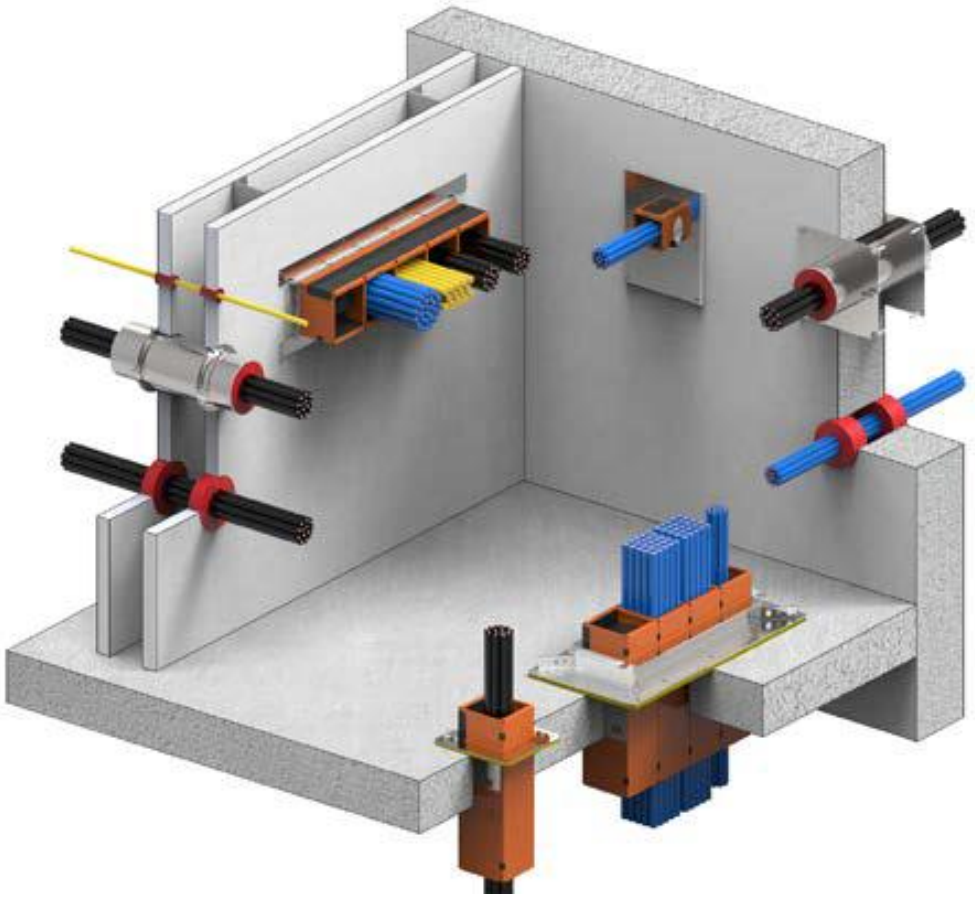
Fire Stopping for Data Cabling

Ariel Arcilla Estarte

Technical Manager – ASIA, ME & Europe

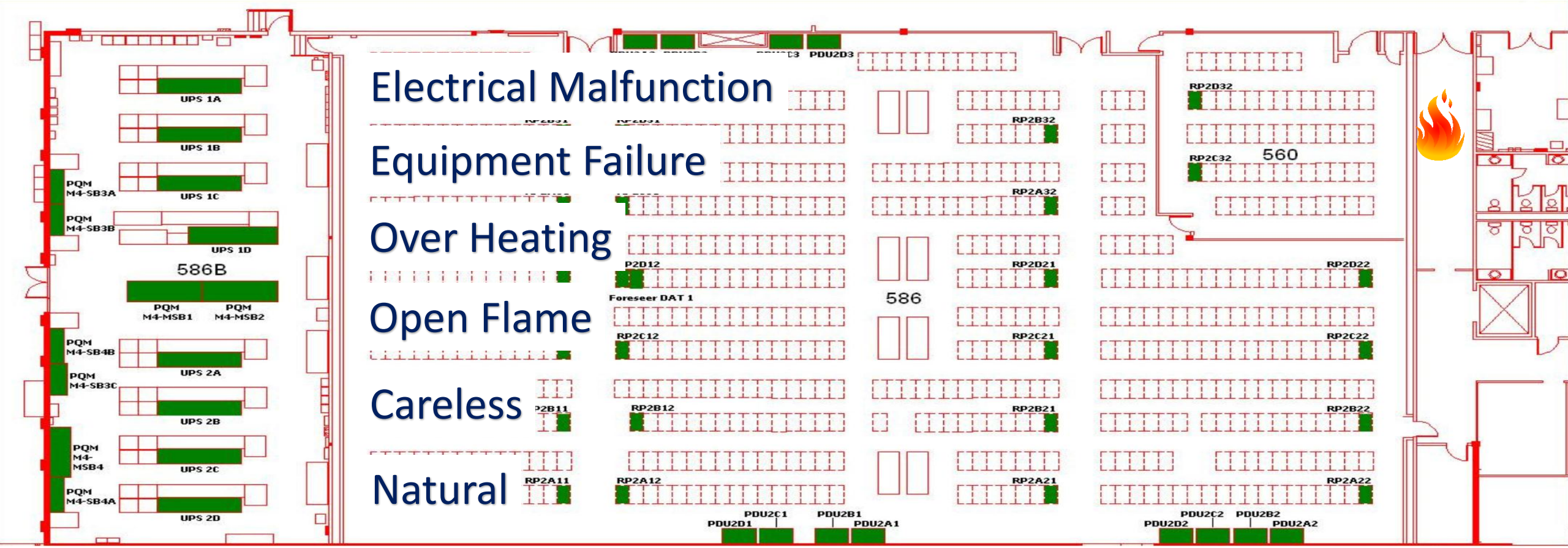
Specified Technologies Inc.

FireStopping for Data Cabling



Ariel Arcilla Estarte
Specified Technologies Inc.

Data Centre


Electrical Malfunction
Equipment Failure
Over Heating
Open Flame
Careless
Natural
UPS 1A
UPS 1B
UPS 1C
UPS 1D
586B
UPS 2A
UPS 2B
UPS 2C
UPS 2D
PQM M4-SB3A
PQM M4-SB3B
PQM M4-MSB1
PQM M4-MSB2
PQM M4-SB4B
PQM M4-SB3C
PQM M4-MSB4
PQM M4-SB4A
PDU2D3
RP2D32
RP2B32
RP2C32
560
RP2A32
P2D12
RP2D21
RP2D22
Foreseer DAT 1
586
RP2C12
RP2C21
RP2C22
RP2B12
RP2B21
RP2B22
RP2A11
RP2A12
RP2A21
RP2A22
PDU2C1
PDU2B1
PDU2D1
PDU2A1
PDU2C2
PDU2B2
PDU2D2
PDU2A2

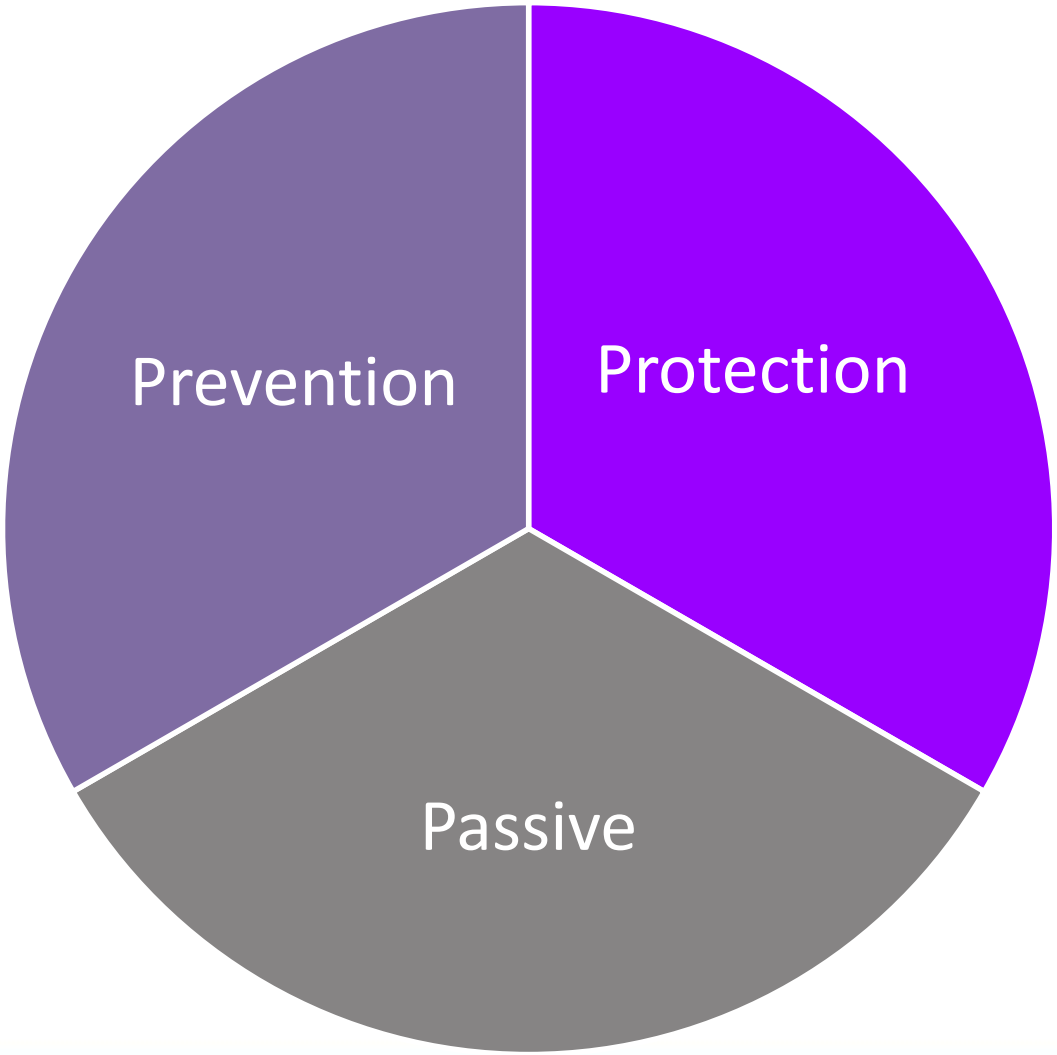
Fire – Can you outrun?

