52nd ASHE Annual Conference & Technical Exhibition 2015

ashe.org/annual

Barrier Management Symposium

Improving Barriers Nation Wide

The Joint Commission

ASHE

UL

Firestop Contractors FCIA International Association

FMfit

Raising the Bar in Health Care Facility Management

Details

- Emergency Exits
- Restrooms
- Mobile Phones…

Today’s Speakers

- Jonathan Flannery, ASHE
- Anne Guglielmo, The Joint Commission
- Lennon Peake, Koffel Associates
- Bill McHugh, Firestop Contractors International Association

Barrier Management Symposium

Effective Compartmentation Features

Barrier Management Symposium

- **World Travelled Faculty**
  - Jonathan Flannery, ASHE Advocacy
  - Anne Guglielmo, The Joint Commission
  - Rich Walke, UL
  - Bill Koffel, Koffel Associates
  - Nestor Sanchez, USG Corp.
  - Rich Walke, UL - Concrete Industry
  - Bill McHugh, FCIA – Firestopping
  - Paul Baillargeon, DHI – Fire Doors
  - Marc Sorge, Greenheck – Fire & Smoke Dampers
  - Tim Warren, TGP – Fire Rated Glazing
  - Others….

Details – Jonathan Flannery

- Objective – YOU
- Speakers Volunteer

Why is ASHE Educating with TJC?

- Identified Problem
- Passion for Patient Safety
- Trusted Industry Resource

ASHE Mission

Dedicated to optimizing the health care physical environment

2015

BARRIER MANAGEMENT SYMPOSIUM

Anne Guglielmo, Engineer

Department of Engineering

The Joint Commission

The Joint Commission

Barrier Management Symposium

The Joint Commission

ASHE
American Society for Healthcare Engineering

FCIA
Firestop Contractors International Association

UL

Free Symposium
Sept 5-6
Steamboat Springs, CO
Hosted By CAHED

Learn about
Design, Installation,
Inspection & Maintenance
of Rated Barrier Systems in
Healthcare Environments

The safety and welfare of patients depends on many things, including a healthcare environment that is fire safe.

Barrier Management Symposium

- Program Developers:
  - Joint Commission
  - Firestop Contractors International Association
  - Underwriters Laboratories
- Participating Organizations:
  - American Society for Healthcare Engineering
  - Gypsum Association
  - Fire Damper Industry
  - Fire Rated Glazing Industry
  - Door & Hardware Institute

Top Scored Standards

Standard	2014 Non Compliance	2013 Non Compliance
EC.02.06.01	56%	39%
EC.02.05.01	53%	47%
IC.02.02.01	52%	46%
LS.02.01.20	50%	52%
RC.01.01.01	49%	52%
EC.02.03.05	48%	45%
LS.02.01.10	46%	48%
LS.02.01.35	43%	36%
LS.02.01.30	43%	45%
EC.02.02.01	36%	34%

Top Scored Standards

Standard	2014 Non Compliance	2013 Non Compliance
MM.03.01.01	35%	35%
PC.01.03.01	33%	27%
PC.02.01.03	29%	18%
EC.02.05.09	27%	21%
PC.03.01.03	26%	20%
MM.04.01.01	25%	22%
LD.01.03.01	23%	19%
LD.04.01.05	22%	14%
EC.02.05.07	21%	23%
IC.02.01.01	20%	13%

BARRIER MANAGEMENT SYMPOSIUM

. . .at no cost to the attendee . . .

#4 LS.02.01.20

EP	Assembly Affected	Issue
1	Door	Locking
2	Door	Swing
3	Horizontal exits	Requirements
4	Outside stair	Building protection
5	Horizontal exit: door	Requirements
6	Horizontal exit	Fire jump
8	Exit	Discharge
9	Stair doors	Hold open
10	Doors	New boiler rooms, mechanical rooms, and heater rooms

#7 LS.02.01.10

EP	Assembly Affected	Issue
1	Building type	Construction type
3	Rated walls	Features
4	Rated walls	Openings
5	Rated doors	Features
6	Doors	Protective plates
7	Doors	Coverings
8	Ducts	Penetration
9	Penetrations	Firestopping

#9 LS.02.01.30

EP	Assembly Affected	Issue
1	Vertical openings	Protection
2	Hazardous areas	Walls & doors
3	Gift shop	Protection
6	Corridor partitions	Features
7	Corridor walls, new	Limit transfer of smoke
8	Fire windows in corridor walls	Features
9	Corridor doors	Features
10	Corridor doors	Plates
11	Corridor doors	Features

#9 LS.02.01.30

EP	Assembly Affected	Issue
12	Corridor walls	Openings
16	Smoke barriers	Features
18	Smoke barriers	Features
19	Smoke barriers	Features
20	Smoke barriers	Duct penetrations
21	Smoke barriers	Damper protection
22	Smoke barriers; smoke doors	Window opening rating
23	Smoke barriers doors	Features
24	Exit stair	Rating

LS.02.01.50

EP	Assembly Affected	Issue
8	Linen & waste chute inlet doors	Protection
9	Linen & waste chute inlet & discharge doors	Features
10	Linen & trash chutes discharge door	Features
11	Linen & waste chutes discharge	Separation

Top 10 Cited Standards: 2011 – 2014

Standard	2014	2013	2012	2011
EC.02.06.01: Built Environment	#1	#8	#7	#11
EC.02.05.01: Utility Systems Risks	#2	#4	#10	#13
LS.02.01.20: Means of Egress	#4	#1	#2	#2
EC.02.03.05: Fire Safety Systems	#6	#7	#5	#5
LS.02.01.10: General Building Req's	#7	#3	#3	#3
LS.02.01.35: Extinguishment	#8	#9	#9	#10
LS.02.01.30: Protection	#9	#6	#6	#4
EC.02.02.01: Haz Materials & Waste	#10	#11	#11	#15

Department of Engineering

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Director

Anne Guglielmo, CFPS, CHFM, CHSP LEED, A.P.

Engineer

John Maurer, SASHE, CHFM, CHSP

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Kathy Tolomeo, CHEM

Engineer

James Woodson, P.E., CHFM

Engineer

The Joint Commission Disclaimer

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FIRE/SMOKE BARRIER FUNDAMENTALS FOR HEALTH CARE FACILITIES

Lennon Peake

Koffel Associates, Inc.

www.koffel.com

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OBJECTIVE

- Identify the different types of barriers used in health care facilities
- Identify the key characteristics for each barrier
  - Continuity
  - Protection of openings
- List at least three strategies that can be used to improve a barrier management program

KOFFEL

TYPES OF WALL ASSEMBLIES

- Exterior walls
- Fire walls
- Fire barriers
- Fire partitions – No such assembly in NFPA
- Smoke barriers
- Smoke partitions

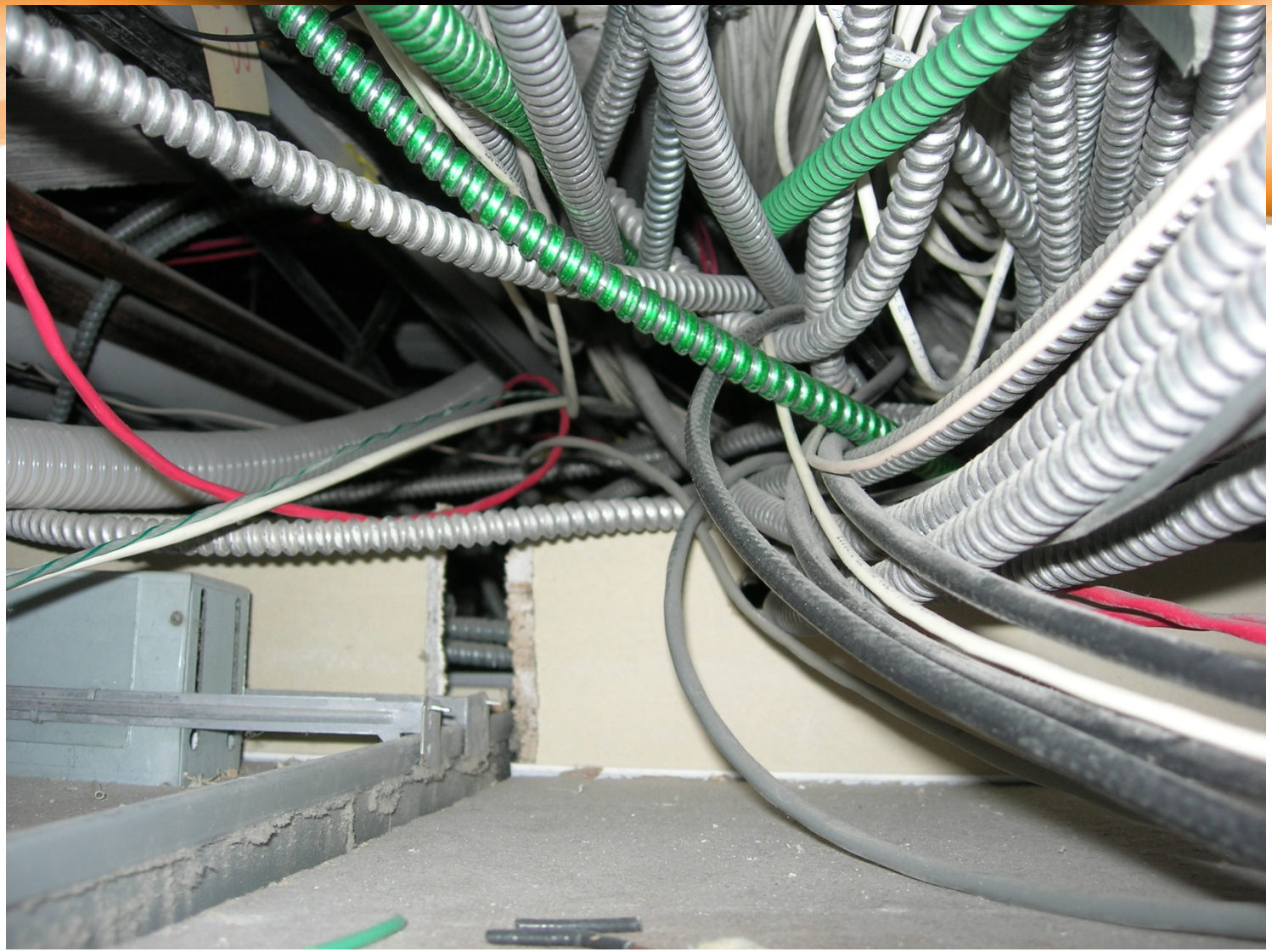
KOFFEL

FIRE TESTED WALL ASSEMBLIES

- In accordance with ASTM E119/UL263
- Resist passage of heat and hot gases
- Structural integrity during the test fire
- Have something left at the end of the test

FIVE POINTS

- Required fire-resistance rating
- Continuity
- Openings and penetrations
- Types of materials
- Structural robustness



FIRE BARRIERS

- Fire barriers are used in the following applications:
  - Fire area separations
  - Mixed occupancy separations
  - Incidental use areas
  - Hazardous area separations
  - Exit enclosures
  - Shaft enclosures
  - Horizontal exits
  - Corridor walls – **NFPA only**

SUPPORT

- Supported by construction with the same fire-resistance rating as the fire barrier
- Some exceptions
  - Vary between NFPA and ICC

SUMMARY OF FIRE BARRIERS

Issue	Requirement
Required Fire-Resistance Rating	Depends upon specific use
Required continuity	Floor/ceiling below to deck above
Openings	General: Aggregate glazing area (or width) <25% wall area/length; maximum size 120 sf. Specific: Rules based on use of barrier
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

SMOKE BARRIERS

- Smoke barriers are used in the following applications:
  - Group I-2
  - Group I-3
  - Areas or refuge
  - Other specific applications

SUMMARY OF SMOKE BARRIERS

Issue	Requirement
Required Fire-Resistance Rating	1-hour with the exception that a construction of a minimum 0.1” thick steel in Group I-3 buildings is allowed
Required continuity	Horizontal: Outside wall to outside wall Vertical: Floor to slab or deck above, continuous through interstitial spaces Supporting construction may be required based upon the applicable codes
Openings	20 minutes – but not a true fire door in NFPA 101 Smoke- and draft-controlled doors tested in accordance with UL 1784 – IBC only
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

