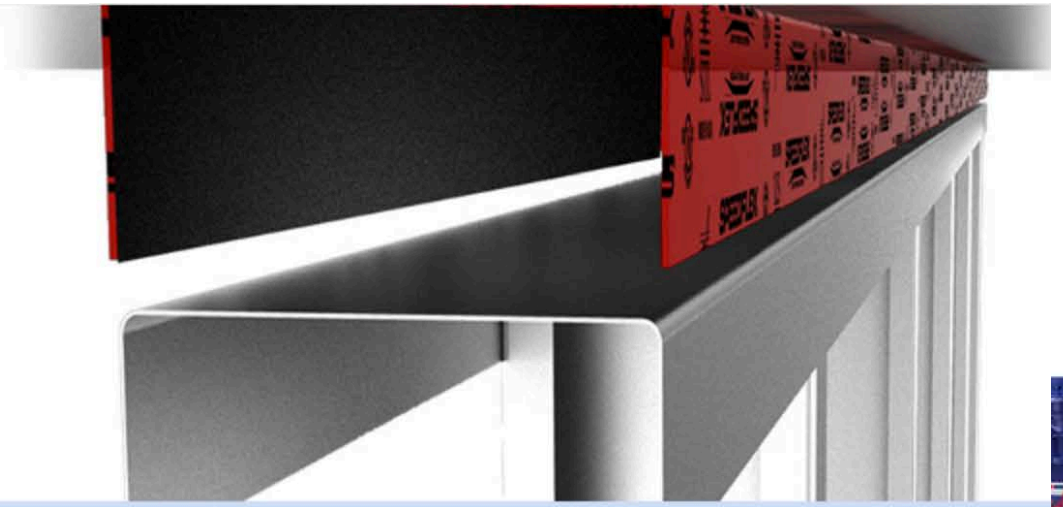
# Joint Applications

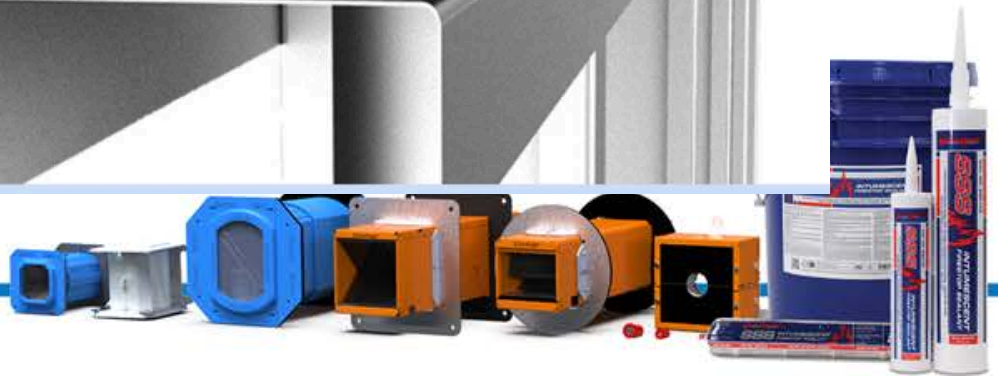
SpecSeal AS200

AS200 Elastomeric Spray

TTG

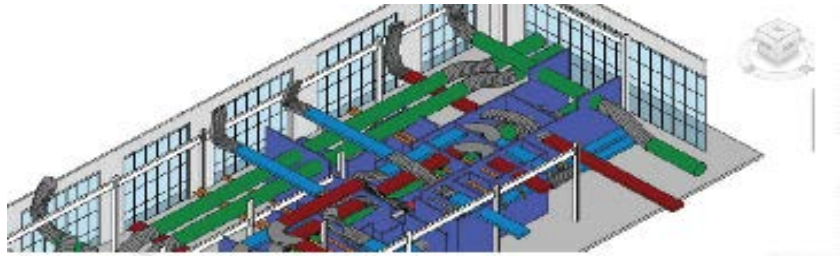
SpeedFlex® TTG Track Top Gasket

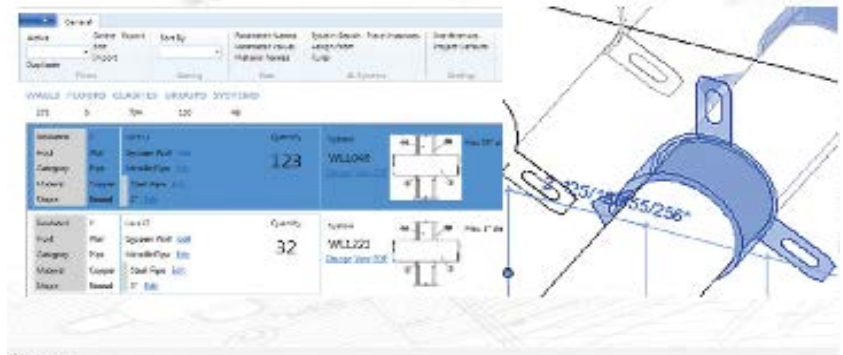




# BIM & Clash Management

- Complete library of BIM objects & tools
- Free Firestop Clash Management plug in
  - Finds clash locations for firestop assemblies
  - Groups clashes with similar properties
  - Reduces amount of systems for project
  - Automatically performs STI System Search
  - Places UL® System at clash location
  - Provides openings reports of coordination