Fire rapidly engulfed Grenfell Tower in London
Guilhem Baker/LNP/Rex/Shutterstock

A fire engulfs The Address Hotel in Dubai on Dec. 31. AHMED JADALLAH / Reuters

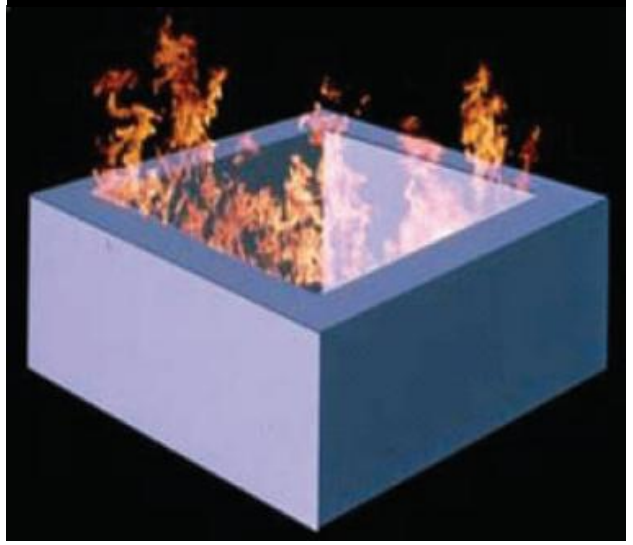
Six patients have been killed in a fire that broke out at the intensive care unit (ICU) of the Sultanah Aminah Hospital here. Oct2016