SMOKE PARTITIONS

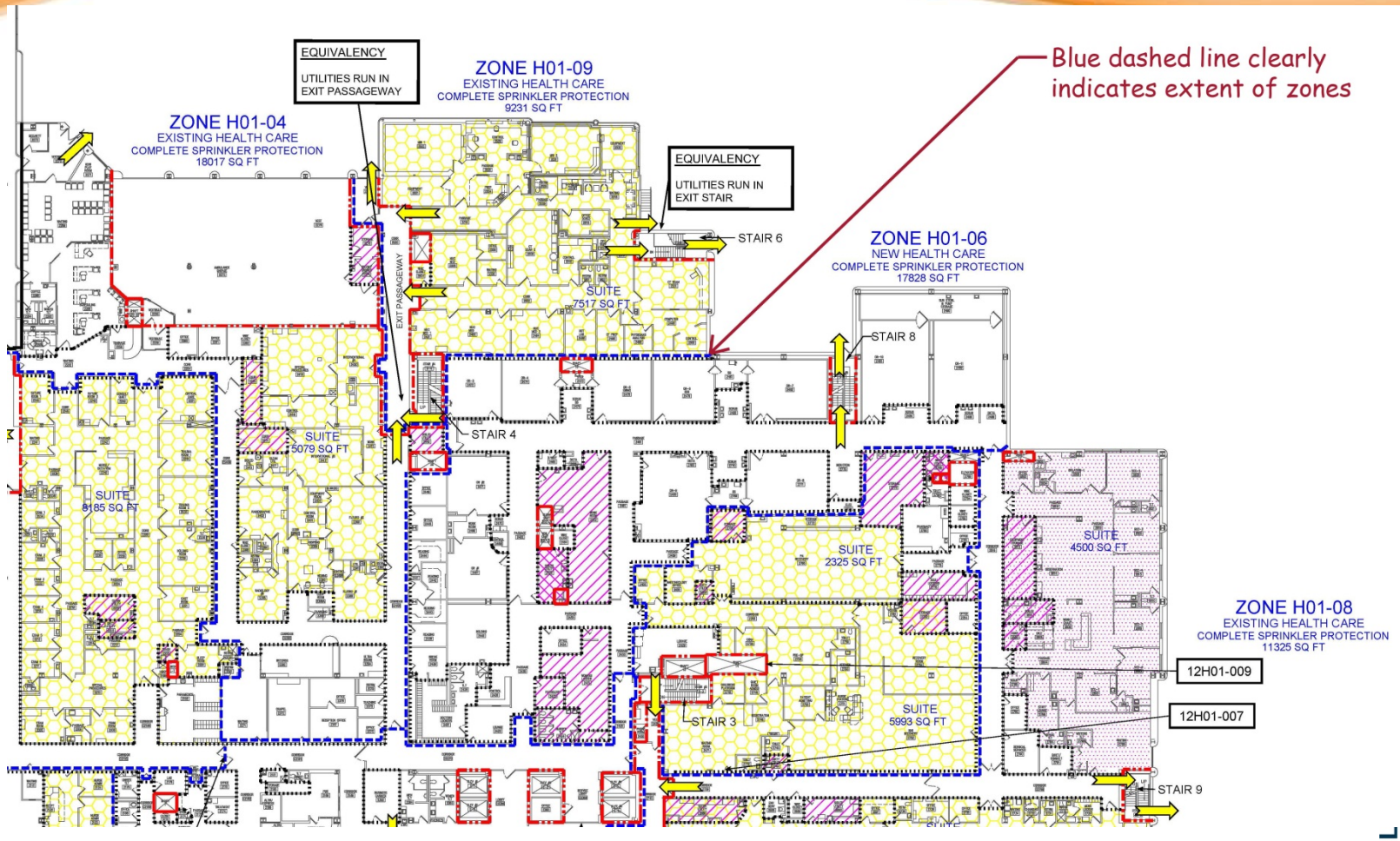
- Smoke partitions are used in the following applications:
  - Corridor walls in Group I-2 – IBC only
  - Sprinkler protected hazardous areas – NFPA

KOFFEL

SUMMARY OF SMOKE PARTITIONS

Issue	Requirements
Required Fire-Resistance Rating	Not required (unless otherwise required)
Required continuity	Floor/ceiling below to deck above or tight to underside of ceiling membrane in ceiling membrane designed to limit passage of smoke - Difference between NFPA/ICC for ceiling tiles
Openings	Windows: Sealed to resist free passage of smoke Doors: No louvers Air leakage rated (UL 1784) – IBC??? Self closing, or automatic closing by smoke detectors
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

LS DRAWING INFORMATION



BUILD IT CORRECTLY!!

SUCCESSFUL STRATEGIES

- BUILD IT CORRECTLY
  - Thorough plan review process
  - Contractor qualifications
  - Commissioning systems and buildings
    - NFPA 3, NFPA 4, ASHE documents, pending ICC std.
  - Complete SOC documentation while contractor still on site
  - Use of certified inspectors or special inspectors

Intertek CFDI

KOFFEL

FIRE/SMOKE BARRIER FUNDAMENTALS FOR HEALTH CARE FACILITIES

Lennon Peake

Koffel Associates, Inc.

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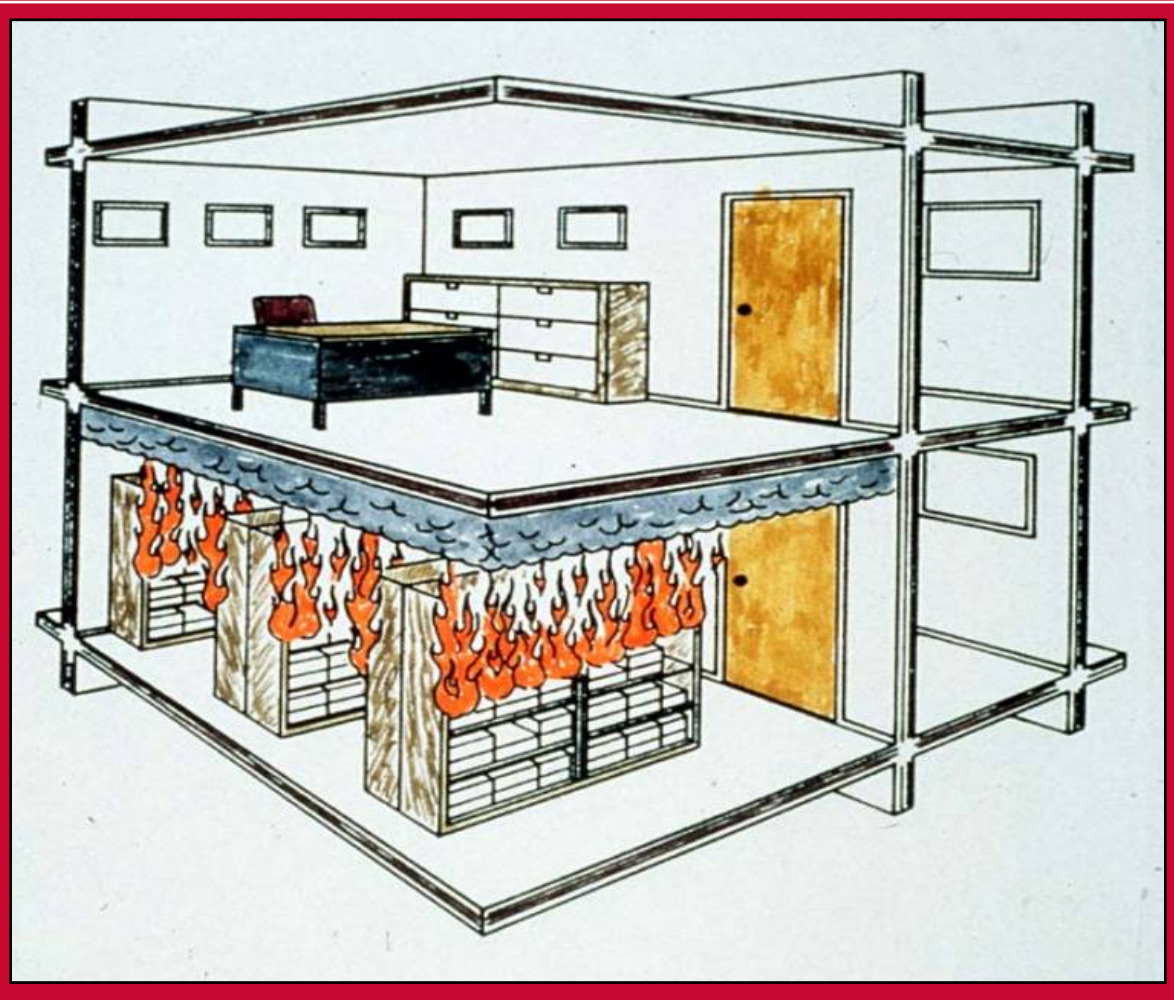
Testing of Fire Resistance and Smoke Resistant Assemblies

Rich Walke
UL Codes and Advisory Services

April 14, 2015

Fire-Resistance-Rated Construction



Code Requirements

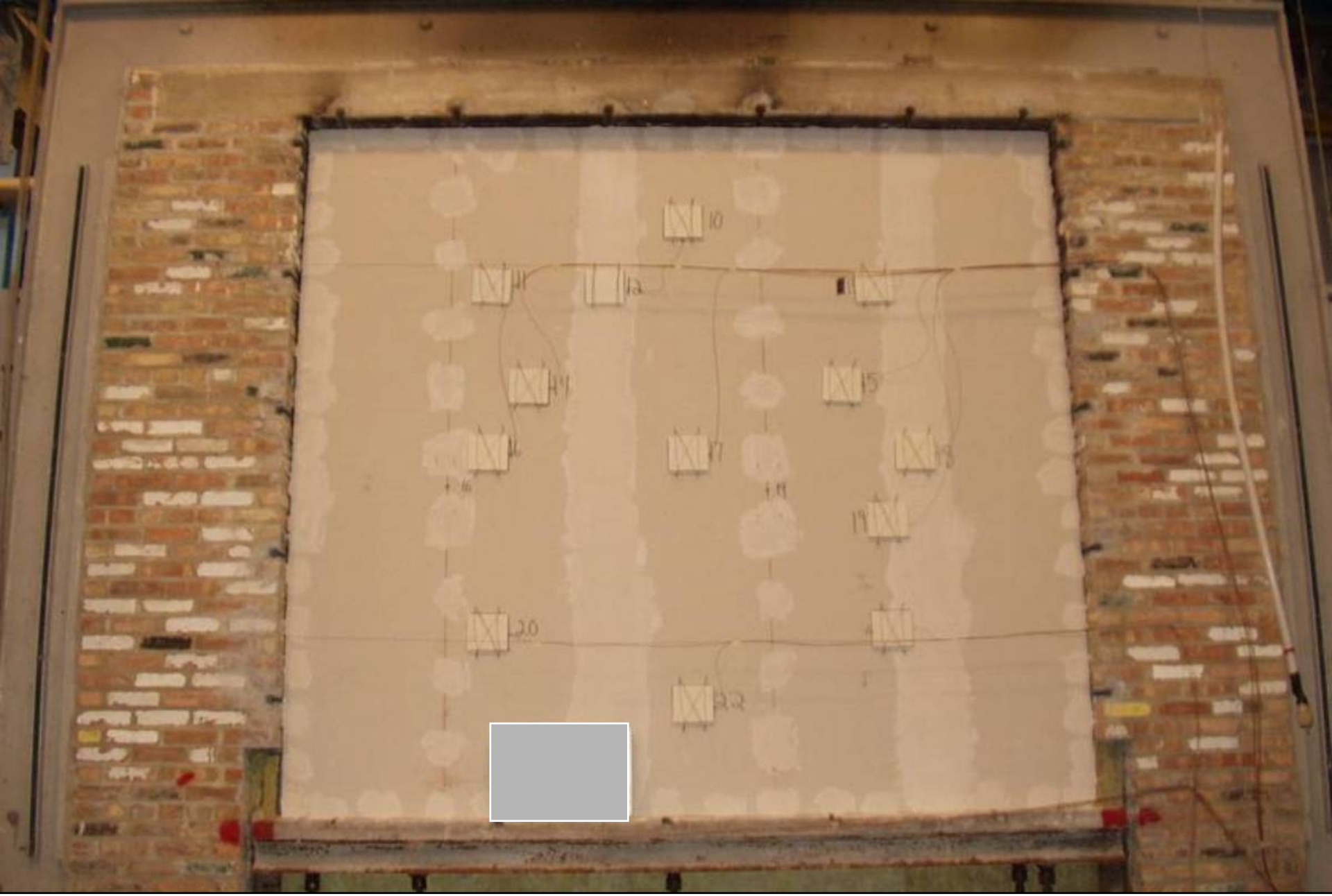
- IBC Section 703.2 – Fire-resistance ratings shall be determined in accordance with ANSI/UL 263 or ASTM E119
- LSC 8.2.3.1 – The fire resistance of structural elements and building assemblies shall be determined in accordance with test procedures set forth in NFPA 251 (i.e. ANSI/UL 263 or ASTM E119)