Openings

| Linked Revit Model | Workset Name | Reference Level | Host Base Level | Host Base Level Elevation | Host Class | Host Fire Rating |
|---|---|---|---|---|---|---|
| 1 - stidev - 2016.rvt | Workset1 | Level 1 | Level 1 | 0" | Wall | |
| 1 - stidev - 2016.rvt | Workset1 | Level 1 | Level 1 | 0" | Wall | |
| 1 - stidev - 2016.rvt | Workset1 | Level 1 | Level 1 | 0" | Wall | |
| 1 - stidev - 2016.rvt | Workset1 | Level 1 | Level 1 | 0" | Wall | |
| 1 - stidev - 2016.rvt | Workset1 | Level 1 | Level 1 | 0" | Wall | |
| | | | Level 1 | 0" | Wall | |
| 1 - stidev - 2016.rvt | Workset1 | | Level 1 | 0" | Wall | |

FCM FIRESTOP CLASH MANAGEMENT

BIM OBJECTS FROM STI

STI FIRESTOP SPECIFIED TECHNOLOGIES INC.

# Firestop Locator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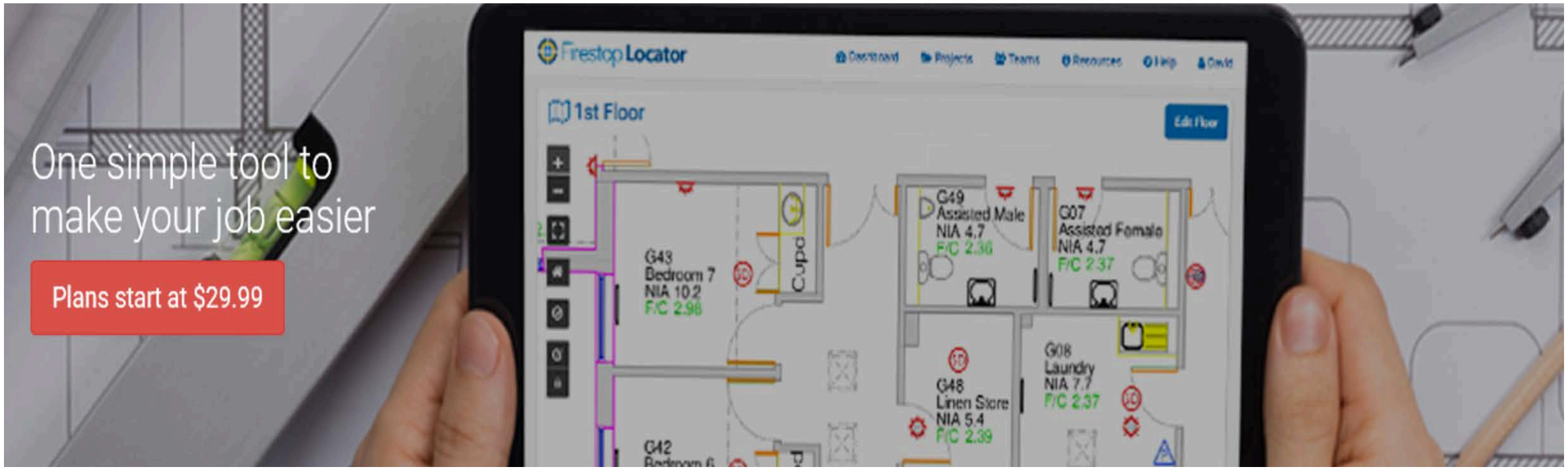
# Firestop Locator