Good Fire Protection Management



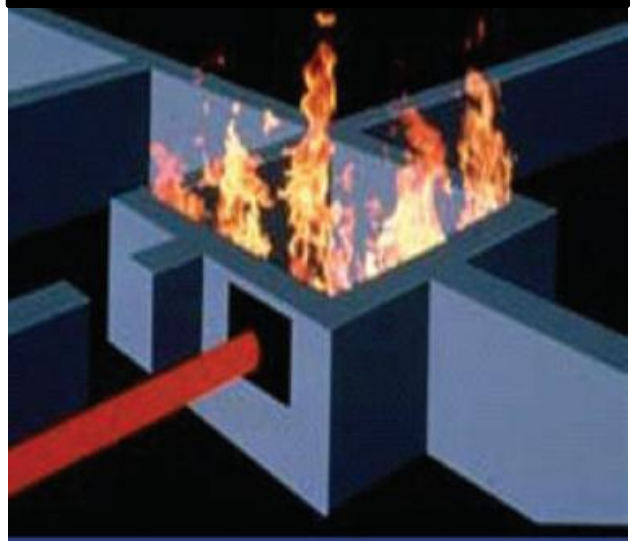
Passive

Compartmentation

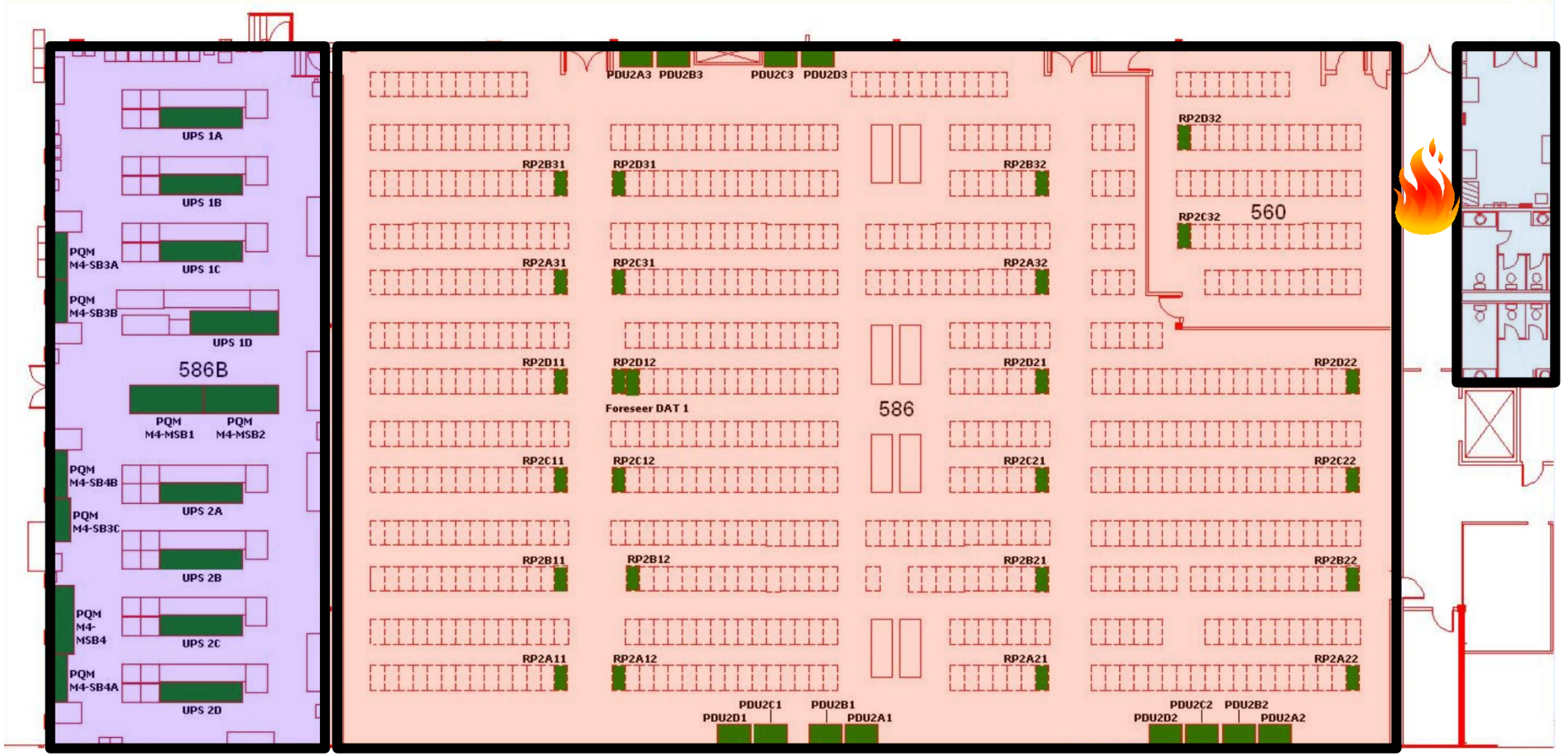


openings for building utilities

Restore the fire rated barrier



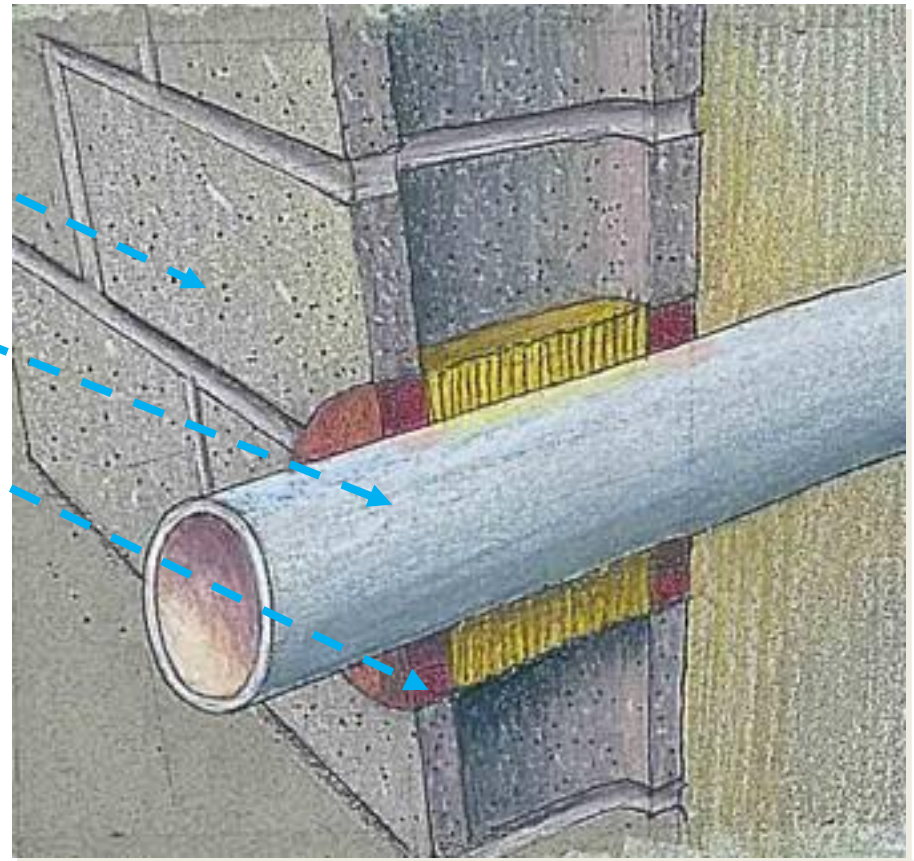
Compartmentation



FIRESTOP SYSTEM

Through Penetration

A firestop system is a specific construction consisting of a fire rated wall or floor assembly, a penetrating item passing through an opening on the wall or floor assembly and the firestop assembly designed to prevent the spread of fire and products of combustion through the opening.



UL LISTED

CLASSIFIED UL

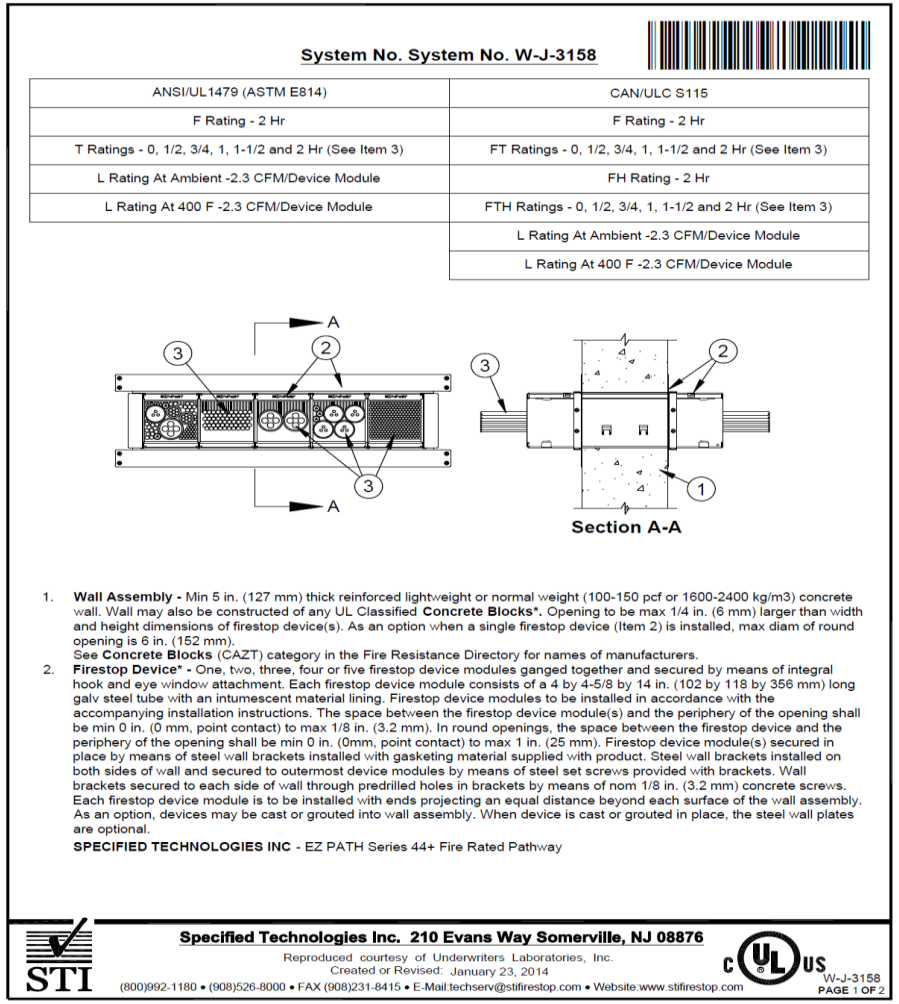
FM APPROVED

Bicsi

Firestop System Components

Components:

- Barrier type
- Penetrants – Cables, pipes, etc.
- System Description
  - ✓UL System
  - ✓F-Rating
  - ✓T-Rating
  - ✓L-Rating
  - ✓You deserved what you paid for !



System No. System No. W-J-3158

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 2 Hr	F Rating - 2 Hr
T Ratings - 0, 1/2, 3/4, 1, 1-1/2 and 2 Hr (See Item 3)	FT Ratings - 0, 1/2, 3/4, 1, 1-1/2 and 2 Hr (See Item 3)
L Rating At Ambient -2.3 CFM/Device Module	FH Rating - 2 Hr
L Rating At 400 F -2.3 CFM/Device Module	FTH Ratings - 0, 1/2, 3/4, 1, 1-1/2 and 2 Hr (See Item 3)
	L Rating At Ambient -2.3 CFM/Device Module
	L Rating At 400 F -2.3 CFM/Device Module

Section A-A

1. **Wall Assembly -** Min 5 in. (127 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600-2400 kg/m3) concrete wall. Wall may also be constructed of any UL Classified **Concrete Blocks*.** Opening to be max 1/4 in. (6 mm) larger than width and height dimensions of firestop device(s). As an option when a single firestop device (Item 2) is installed, max diam of round opening is 6 in. (152 mm).
   See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. **Firestop Device* -** One, two, three, four or five firestop device modules ganged together and secured by means of integral hook and eye window attachment. Each firestop device module consists of a 4 by 4-5/8 by 14 in. (102 by 118 by 356 mm) long galv steel tube with an intumescent material lining. Firestop device modules to be installed in accordance with the accompanying installation instructions. The space between the firestop device module(s) and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 1/8 in. (3.2 mm). In round openings, the space between the firestop device and the periphery of the opening shall be min 0 in. (0mm, point contact) to max 1 in. (25 mm). Firestop device module(s) secured in place by means of steel wall brackets installed with gasketing material supplied with product. Steel wall brackets installed on both sides of wall and secured to outermost device modules by means of steel set screws provided with brackets. Wall brackets secured to each side of wall through predrilled holes in brackets by means of nom 1/8 in. (3.2 mm) concrete screws. Each firestop device module is to be installed with ends projecting an equal distance beyond each surface of the wall assembly. As an option, devices may be cast or grouted into wall assembly. When device is cast or grouted in place, the steel wall plates are optional.
   SPECIFIED TECHNOLOGIES INC - EZ PATH Series 44+ Fire Rated Pathway

STI

Specified Technologies Inc. 210 Evans Way Somerville, NJ 08876

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

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W-J-3158
PAGE 1 OF 2

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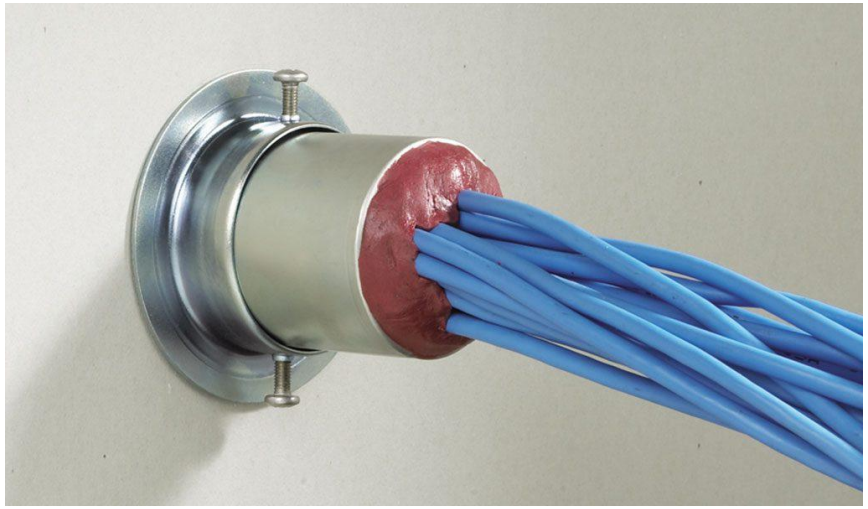
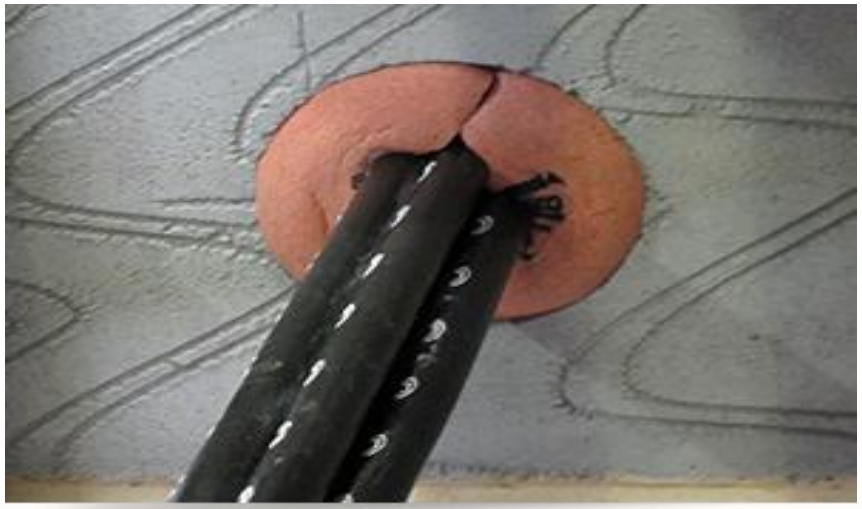
This Is What You WANT





But Is This What You GET?