Fire Resistance

- Expressed as an Hourly Time Period
- Ratings range from 1/2 to 4 hours
- Containment of Fire to Room or Floor of Origin

Standards

- ANSI/UL 263
- ASTM E119
- NFPA 251 (Withdrawn)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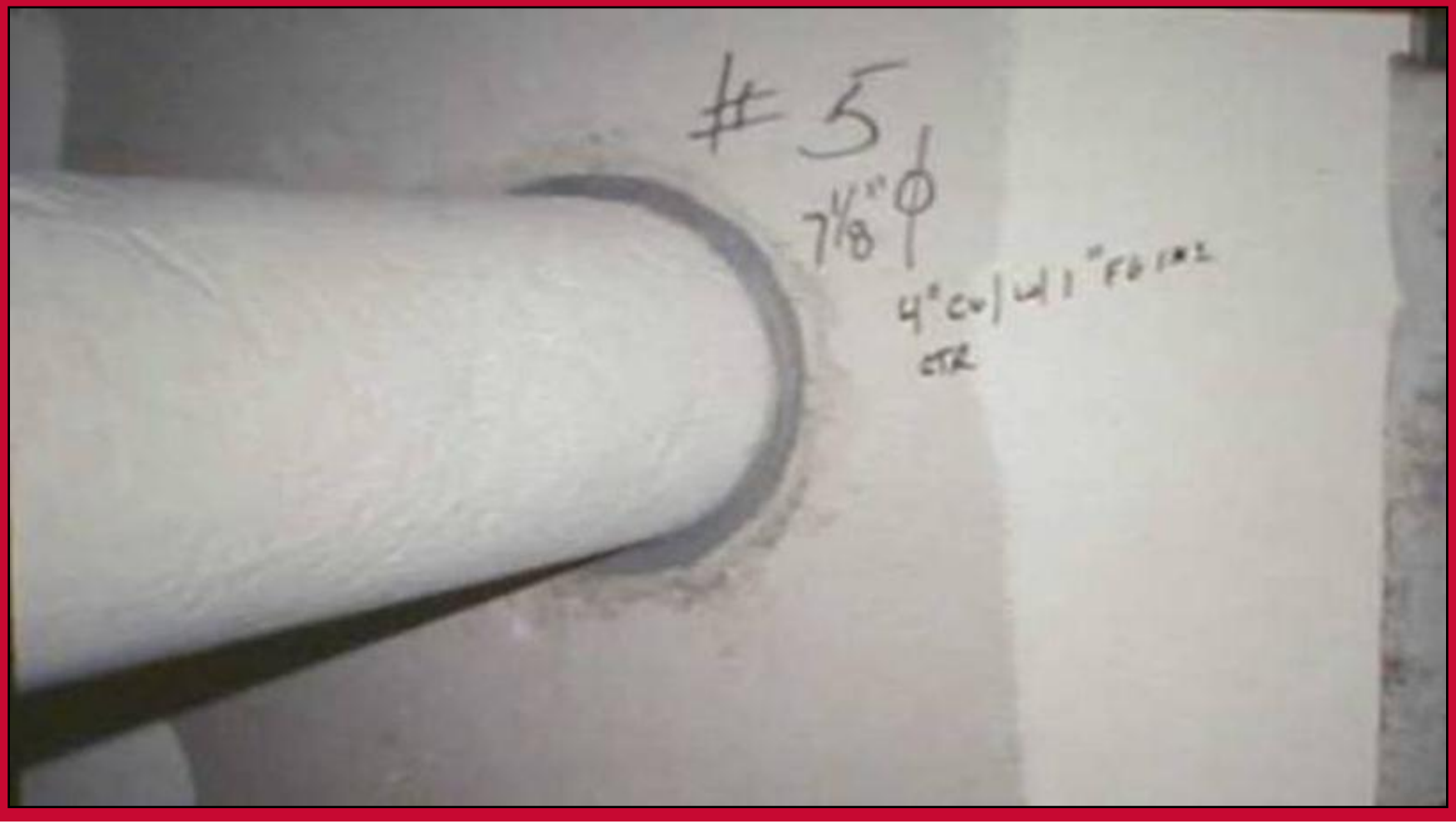
Through- and Membrane-Penetration Firestop Systems



Fire-Resistance-Rated Construction

Establishing an L Rating

Opening Protectives

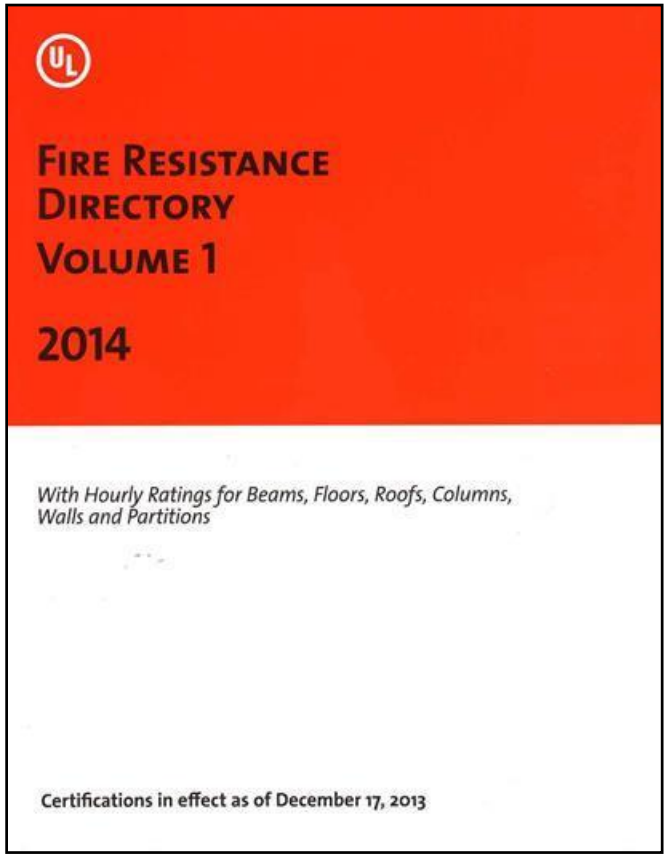
- Fire Door Assemblies
- Fire Window Assemblies

Conditions of Acceptance – Walls

- Flame passage
- 250ºF / 325ºF
- Support load
- Hose stream

Where Are Listings Found?

Hard Copy



CD-ROM

Online

Barrier Management Symposium

April 14, 2015

Nestor Sanchez, USG Corporation

Learning Objectives

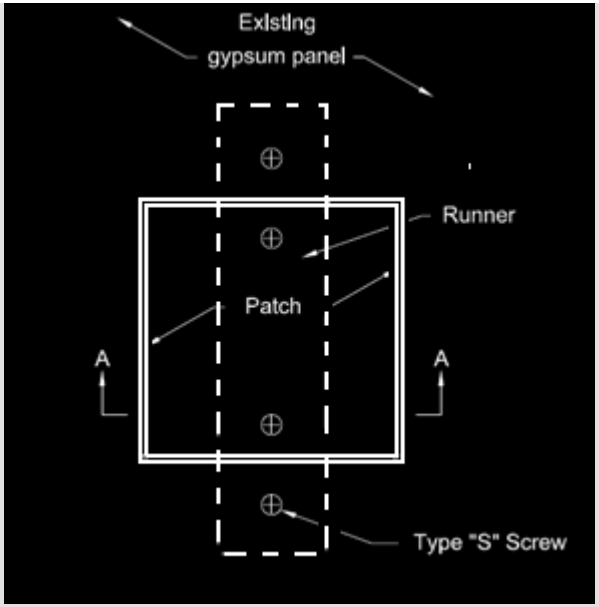
1. Explore the gypsum mineral and its impact on fire resistance in a systems basis
2. Understand the different types of gypsum core and their relation to fire resistance
3. Determine recognized methods for repair installed gypsum panels
4. Innovative Technology