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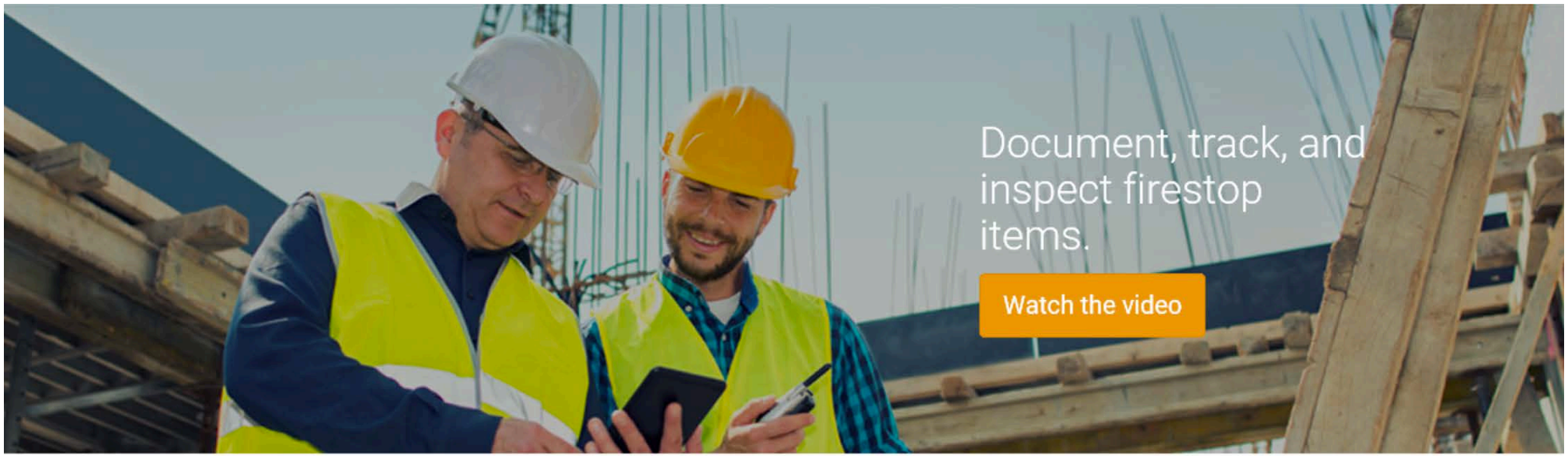
SPECIFIED TECHNOLOGIES INC.

# Firestop Locator

## Streamline your firestop tracking process today.


STI FIRESTOP
SPECIFIED TECHNOLOGIES INC.

# Firestop Locator

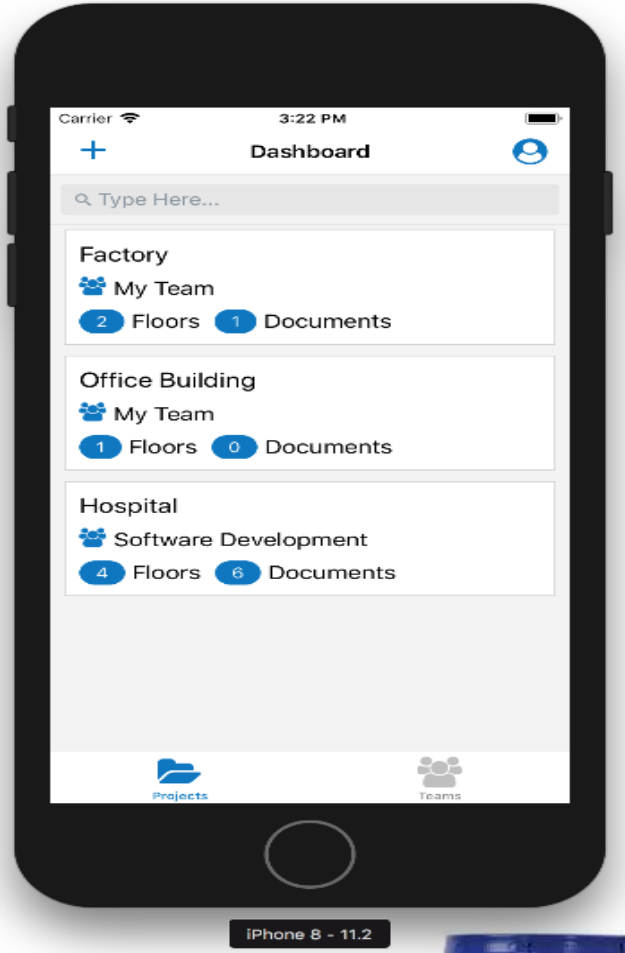



- Fully interactive floor drawings
- Use mobile devices (phone, tablet, web)
- 24 hour team member notifications
- Detailed reports including Corrective Action Reports

STI FIRESTOP
SPECIFIED TECHNOLOGIES INC.

# FS Locator = Complete Documentation

- Use mobile tools (phone, tablet, web)
- Platforms include both iOS and Android
- All functions can be done on either app or web
- **Interactive with underlying floor drawings**
- Streamline the firestop tracking process
- Turn-key solution with pre-printed QR labels




Firestop Locator

STI FIRESTOP
SPECIFIED TECHNOLOGIES INC.

# This Is How You Win!

- Proactive approach
  (Barrier Management Program)
- Reduce costs by:
  (Standardization of Systems)
- UL systems that meet the requirement
- Deliver a long term “Sustainable” Facility

STI FIRESTOP
SPECIFIED TECHNOLOGIES INC.

# Set up an appointment to learn more:


Kmason@stifirestop.com

810-650-3419

Specified Technologies Inc

800-992-1180

www.stifirestop.com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