Moves, Adds and Changes

Working environments are changing constantly, bringing new priorities, projects and challenges for an Organization.

Moves, Adds and Changes

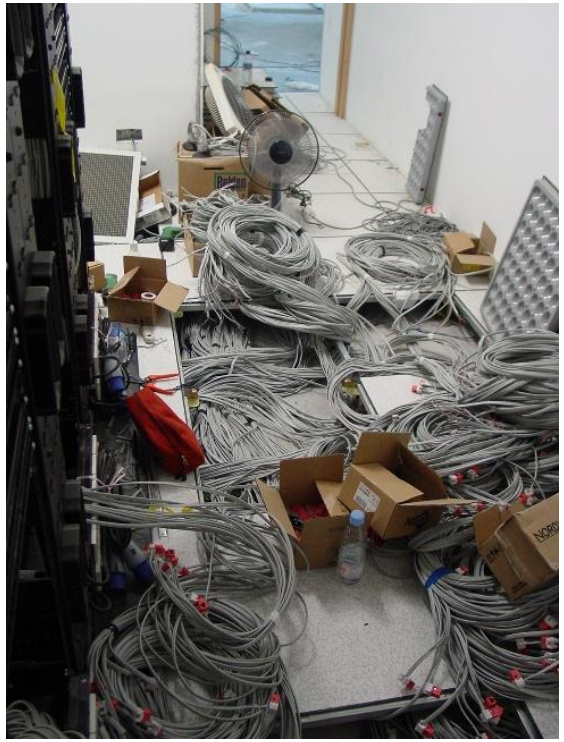
Why?

- Increase Capacity
- Support New Equipment
- Support New Applications
- Replacing Obsolete Cabling Infrastructure

Moves, Adds and Changes

Challenges

1. Disruption to Operation
2. Downtimes in Productivity
3. Inconvenience to Tenants
4. High Risk of compromising existing Infrastructure

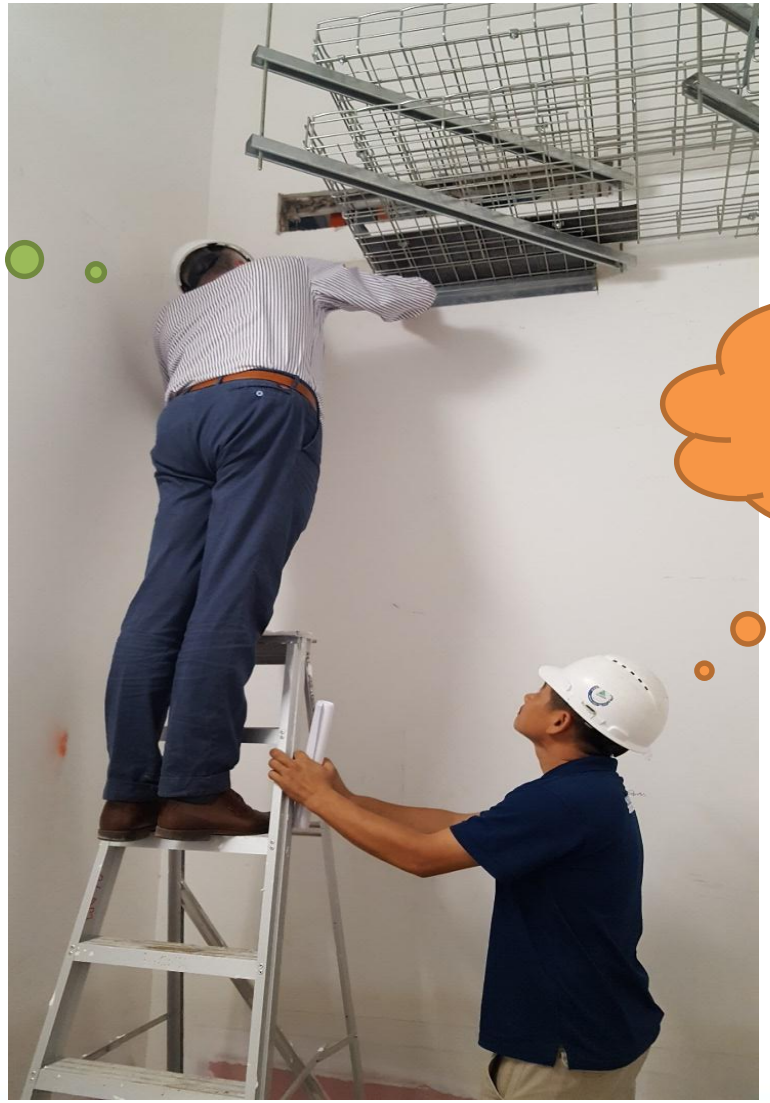


Common Challenges in Installing Firestop

- Is the opening big enough?
- Breaking the seal with existing cables
- Obstruction or Resistance in pulling cables
- Sealing back the opening

Who's Checking???

mmm……
interesting



Is he done yet?
I want to go home

How do we know if the Firestop application is correct?

- UL Classified Firestop product?
- Completely seal the opening?
- Red Colour?
- Contractor said so?
- See no evil, hear no evil, speak no evil?

What do the codes require?

Republic of the Philippines
BUREAU OF FIRE PROTECTION
"Save Lives and Protect Properties"

Extract from "Fire Code of the Philippines 2008"

c. All penetrations of floors and walls shall be provided with **firestopping** having a fire resistance rating equal to that of the floor or wall.

F. **Firestopping Concealed Spaces**

a flame-spread rating greater than Class A as defined in Section 10.2.6.3 of this IRR are exposed, shall be effectively fire-stopped as provided below, with approved materials, unless the space is sprinkled in accordance with Section 10.2.6.5 of this IRR.

a. Every exterior and interior wall and partition shall be firestopped at each level, at the top storey ceiling level, and at the level of support for roofs.

b. Every unoccupied attic space shall be subdivided by firestops into areas not to exceed two hundred eighty (280) square meters.

c. Any concealed space between the ceiling and the floor or roof above shall be firestopped for the full depth of the space along the line of support of the floor or roof structural members and, if necessary at other locations to form areas not to exceed ninety three square meters (93 m^2) for any space between the ceiling and floor and two hundred eighty square meters (280 m^2) for any space between the ceiling and the roof.

2. In every existing building, firestopping shall be provided as required by the provisions of Divisions 8 through 17 of this Chapter

5. Walls, floor, doors and openings shall comply with the following:

a. If walls are erected as firewalls between adjoining buildings, then they shall be designed for a minimum of four (4)-hour fire resistance rating.

b. Interior walls erected as fire barrier between adjoining areas shall be designed for a minimum of one (1)-hour fire resistance rating.

c. All penetrations of floors and walls shall be provided with firestopping having a fire resistance rating equal to that of the floor or wall.

d. Piping and ductwork shall not be embedded in firewalls.

e. Interior walls erected to isolate dust explosion hazards shall be designed for sufficient explosion resistance to preclude damage to these walls before the explosion pressure can be safely vented to the outside.

f. Where there are openings in fire-rated assemblies, including conveyor and chute openings, such shall be protected by approved, automatic-closing fire doors or fire dampers that have a fire resistance rating equivalent to the fire-rated assembly.

374

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International Codes "FireStopping"

Model Building Codes That Require Firestop

- International Building Code (IBC)
- Uniform Building Code (ICBO)
- Standard Building Code (SBCCI)
- National Building Code (BOCA)
- Life Safety Code (NFPA 101)
- National Electrical Code (NFPA 70)
- NFPA 5000 (NFPA Building Code)

International Code "FireStopping"

- 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, *Standard Test Method for Fire Tests of Through Penetration Fire Stops*, or UL 1479, *Standard for Fire Tests of Through-Penetration Firestops*, at a minimum positive pressure differential of 0.01 in. water column (2.5 N/m^2) between the exposed and the unexposed surface of the test assembly.