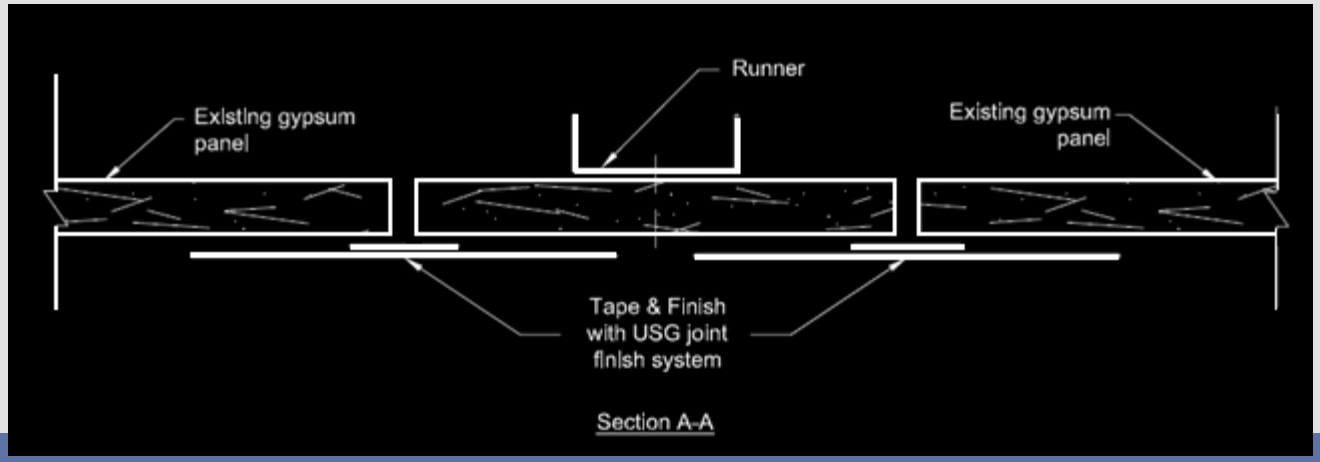
Gypsum Core Types

Three (3) Types of Gypsum Cores

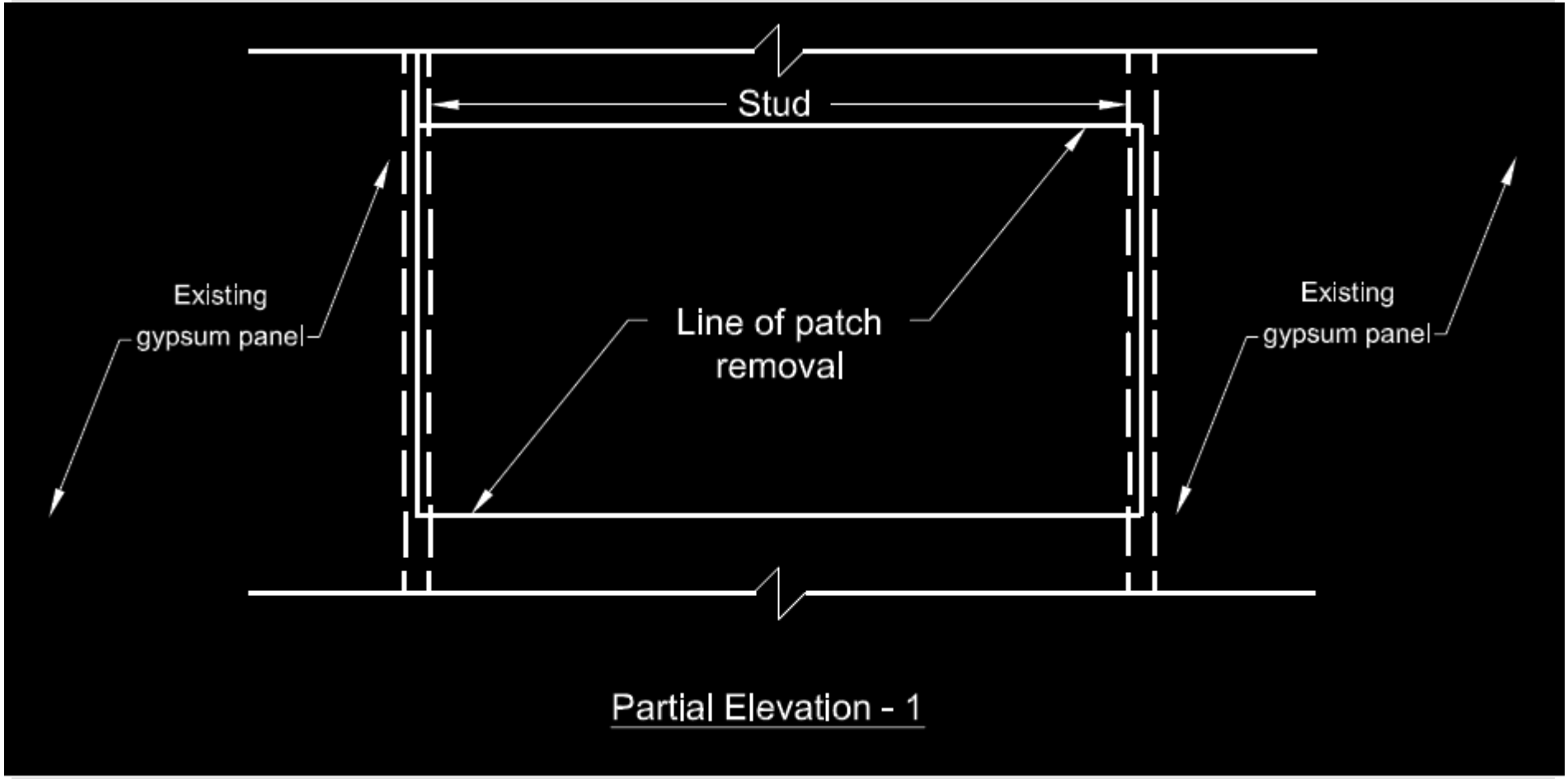
- Regular Core
- Type X
- Type C

Repair Small Holes





Repair Large Holes



Bill McHugh, Executive Director

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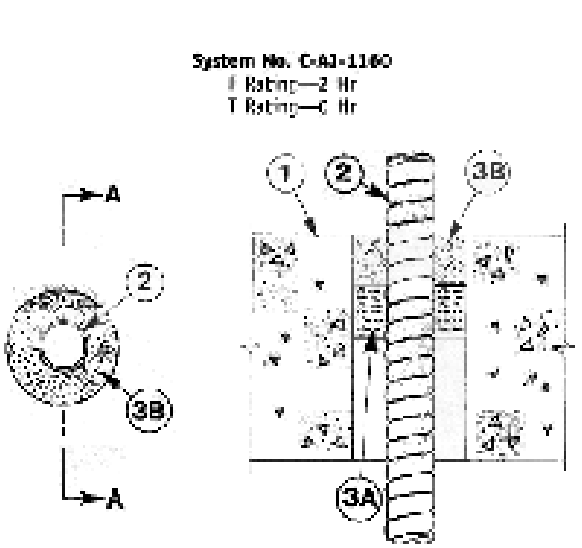
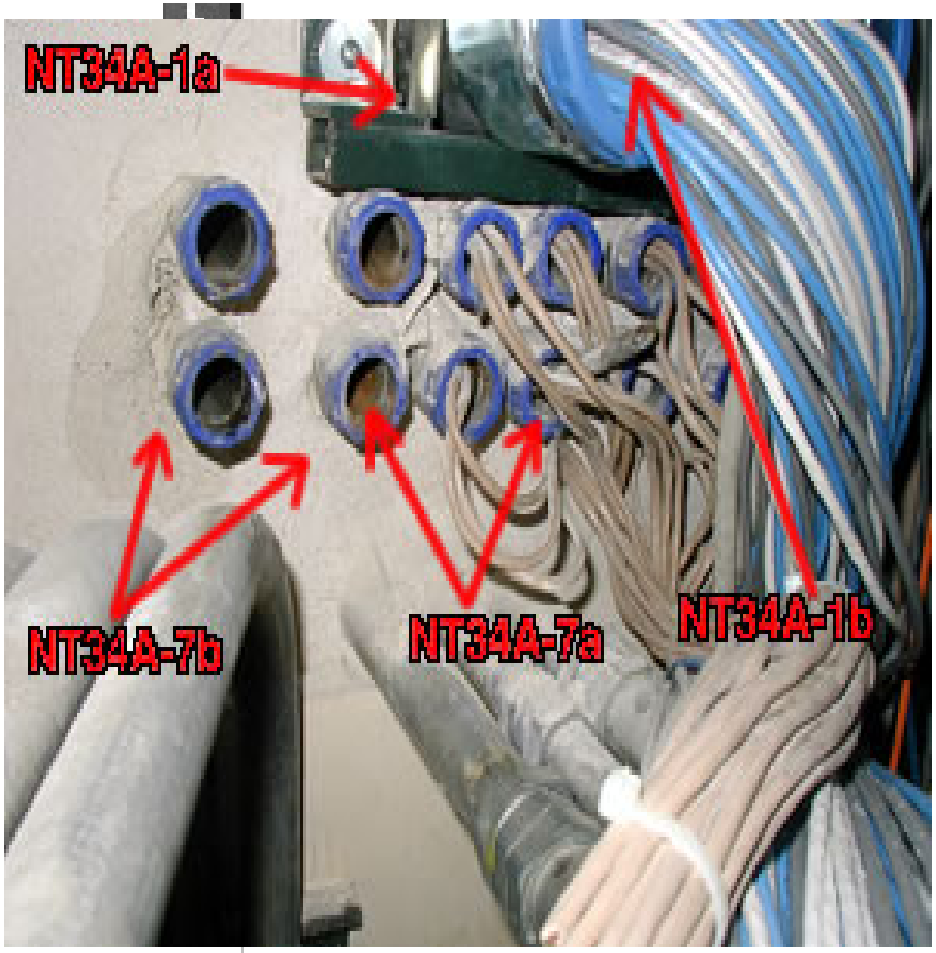
Bill McHugh – **bill @ fcia.org**

Firestopping for Continuity
I – Systems

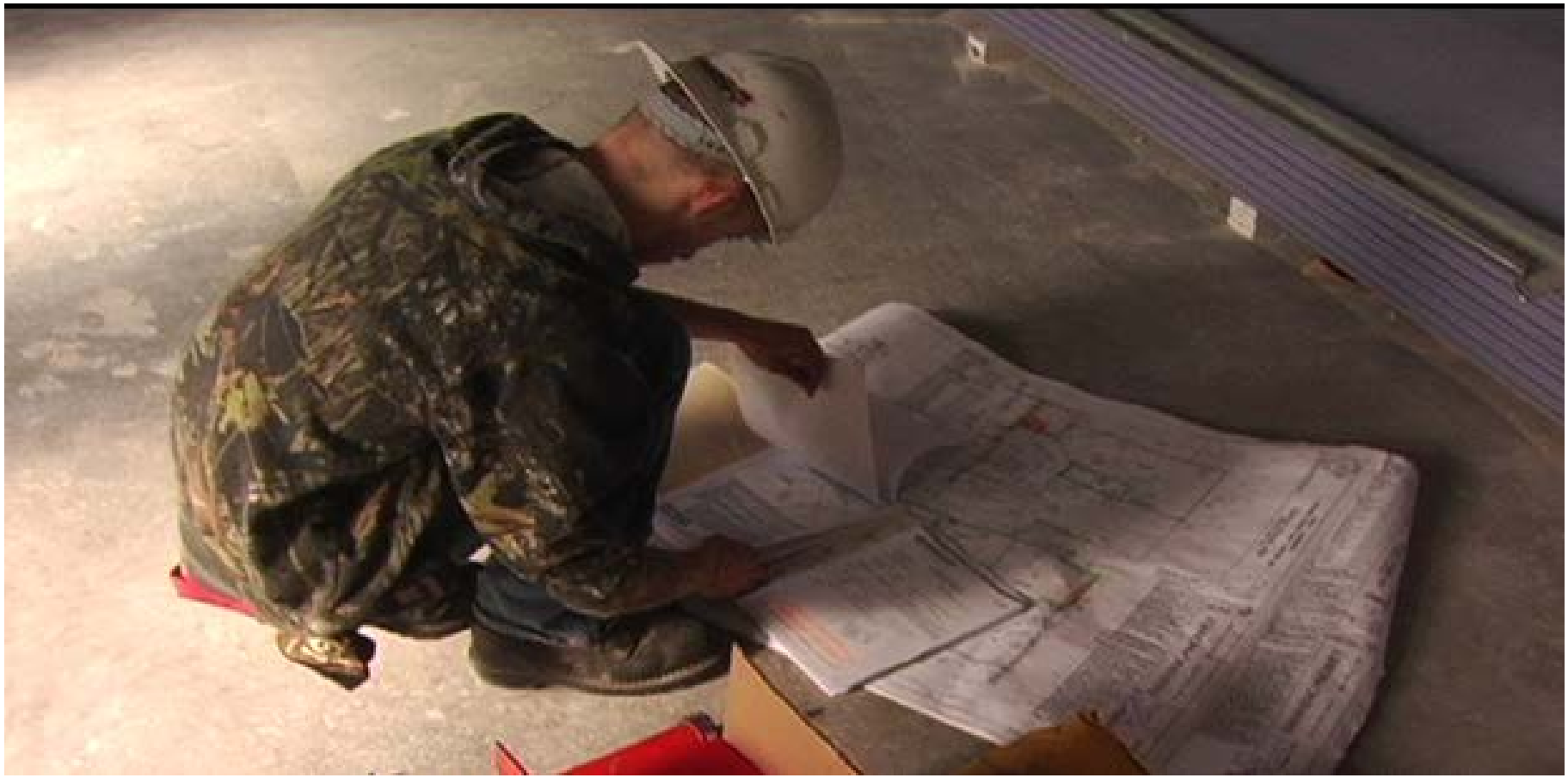


1. Floor or Wall Assembly—Min 4-1/2 in. thick lightweight or normal weight (100 to 150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks*. Diam of circular through opening in floor or wall assembly to be 1/4 in. to 1-1/2 in. larger than diam of flexible metal conduit (Item 2) installed in through opening. Max diam of opening is 6 in.
   See Concrete Block (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrating Product*—Max 4 in. diam (or smaller) steel or min 3/4 in. diam (or smaller) aluminum Flexible Metal Conduits. Max one flexible metal conduit to be installed near center of circular through opening in floor or wall assembly. Flexible metal conduit to be rigidly supported on both sides of floor or wall assembly.
   Alliance Cable Corp.
3. Packing Material—Min 1 in. thickness of ceramic (alumina silica) fiber blanket or mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed min 1 in. from top surface of floor or from both surfaces of wall.
4. FILL, Void or Cavity Material*—Caulk—Applied to fill the annular space around the flexible metal conduit. In floors, a min 1 in. depth of fill material to be installed flush with top surface of floor. In walls, a min 1 in. depth of fill material to be installed flush with wall surface on both sides of wall assembly.
   Minnesota Mining & Mfg. Co.—[illegible]