- International Building Code

714.4.1.1.2 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, with a minimum positive pressure differential of 0.01 inch of water (2.49 Pa). The system shall have an F rating/T rating of not less than 1 hour but not less than the required rating of the floor penetrated.

- National Electrical Code (NFPA 70)

300.21 Spread of Fire or Products of Combustion.

Electrical installations in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around electrical penetrations through fire-resistant–rated walls, partitions, floors, or ceilings shall be firestopped using approved methods to maintain the fire resistance rating.

Why should you care?

How much $ does your business worth?

Vertical Markets

Major Markets

Sub-Markets

Healthcare

- Hospital
- Clinic
- Retirement

Commercial

- Offices
- Retail

Education

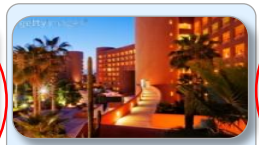
- Higher Ed
- K - 12

Financial

- Banking
- Insurance

Government

- Fed & Military
- State
- Local



Lodging

- Hotel
- Motel

Professional Broadcast

- Studios
- Television
- Radio
- Service Providers
- Trucks

Places of Assembly

- Concert Halls
- House of Worship
- Theaters
- Conf. Centers
- Venues

Recreation

- Theme Parks
- Casinos
- Cruise Ships

Horizontal Markets

Applications

Data Centers

LAN

Fire

CATV

CCTV

Projectors

Access Security

Audio / Video Entertainment

Scoreboards

Speaker Systems

Microphones

Broadcast Cameras

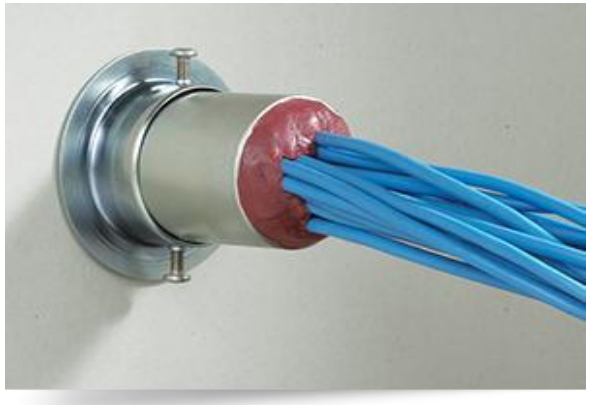
Satellite TV

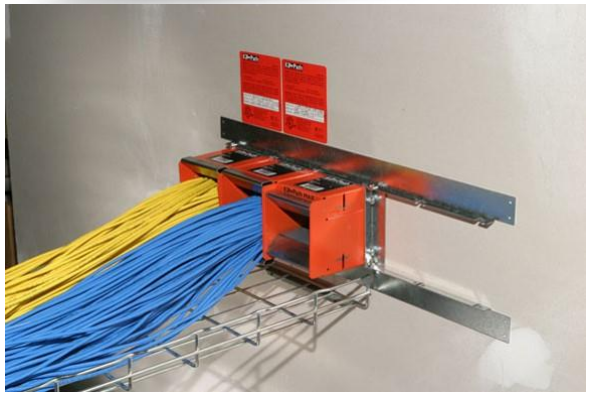
HVAC

BAM

Re-Enterable Solutions

- Putty
- Pillows
- Built-in Firestop
- Composite Sheet





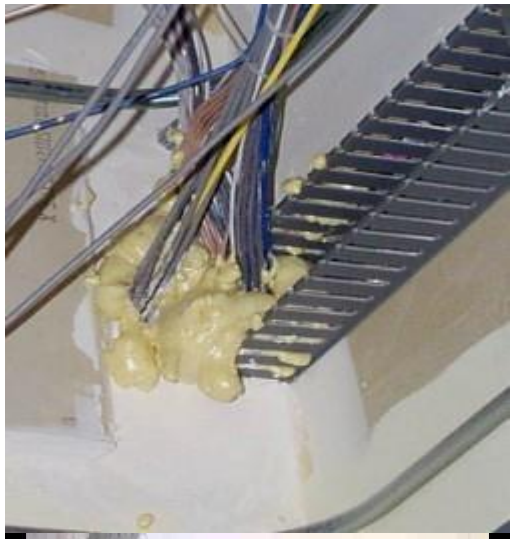
Permanent Methods

- Mortar
- Intumescent Sealant
- Silicone Firestop Sealant

Not a good solutions for frequent cables changes

Why Conventional method is not practical?

- Economical?
- Ease of Installation? Accessibility?
- Need to Unseal & Reseal
- Firestop Integrity Compromised
- Damaged existing cables infrastructure
- Messy and might not fully seal if done incorrectly
- Waste of time
- Need to ensure compliance



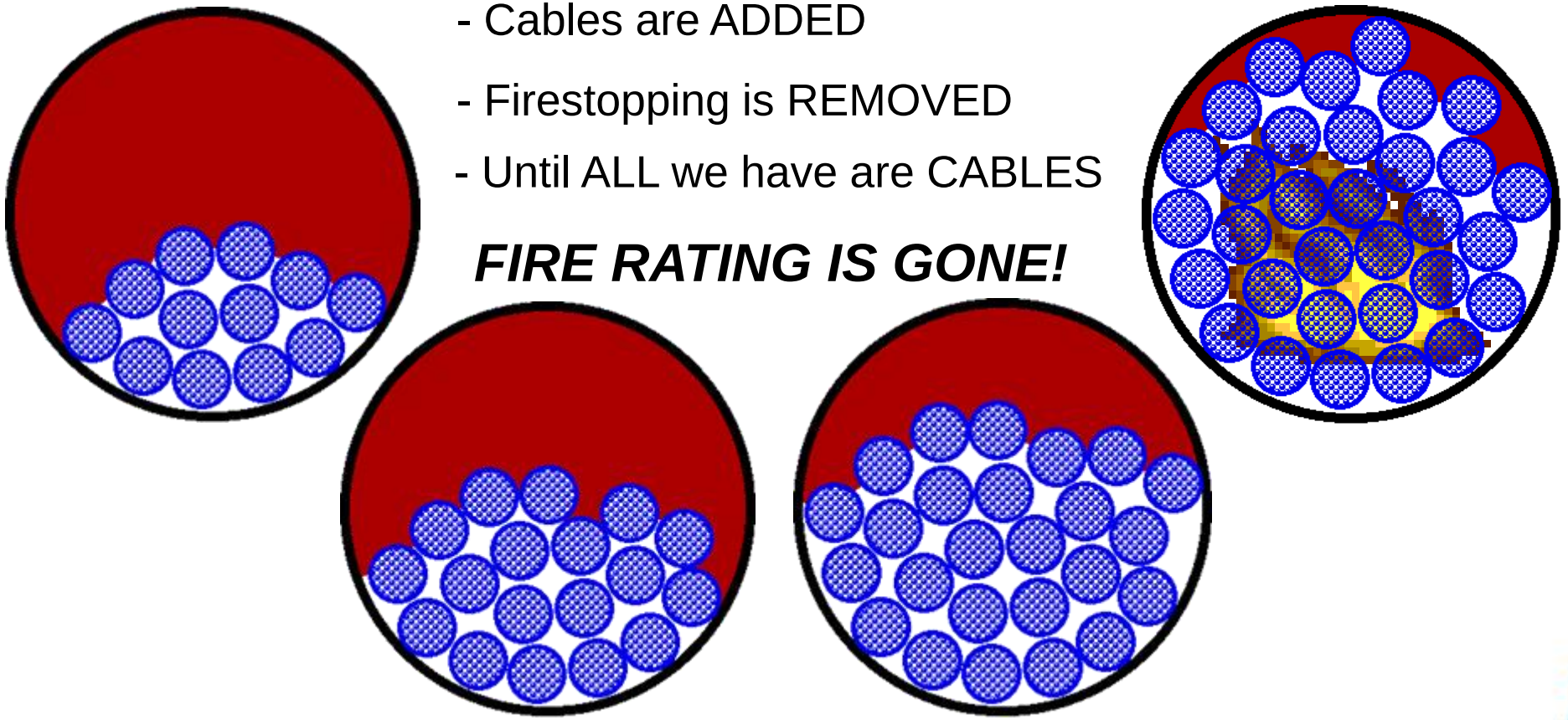
Remember this?

Maximize? Is it a?

The ACTUAL Life Cycle of the Average Datacom Penetration…

- Cables are ADDED
- Firestopping is REMOVED
- Until ALL we have are CABLES

FIRE RATING IS GONE!