*Bearing the UL Classification Marking
†Bearing the UL Listing Mark



Firestopping for Continuity
I – Systems

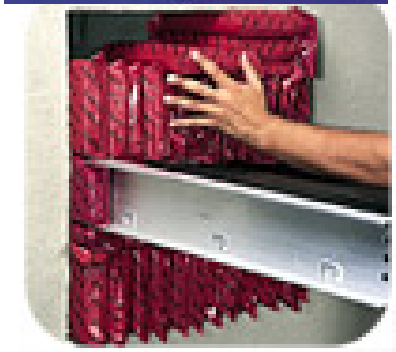


Firestopping for Continuity
Firestop Products

- **Sealants**
  - Silicone, Latex, Intumescent
- **Wrap Strips**
  - “Thick, Thin, Wide, Less Wide”
- **Putties**
- **Pillows**
- **Composite Sheets**
- **Bricks / Plugs**
- **Pre Fabricated Kits**
- **Mortar**
- **Spray Products**








Graphics, STI,3M, AD, HILTI, Nelson

Firestopping for Continuity
Products become Systems

- What are Firestop ***Systems***?
- **'Field Erected Construction…Tested to…'**
  - Standards - ASTM E814/UL 1479–UL 2079, ASTM E 1966, ASTM E 2307, ULC S-115
  - **F Rating - Flame**
  - T Rating – Temperature
  - H Rating – Hose (Always)
  - **L Rating – Smoke**
  - W Rating – Water

Graphics – 3M

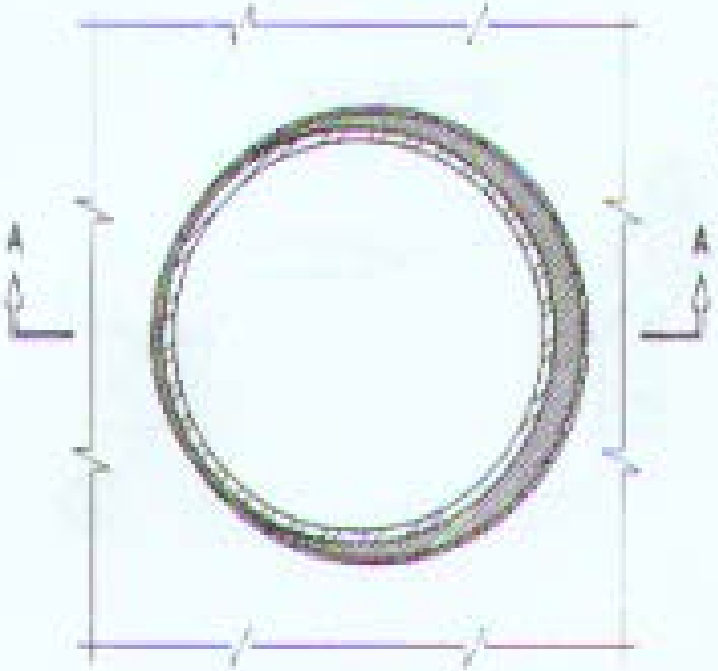
Products become Systems
Hose Stream = Shock Test

U.L. SYSTEM NO. CAJ1155

METAL PIPE THROUGH A SLEEVE IN CONCRETE FLOOR OR WALL

F RATING = 3-HR.
T RATING = 0-HR.
L RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L RATING AT 400°F = 4 CFM/SQ. FT.

TOP VIEW



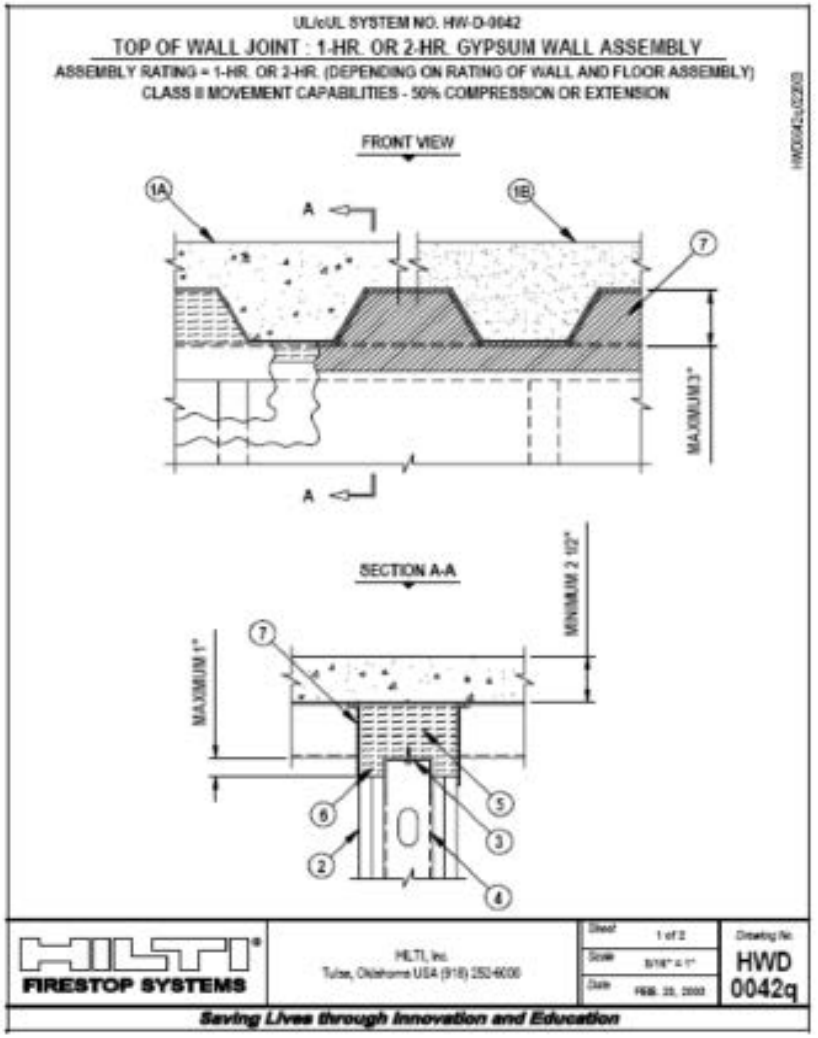
SECTION A-A

1. FLOOR OR WALL ASSEMBLY :
   A. MINIMUM 4-1/2" THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE FLOOR.
   B. U.L. CLASSIFIED CONCRETE BLOCK WALL (MINIMUM 8" BLOCK).

Fire Stop Technologies, Inc.

Fire Stop Technologies, Inc.

Gypsum Wall assembly running up to concrete over metal deck

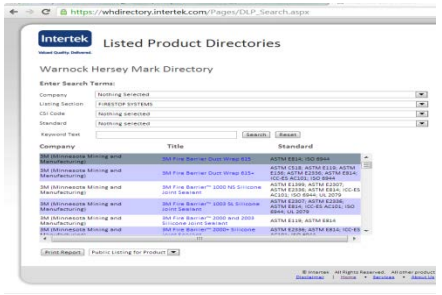


HILTI Photos

Firestopping for Continuity Products become Systems

- **Firestop Systems Directories –**
  - **UL**
  - **Intertek**
  - **FM Approvals**

Systems Selection & Analysis…Not as easy as it looks…



International Firestop Council – Manufacturers – firestop.org

IFC Guidelines for Evaluating Engineering Judgment Guidelines

‘Construction industry professionals, building officials, fire officials, firestop contractors and other stakeholders need appropriate guidelines for evaluating and using such judgments.’

‘As such, IFC developed *Recommended IFC Guidelines for Evaluating FireStop Systems in Engineering Judgments.* ‘

Fire/Smoke Dampers & Firestops

- Dampers are UL 555, 555S Listed ***Systems***
  - Installed to manufacturer's written instructions (Systems – Angles…no sealants)
- Firestop sealants – UL 1479 –
  - Improper hole sizing or poor installation…

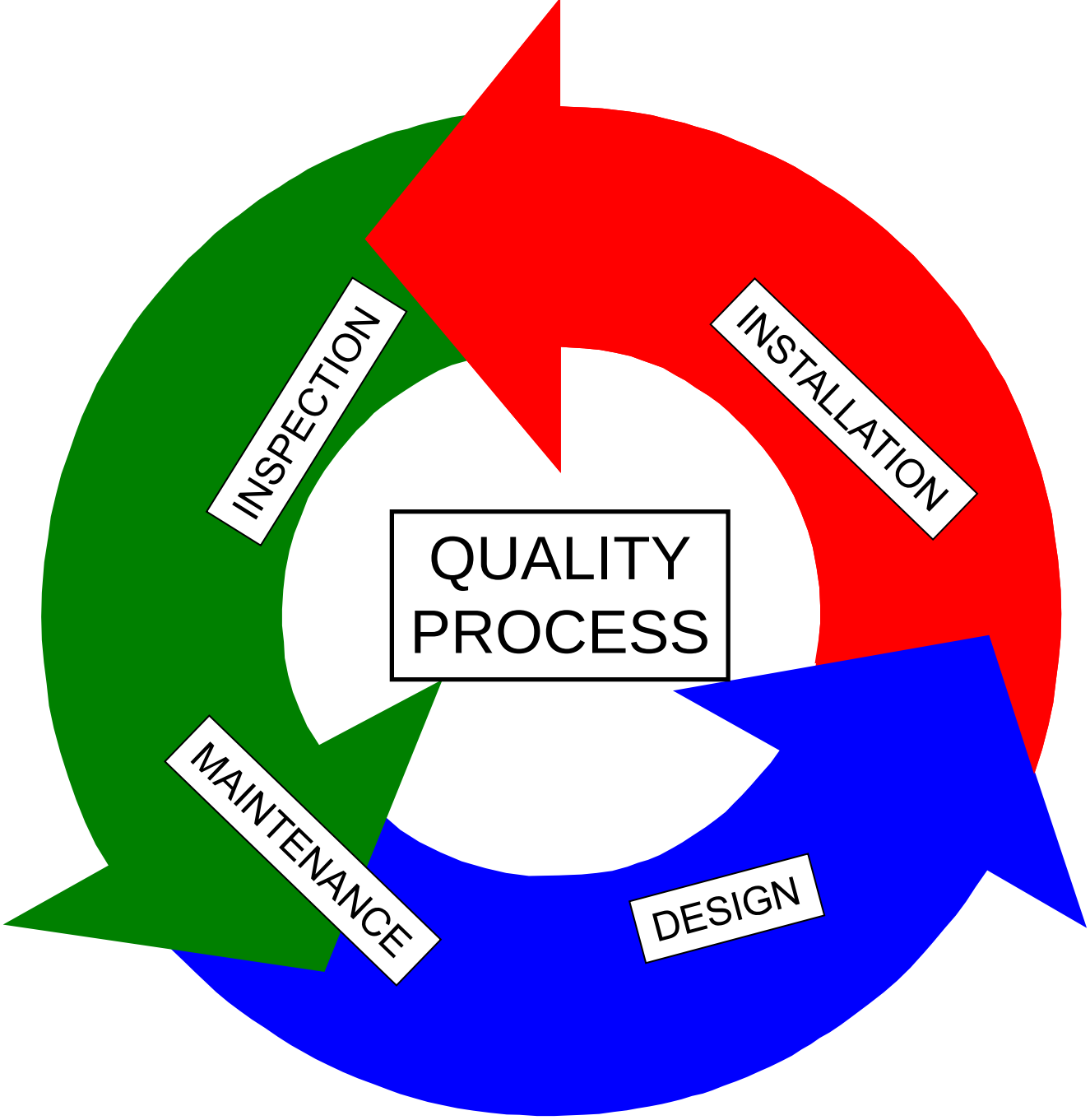
Consult the Damper Manufacturer & the Authority Having Jurisdiction

Graphics - Greenheck

Firestop Materials, Systems & Physical Properties

- **Serve Building Needs**
  - **Smoke**
  - **Germs**
  - **Chemical Resistance – Cleaning?**
  - **Chemical, Biological, Radiation?**
- **Product Types**
  - **Intumescent, Latex, Silicone**
  - **Ablative**
  - **Endothermic**

Graphics – 3M, STI, Nelson


QUALITY
PROCESS
INSPECTION
INSTALLATION
MAINTENANCE
DESIGN

Firestop Contractor Qualifications

FM & UL/ULC – 4 Components

1. Office Facility Quality Management System Audit
2. Field – Jobsite Audit
3. Employ a person
   - UL/FM Firestop Exam @ 80% or better
   - DRI if employed by Approved/Qualified Firm,
     - ***Designated Responsible Individual (DRI)***
4. Annual Audit

FM APPROVED 4991

ULC Underwriters' Laboratories of Canada
Laboratoires des Assureurs du Canada
Qualified Firestop Contractor Program

UL Underwriters Laboratories Inc.
Qualified Firestop Contractor Program

Firestop Systems Inspection ASTM E 2174 - ASTM E 2393

- "Standard Practice for On-Site Inspection of Installed Fire Stops – Penetrations - Joints"
  - Standard Inspection Procedure
  - Special Inspection Agency Companies
  - Other Qualified Firms
  - Report to Building Owner, Fire Marshals & Code Officials

Inspection in Codes
ASTM E 2174 - ASTM E 2393

- **NFPA 101 / 5000 - Chapter 8 - Annex**
- 2012 International Building Code
  - CH 17 – Special Inspections
    - Buildings 75’ & higher above Fire Department Access
    - Occupancy Type III, IV, Chapter 16 Table 1604.5
- Abu Dhabi International Building Code

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Door Security & Safety Foundation

Inspecting Swinging Fire Doors with Builders Hardware

A Practical Guide for

AHJs and Facility Management Personnel

Paul Baillargeon, DSSF/DHI

Top 10 Deficiencies Swinging Fire Doors

- Painted or missing fire door labels
- Poor clearance dimensions around the perimeter of the door in the closed position
- Kick down door holders
- Auxiliary hardware items that interfere with the intended function of the door
- Fire door blocked to stay in the open position
- Area surrounding the fire door assembly blocked by furniture, equipment, and/or boxes
- Broken, defective, or missing hardware items (e.g., latch bolts, strike plates, closer arms, cover plates, etc.)
- Fire exit hardware installed on doors that are not labeled for use with fire exit hardware
- Missing or incorrect fasteners
- Bottom flush bolts that do not project 1/2-inch into the strikes

Care and Maintenance

- Replacing door frames, doors, and builders hardware
  - Meets the requirements for fire protection
  - Meets the requirements for new installations

- Replacing glass and glazing products
  - New glass and glazing products are required to be labeled
  - Existing glass and glazing products are permitted to be replaced with same (e.g., 1/4-inch wire glass can be replaced with same)

Field Modifications

- NFPA 80, Chapter 5 contains provisions for field modifications
  - Contact the testing laboratory whose label is on the product being modified
  - Verify the proposed work does not compromise the integrity of the door assembly
  - Might not require field inspection by testing laboratory

Safety Inspections of Fire Door Assemblies

- Inspections are required to be performed by a qualified person

- Qualified Person:
  - "A person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to deal with the subject matter, the work, or the project."

- ✓ ***AHJs need to have confidence in the expertise of the persons performing NFPA 80's safety inspections***

Index of Fire Door Assemblies

- Assign each fire door a unique identifier
  - Door number
  - Bar code

Documentation

- Acceptance Testing
  - Initial installation
  - After maintenance work

- Safety Inspections
  - Annual safety inspections
  - Performance-based inspections

Documentation

- Acceptance Testing records
  - Retained for life of installation
    - Before Certificate of Occupancy is issued
    - After maintenance work is performed
  - Format that survives the retention period
    - Digital (secured – can’t be edited)
    - Paper
  - Signed by inspector(s) and kept for AHJ’s review

Documentation

- Safety Inspections
  - Format that survives the retention period
  - Minimum retention period of 3 years
  - Signed by inspector and kept for the AHJ's review.

Corrective Actions

- Inspection reports
  - Inspector's recommendations for repairing fire doors
- Minor corrective actions
  - Replacing and/or tightening fasteners
  - Adjusting doors and hardware
    - Shimming doors to correct excessive clearance gaps
    - Adjusting door closers
    - Aligning latching hardware with strike plates
  - Filling unused fastener holes

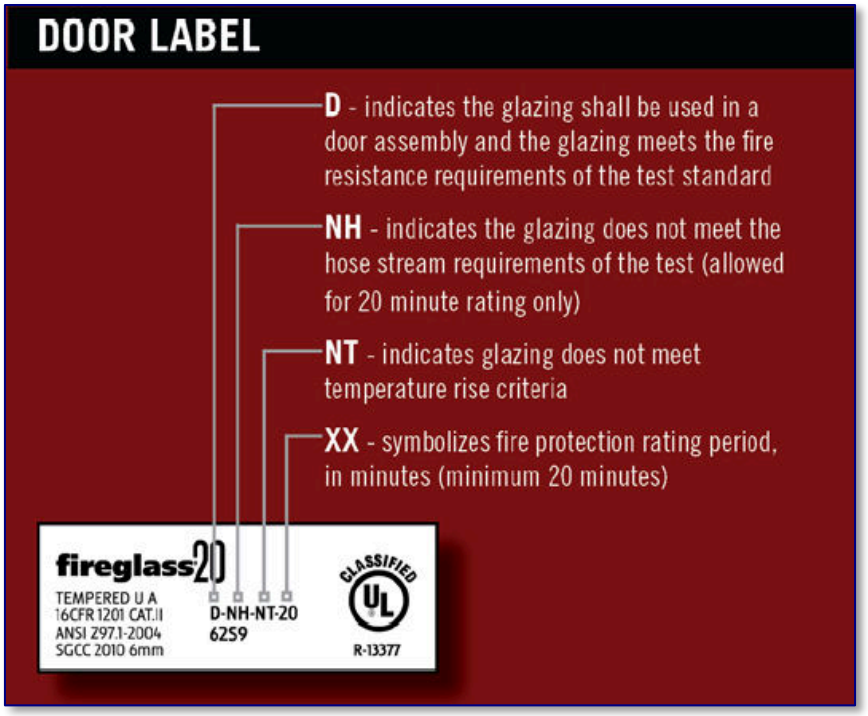
Steel Door Frames 5.2.3.5.2(1)

- Frame Condition
  - No unused fastener holes.
  - Frame jamb extends to floor. No space between bottom of frame and floor.
  - Fasteners installed in miters of knock down frames.

Steel and Wood Doors 5.2.3.5.2(2)

- No broken welds on rails or stiles of steel doors.
- No holes in faces and edges of steel doors.
- Verify face of door for delaminating of face skins from core of door.

Glazing 4.4.1



- Glazing beads securely fastened/no missing fasteners.
- Labeled light kits secured fastened - no missing fasteners.
- Correctly sized fire rated glazing installed.

Hinges, Continuous Hinges, Pivots 6.4.3.1

- Labeled or listed.
- Steel hinges and pivots.
- Ball Bearing hinges.
- Spring Hinges (must be labeled on fire doors)
- Door must fully close from an open position of 30 degrees with spring hinges.

Fire Exit Hardware 6.4.4.2.1

- Must bear fire exit hardware label
- Latch bolt projects the required distance into the strike
  - 1/2-inch minimum or as required by the manufacturer
- No missing parts
  - lever, knob
  - end caps
  - Strikes
  - bottom rods
  - fire pin

Blockage 5.2.3.5.2(10)

- Area around door must remain clear of any materials

Door Wedges 5.2.3.5.2(10)

- Manual blocking open of doors is not permitted
  - Kick-down door holders
  - Friction door holders
  - Overhead door holders
  - Hold open arms on door closers
  - Furniture, trash cans, fire extinguishers, etc…

Decorations 5.2.3.5.2(13)

- Decorations can cause premature door failure due to additional fuel added to fire loading of door

Swinging Fire Door Assemblies
2 Basic Rules

- Rule #1
  - All fire door assemblies shall consist of:
    - Labeled door frames
    - Labeled fire doors
    - Labeled or listed hardware & glazing

- Rule #2
  - Any field modification to a labeled product must be approved by the testing laboratory that labeled or listed the product or component

Door Security & Safety Foundation

Inspecting Swinging Fire Doors with Builders Hardware

A Practical Guide for

AHJs and Facility Management Personnel

Paul Baillargeon, DSSF/DHI

Marc Sorge, Mark Belke
Fire Damper Agenda

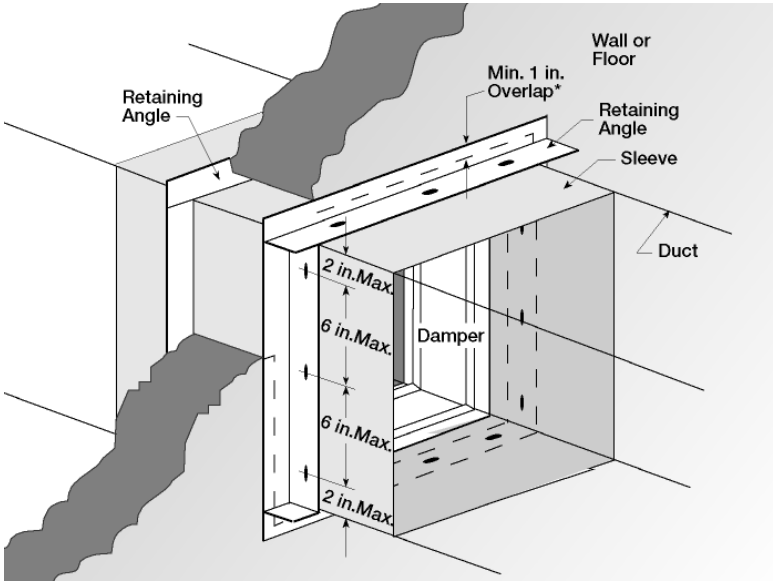
- **Installation/Configuration**
  - Fire Dampers
  - Smoke Dampers
  - Combination Fire/Smoke Dampers
- **Operational Test/Inspection**
- **Periodic Test/Maintenance**

What is it?

- **Labels**

Fire Damper Installation

- **Installed with sleeves**
  - factory or field mounted
  - sleeve requirements



Smoke Damper Construction

- **Type**
  - multi-blade
  - 3-V or airfoil blade
- **Construction**
  - blade and jamb seals
  - *always* with a UL-approved actuator

Smoke Damper Actuators

- **Mounting**
  - must be factory mounted
  - internal or external
- **Operation**
  - spring return
  - two position or modulating

Purpose of Fire/Smoke Damper

- **Provide the same level of protection as individual fire and smoke dampers.**
- **Installation guidelines of fire and smoke dampers apply.**

Operational Test

NFPA 80

Standard for Fire Doors and Other Opening Protectives

Frequency

"After the installation of a damper is completed, an operational test shall be conducted."

Test Method

"The damper shall fully close from the open position."

"The operational test shall verify that there is full and unobstructed access to the fire damper and all listed components."

"All indicating devices shall be verified to work and report to the intended location."

"The operational test shall be conducted under non-fire HVAC airflow conditions as well as static flow conditions."

Operational Test

NFPA 105

Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives

Frequency

"An operational test shall be conducted after the building's HVAC system has been balanced."

Test Method

"The operational test shall be conducted under normal HVAC airflow conditions as well as static flow conditions. The damper shall fully close/seal under both test conditions."

"All indicating devices shall be verified to work properly and report to the intended location."

"Combination fire/smoke dampers shall also meet the testing requirements contained in NFPA 80."

Fire, Smoke, and Combination Fire Smoke Dampers

amca CERTIFIED RATINGS
AIR PERFORMANCE
AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.®

GREENHECK
Building Value in Air.