3 Key Challenges Installers faced:

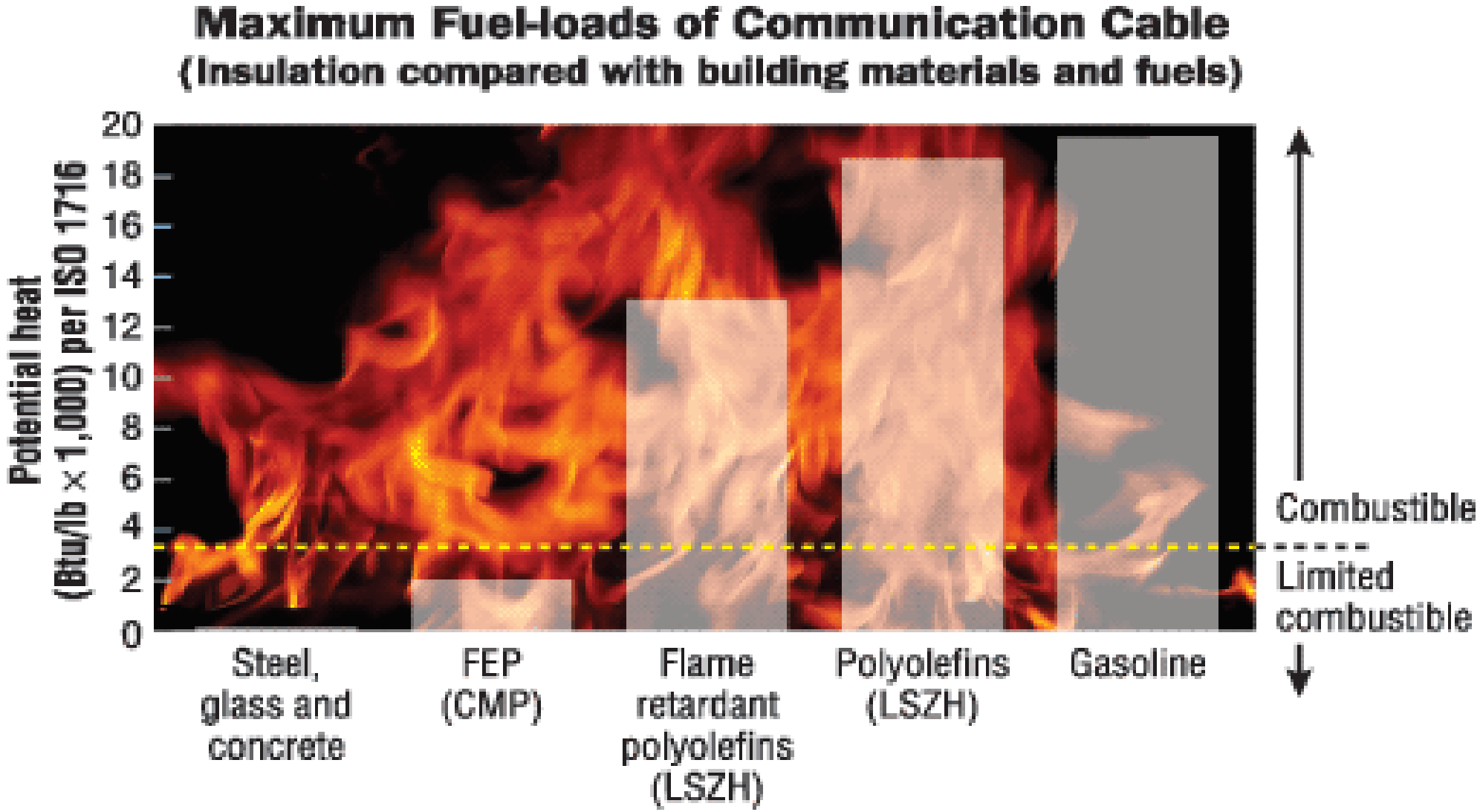
- Maintaining the seal
- Not overfilling
- Avoiding new holes

EIA/TIA requires 60-40% Ratio

Huge Amount of Cables

But, We Use *Large Amounts* of Combustibles In Buildings …

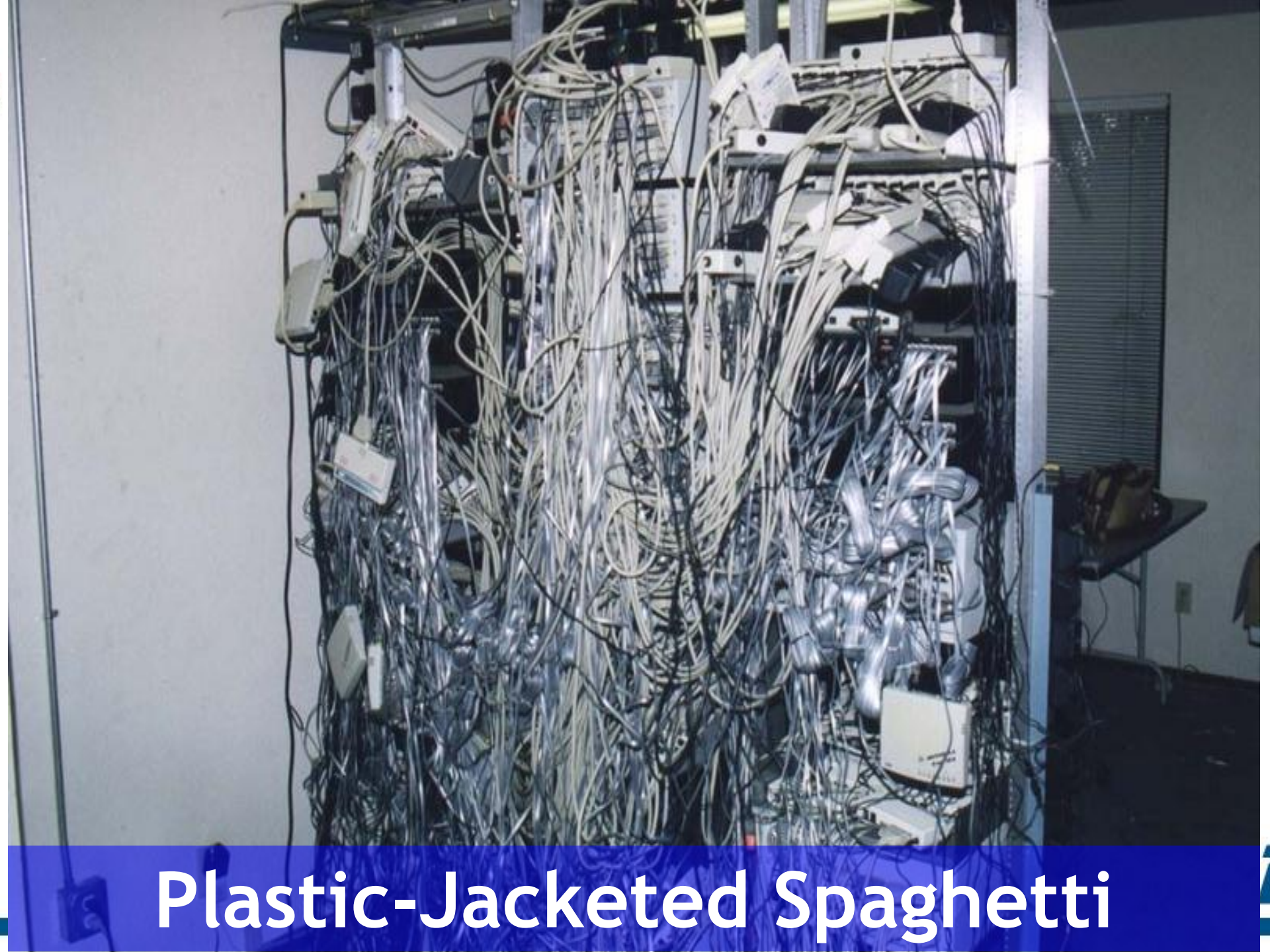
The Jacket of the cables are FUEL



Plastic-Jacketed Cable

Plastic-Jacketed Cable

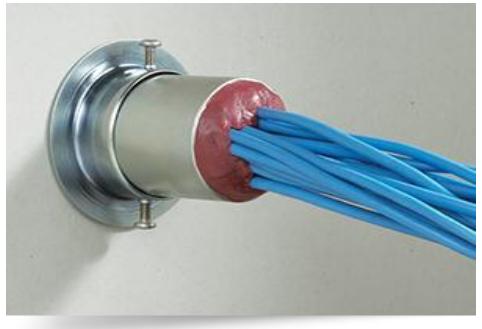
Plastic-Jacketed Cable

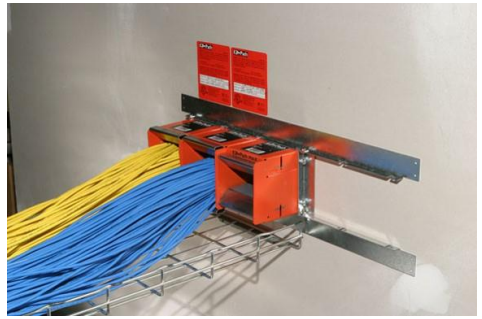


Plastic-Jacketed Spaghetti

Which Firestop solutions is suitable for you?