2015

Barrier management Symposium

Anne Guglielmo, Engineer
Department of Engineering
The Joint Commission

Barrier Management Program: Policy, Permit, Educate and Inspect

- Policy:
  - Define
    - Scope
    - Authority
    - Management process
  - Interim Life Safety Measures
  - Pre-construction Risk Assessment

Deficiency Resolution

- Deficiency Resolution Options:
  - Correct it immediately
  - Correct it within 45 days
    - Management process that documents the deficiency and actions to resolve
    - ILSM must be considered
  - Plan For Improvement located in the Statement of Conditions™
    - Corrected within 6 months of the Projected Completion Date
    - ILSM must be considered

Interim Life Safety Measures

- Order of Standards (LS.01.02.01)
  - EP 1 & 2 regardless of ILSM policy
  - EP 3 must clearly define the ILSM policy including
    - AFS 10 Process
    - When to implement
    - What to do to protect occupants
    - Both construction related and non-compliance with the LSC
  - EPs 4 – 14 align with policy and implementation strategies

PRA EC.02.06.05 EPs 2 & 3

Preconstruction Risk Assessment (PRA)

Construction or renovation in occupied healthcare facilities can result in environmental problems such as:

- Noise
- Vibration
- Creation or spread of contaminants
- Disruption of essential services
- Emergency Procedures
- Air quality

Barrier Management Program: Policy, Permit, Educate and Inspect

- Permit
  - Follows policy
  - Define when permits are issued
  - Define criteria for awarding permits
  - Define permit display requirements
  - Define scope of permit: where the work is being done
  - Define time frame for the permit will expire

Barrier Management Program: Policy, Permit, Educate and Inspect

- Educate
  - Facilities staff
    - Components of the Barrier System
    - Maintenance of the Components
  - All other staff
    - Barrier System awareness
    - Permit awareness
  - Contractors
    - Barrier Management expectations

Barrier Management Program: Policy, Permit, Educate and Inspect

- Inspect
  - Establish inspection frequencies
    - Hospital experience
    - Reliability Centered Maintenance
  - Document inspection activities
  - Management inspections
    - Verify quality
    - Modify program as needed

Department of Engineering
630 792 5900

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The Joint Commission Disclaimer

- These slides are current as of 4/13/2015. The Joint Commission reserves the right to change the content of the information, as appropriate.
- These slides are only meant to be cue points, which were expounded upon verbally by the original presenter and are not meant to be comprehensive statements of standards interpretation or represent all the content of the presentation. Thus, care should be exercised in interpreting Joint Commission requirements based solely on the content of these slides.
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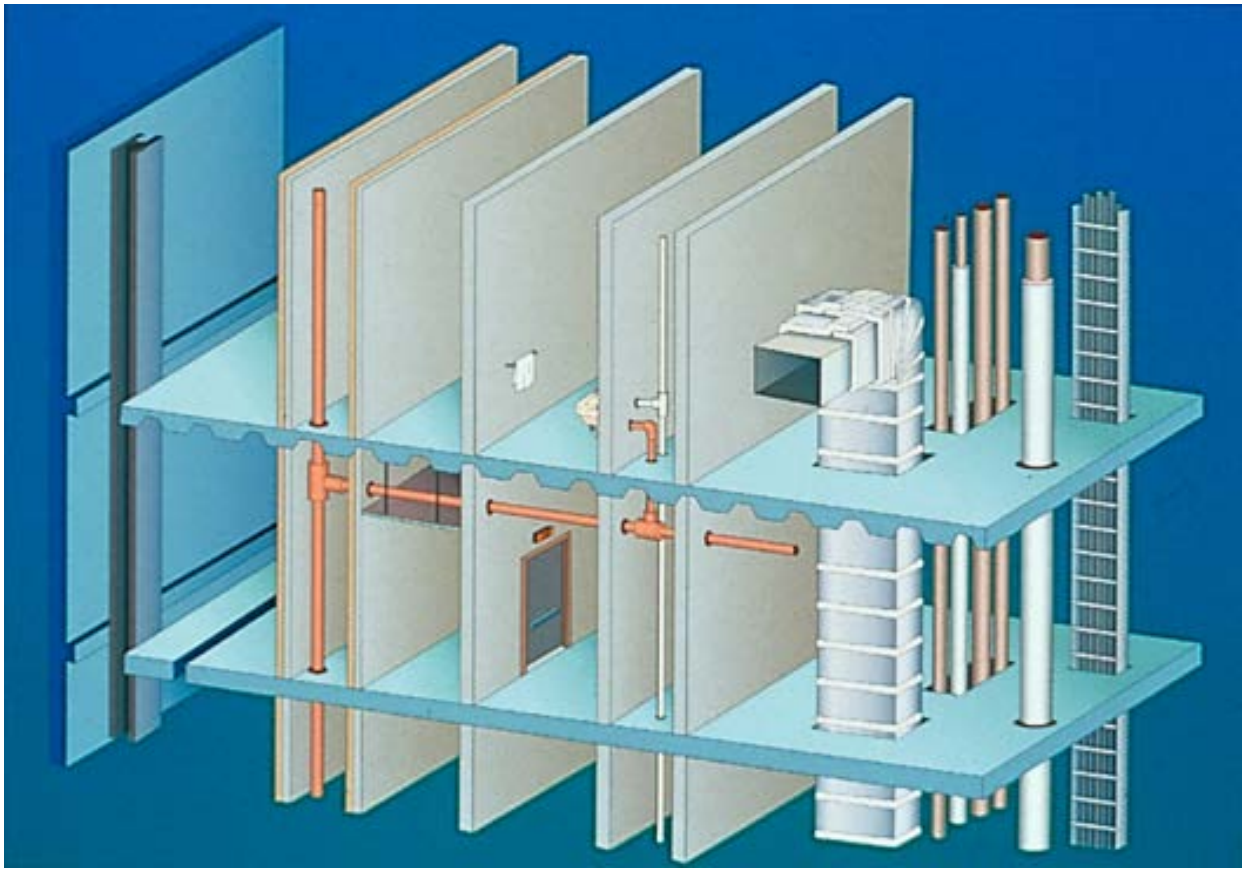
M – Maintenance
(& Management)



Barrier Maintenance

- **Maintenance**
  - **Code Required**
  - **How??**

- **How to keep Track – Barrier Management Initiative**
  - **Paper**
  - **Software**
  - **Labeling**

National Fire Protection Association - NFPA 101-2012

- **SECTION 4.5.8 Maintenance, Inspection, and Testing.**
- **4.5.8.1** **Whenever or wherever any device**, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature **is required for compliance** with the provisions of this Code, **such device**, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or other feature ***shall thereafter be continuously maintained*** in accordance with applicable NFPA requirements or requirements developed as part of a performance-based design, or as directed by the AHJ. [101:4.6.12.1]

National Fire Protection Association - NFPA 101-2012

- **4.5.8.2 No existing life safety feature *shall be removed or reduced*** where such feature is a requirement for new construction. [101:4.6.12.2]
- **4.5.8.3*** **Existing life safety features obvious to the public, if not required by the Code, *shall be either maintained or removed*.** [101:4.6.12.3]
- **4.5.8.4 Any device**, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature **requiring periodic testing, inspection, or operation** to ensure its maintenance ***shall be tested, inspected, or operated*** as specified elsewhere in this Code or as directed by the AHJ. [101:4.6.12.4]
- **4.5.8.5 Maintenance, inspection, and testing *shall be performed under the supervision of a responsible person who shall ensure*** that testing, inspection, and maintenance ***are made at specified intervals*** in accordance with applicable NFPA standards or as directed by the AHJ. [101:4.6.12.5]

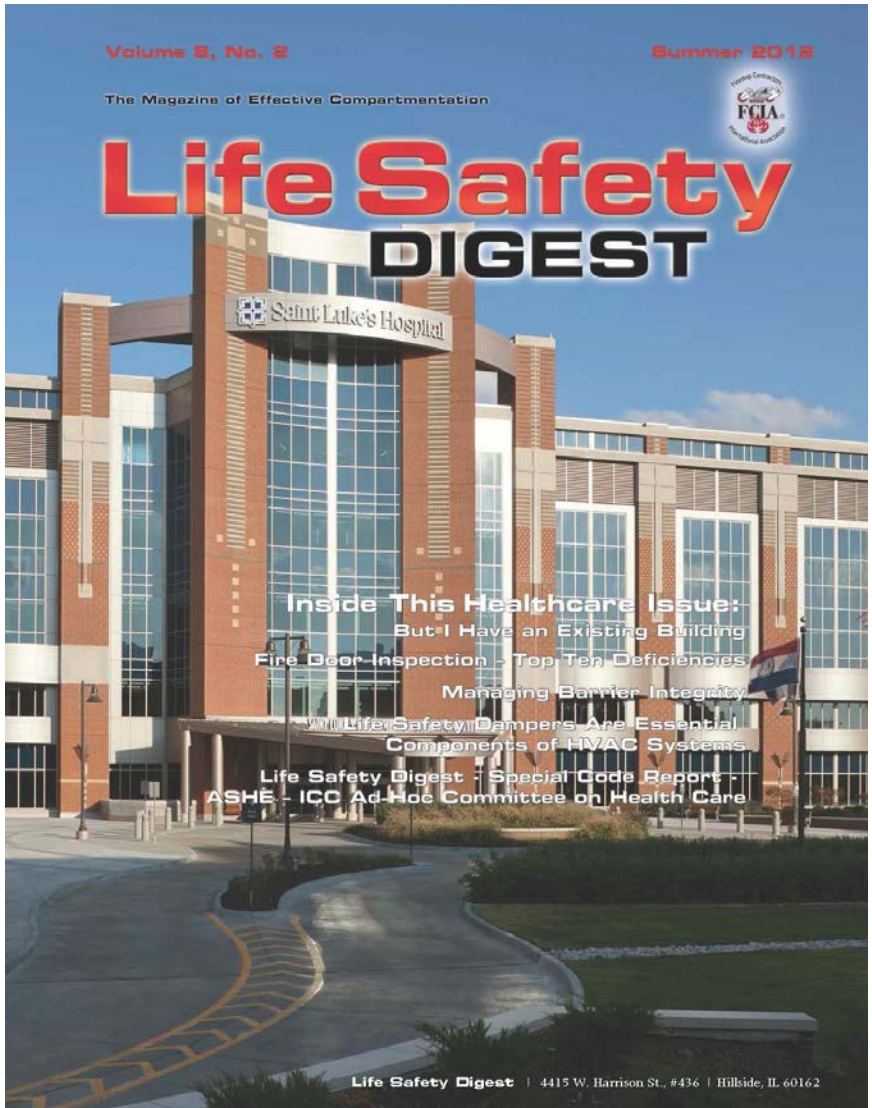
International Fire Code Maintenance

SECTION 703
FIRE-RESISTANCE-RATED CONSTRUCTION

703.1 Maintenance. The required fire resistance rating of fire-resistance rated construction (including walls, fire stops, shaft enclosures, partitions, smoke barriers, floors, fire resistive coatings and sprayed fire resistant materials applied to structural members and fire resistive 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.

Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings, **and holes** made for any reason ***shall be protected with approved methods*** capable of resisting the passage of smoke and fire.