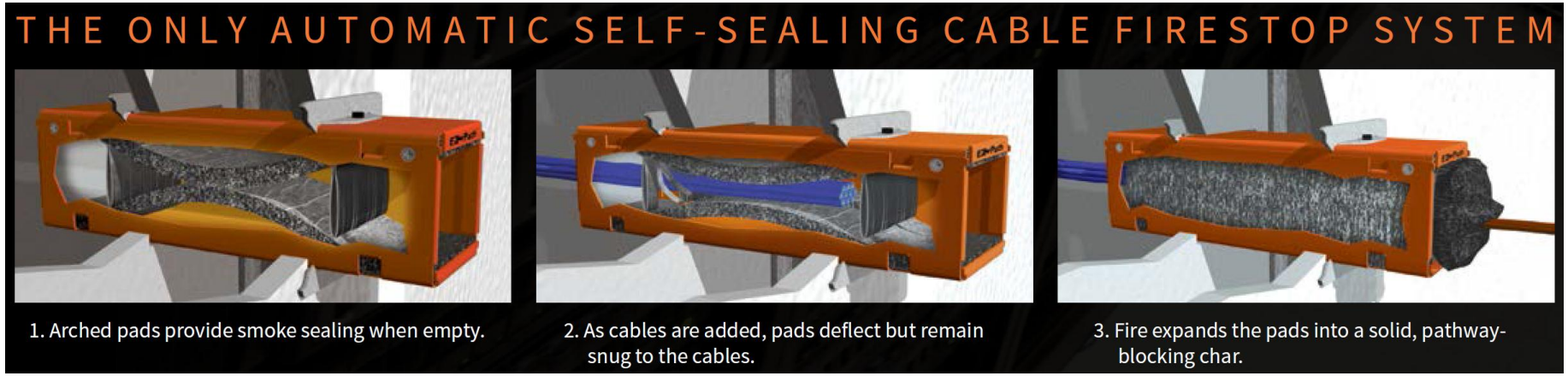
Frequency of Change – 1 to X times per year
Turnover time – weeks / Days / Hours





Built in Firestop

- No special skill needed
- Always compliance
- Ensure sufficient Firestop even if the cables filled is 100% capacity
- No more taking & putting back the firestop

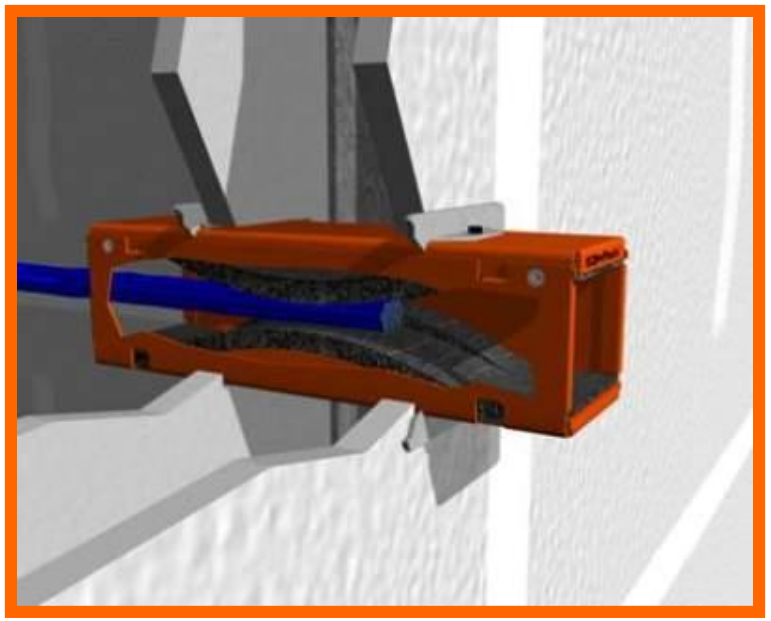


Photos

Photos

Built in Firestop

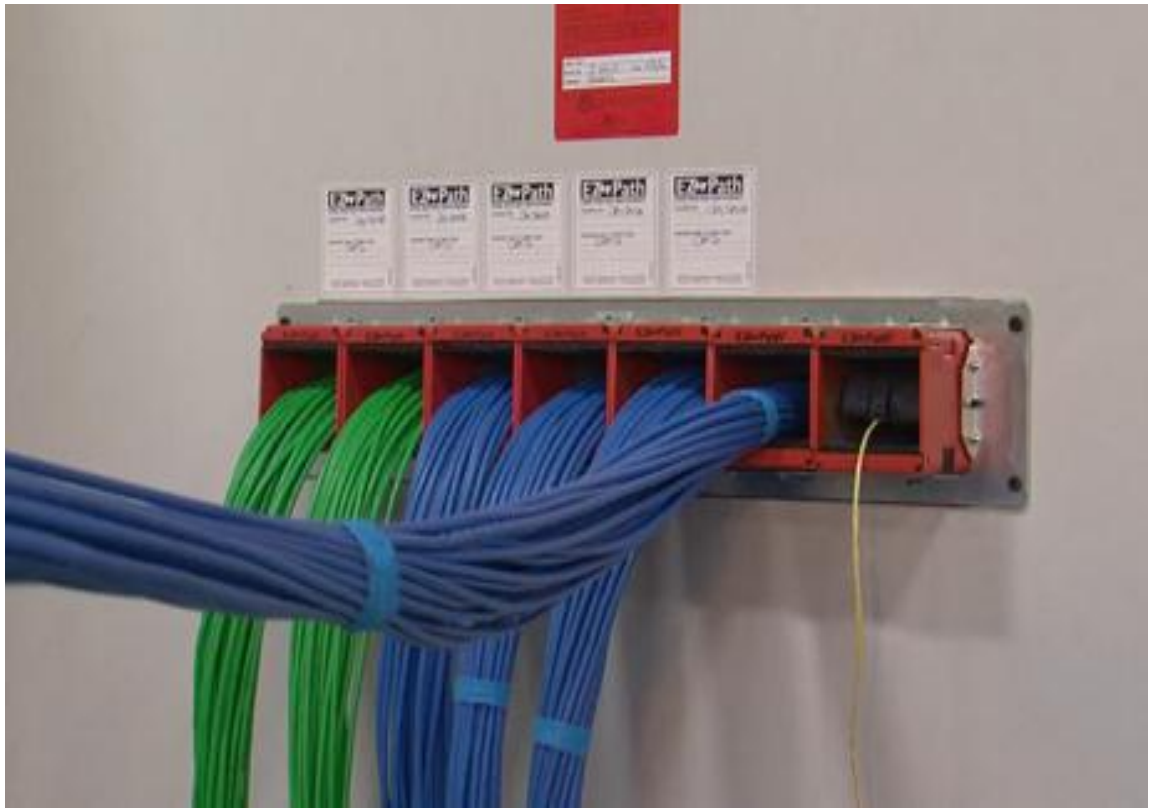
A Self-Adjusting Intumescent Membrane Provides Smoke and Fire Protection 100% Of The Time, Empty or Full!

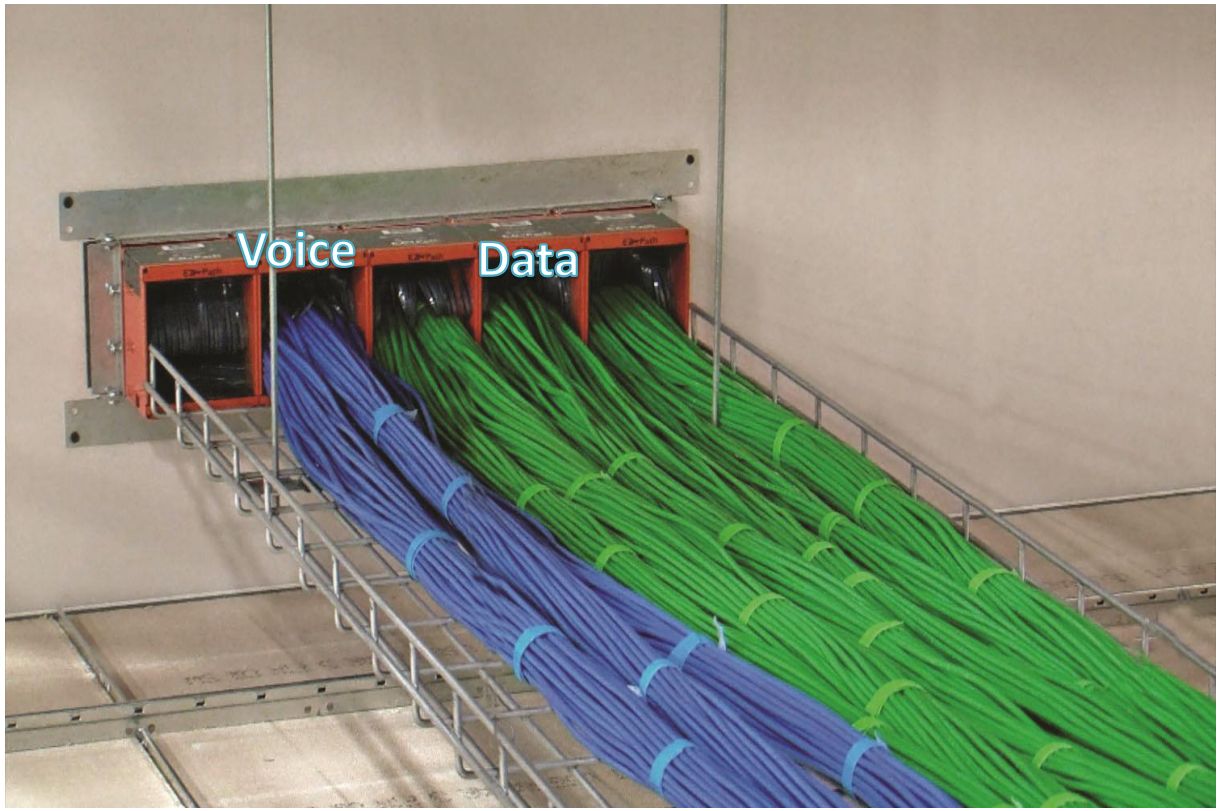


Moves, Adds and Changes Made EZ

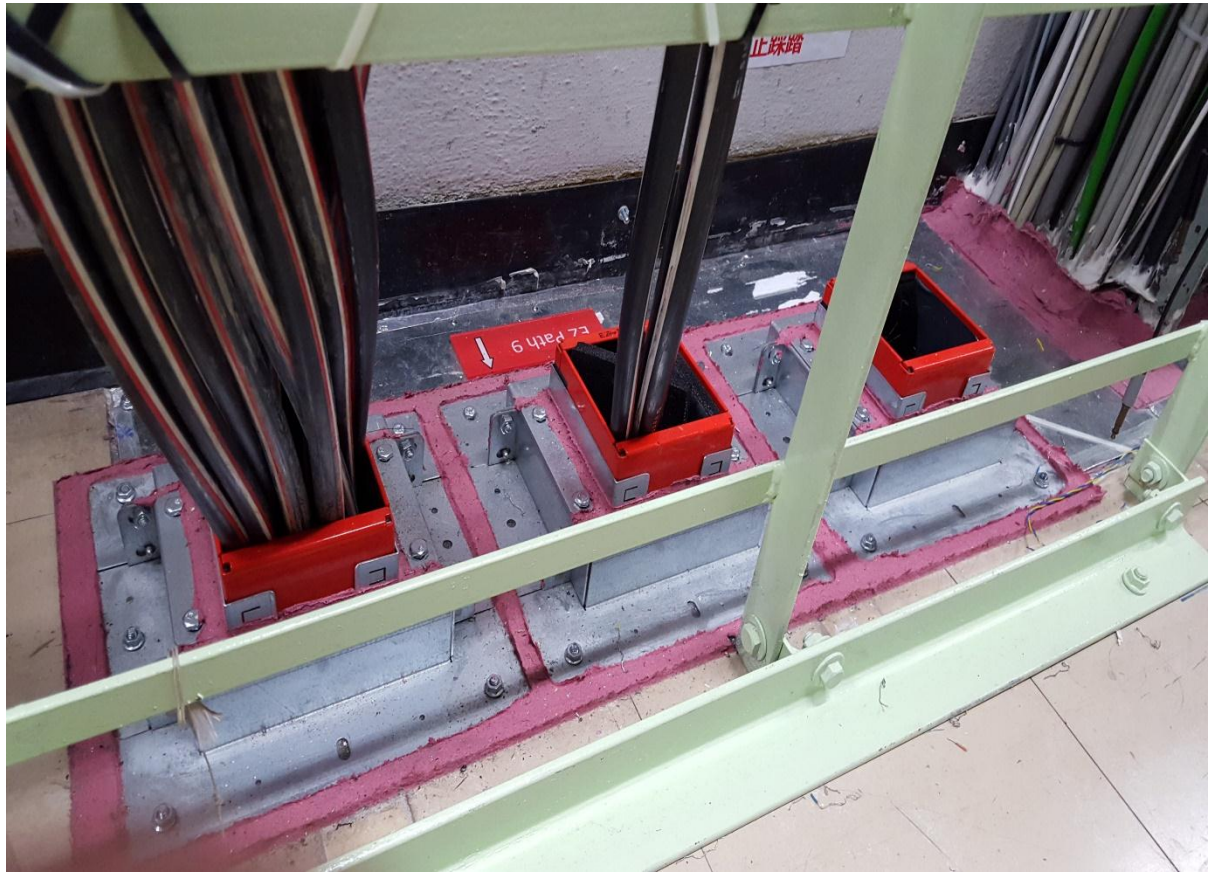
Clean / Neat

Segregation

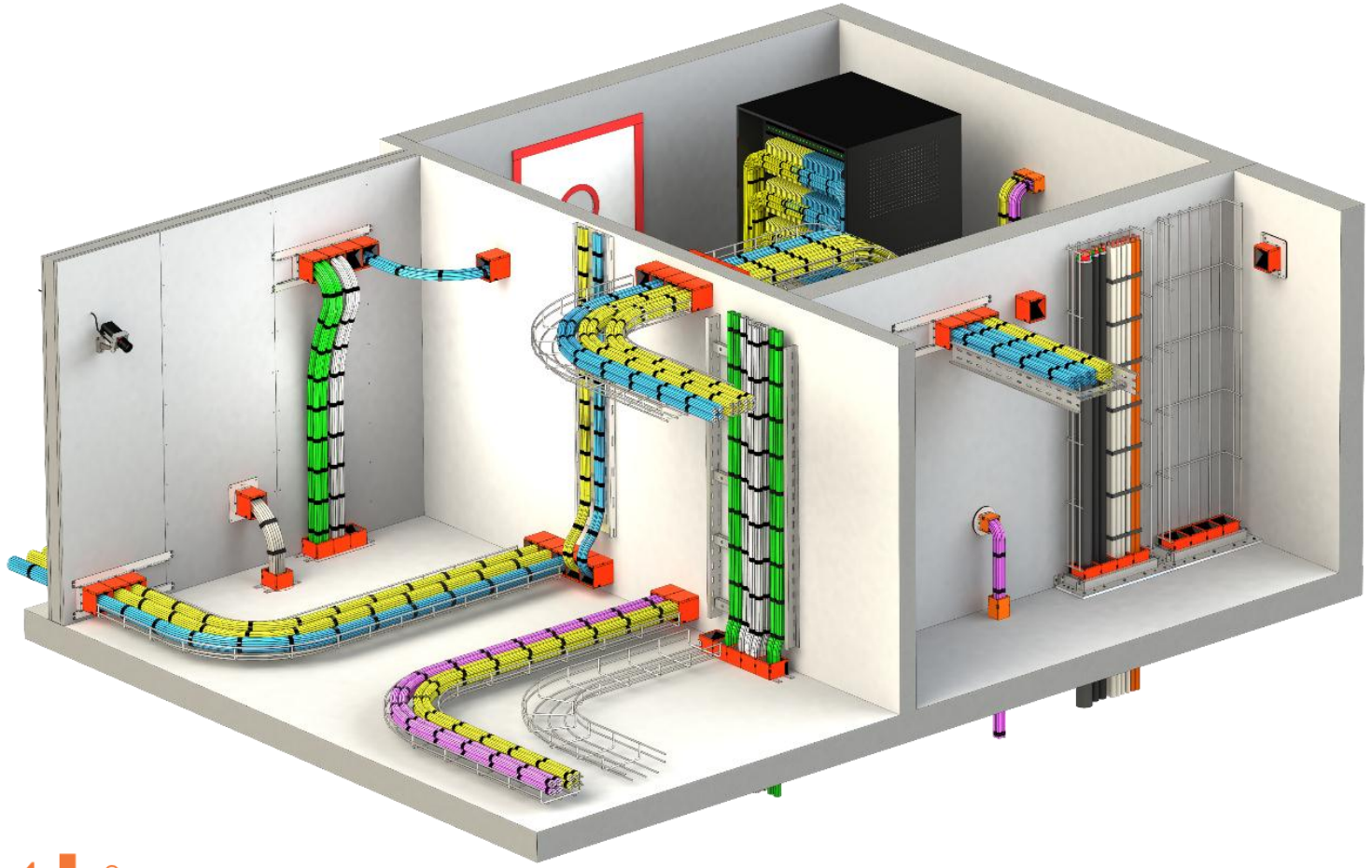




Future Cables



Vertical & Horizontal solution



Fire Stopping

Cable Protection

Cable Management

EZ Path®

Bicsi

What's Next?

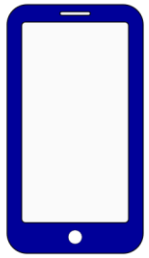
- Do a Health Check on your Firestop
- Correct any non-compliance Firestop
- Protect Yourself against any incidents
- Prevention is better than Cure
- Do yourself a favour

Do talk to us if you need any help

ANY QUESTIONS??
Contact Us

Ariel Arcilla Estarte
Technical Manager

aestarte@stifirestop.com



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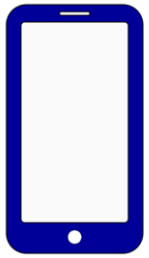

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