Barrier Management Begins when new construction ends…



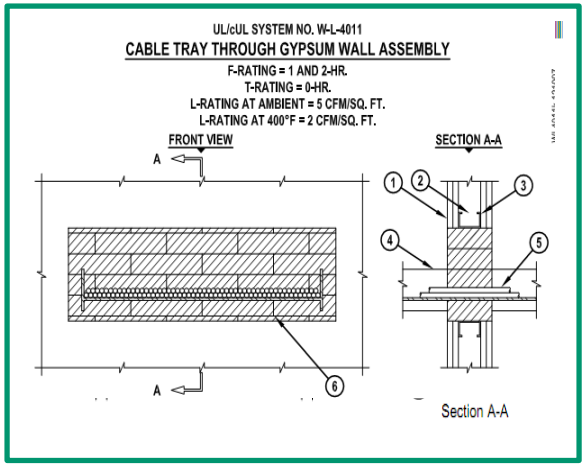
M–Barrier Management Systems

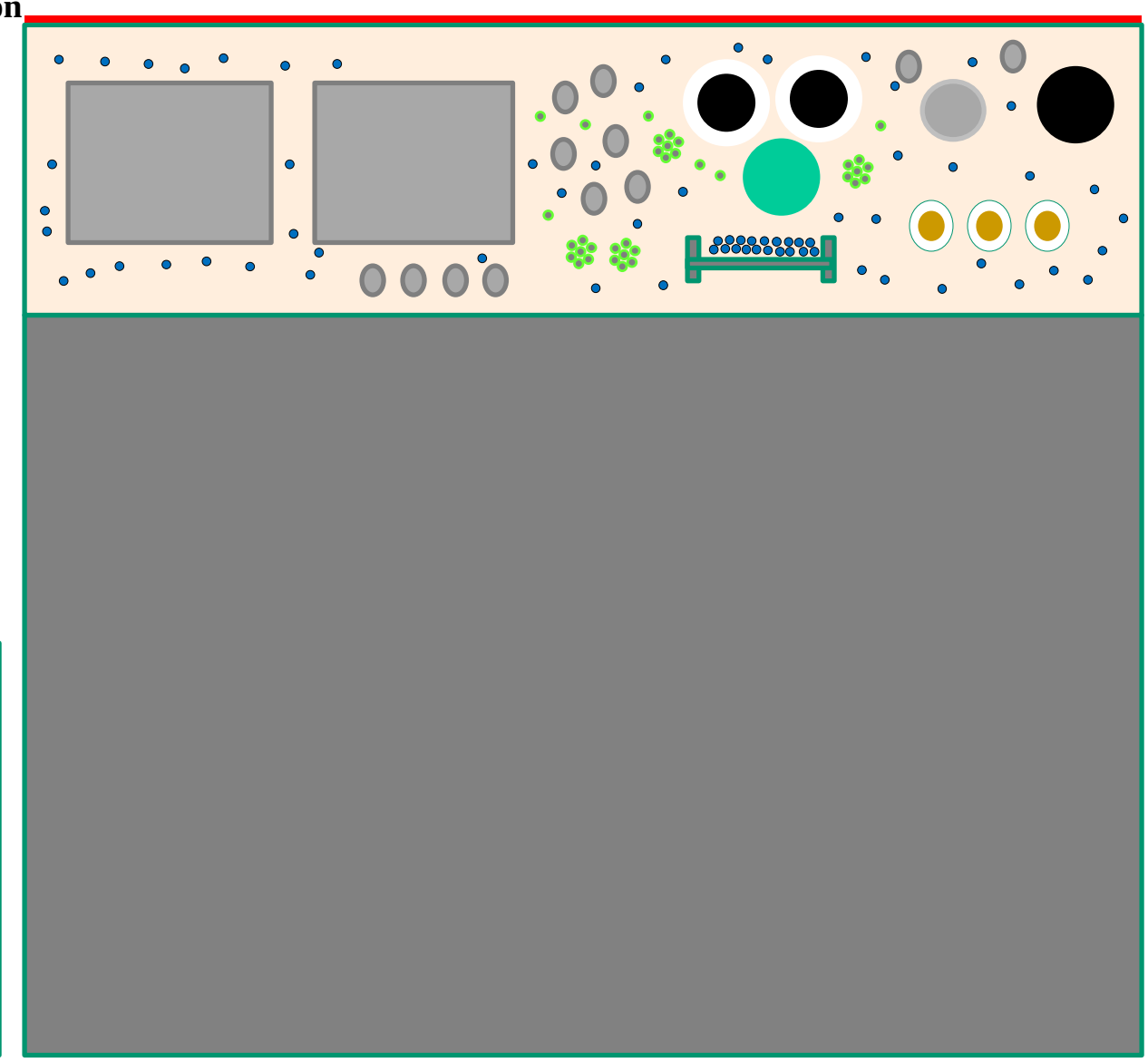
- **Now it's your building….**

- **Gleeson Powers Graphic**

WHAT NEEDS TO BE MAINTAINED?

- Fire Resistive Wall Construction
- Fire Doors
- Fire Dampers
- Firestop Systems:
- Joint Systems
- Hot and Cold Water Piping
- Laboratory Waste
- Medigas Piping
- Pneumatic Tubing
- Sprinkler Piping
- Rigid Electrical Conduits
- Cable Trays
- BX Cables
- Low Voltage Cables
- and More….
  - Low Voltage!!!!



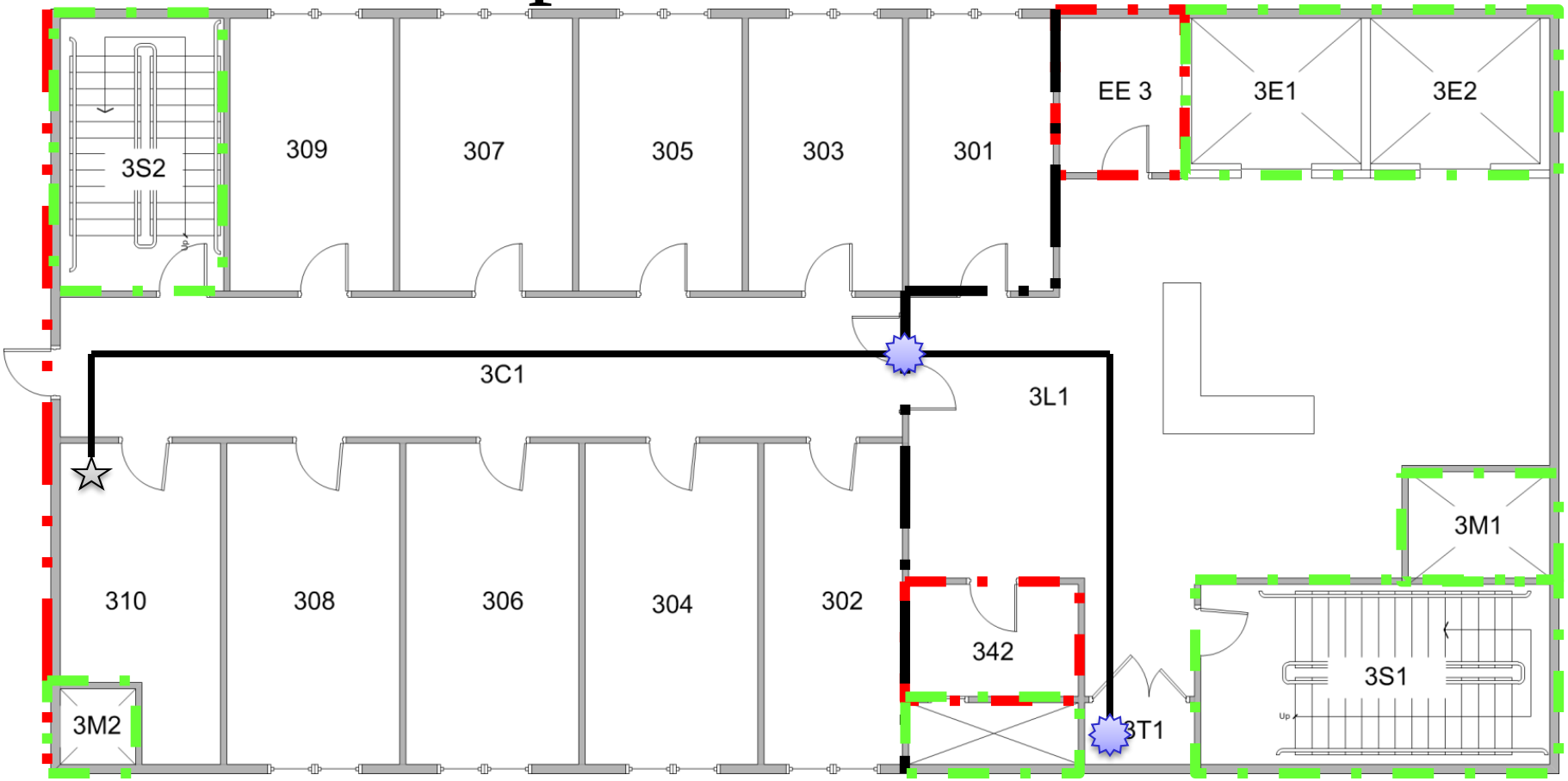


Gleeson Powers Graphic

Barrier Management Policy = Tool

- **ASHE Member Healthcare Engineer & Director Communicates…**
  - **Rules of Engagement in Contracts**
    - **Internal Contracts**
    - **External Contracts**
  - **Pre Construction Meetings**
  - **Barrier Warnings - Markings**
  - **Violation Consequences**
  - **Ongoing Management**
  - **Staff Education & Incentives**

Sample Permit – Area



Demo Hospital

Permit No.: 2011-005

Area (*): 3C1/3L1 Side 1: 3C1 Side 2: 3L1

LSR ID: LST-B1-03-007 Compliance Status: Non-compliant

Survey ID: LSR Group:

Life Safety Details | Surveys | Photos | Floor Plan Diagrams

	LSR Deta...	Status	Latest Ph...	Detail Description	Life Safety T...	Life Safety Sub ...	Letters	Numbers	LSR Count	Notes
>	001	Non-com...		Firestopping Through Wall Penetration - Firestop	Firestopping	Through Wall Pe...	WL	1000-1999	1	
	002	Compliant		Firestopping Through Wall Penetration - Firestop	Firestopping	Through Wall Pe...	WL	1000-1999	0	
	003	Compliant		Firestopping Through Wall Penetration - Firestop	Firestopping	Through Wall Pe...	WL	5000-5999	1	
	004	Compliant		Firestopping Through Wall Penetration - Firestop	Firestopping	Through Wall Pe...	WL	3000-3999	1	EZ Path

Add New Life Safety Detail Entry | Edit Selected Life Safety Detail Entry

Edit | Save | Save & Add Another | Save & Close | Delete Record | Cancel

Edit Selected Permit | Delete Selected Row | View/Print Permit | Close Form

admin | Client: Life Safety Tracker Demo | Beta | v1.3.13.9

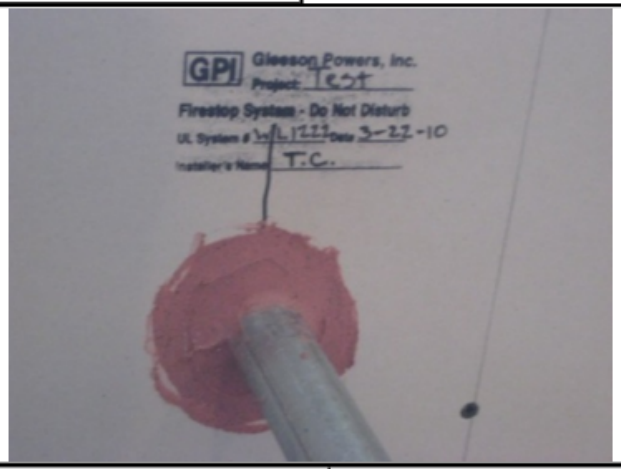
Corrective Action Report

	Building\Floor\Area: Building 1 \ 3rd Floor \ 3C1/3L1	LSR # - Detail#: LST-B1-03-007 - 001
Life Safety Type: Firestopping	Life Safety Sub Type: Through Wall Penetration - Firestop Systems	
Penetration Type: EMT or Conduit	Penetration Size: Max 1"	Annular Space: MIN: 0 to .50", MAX:
Wall Rating Type:		
Date Completed: May-02-2011	Classified System:	Survey #: Survey / Survey Date:
Deficiency Description: No firestopping	Suggested CA Notes: Install UL Listed Firestopping System at penetration/joint	
Survey Notes:	CA Notes:	

Survey Photo

Side: 37296 | Photo ID: 37296

Corrective Action Photo



Side: 1: 3C1	Photo Notes:
Photo ID: 37298	

Survey Photo

Side: 2: 3L1 | Photo ID: 37297

Corrective Action Photo

Side: 2: 3L1	Photo Notes:
Photo ID: 37299	

Barrier Management Policy Tool

- **Ongoing Management**
  - **Engineering Staff Reviews**
  - **User Staff Reviews**
  - **Inside Construction**
  - **Outside Contractor**

Barrier Management Policy Tool

- **Education - Healthcare Staff**
  - **Fire Doors & Hardware – Simple things…**
    - **Close & Latch**
    - **Holes in Door**
  - **Ladder = ?? Permit Sticker?**
  - **Fire Rated Walls - Holes**
    - **Accidental**
    - **Workers**

“TOTAL FIRE PROTECTION”

- Effective Compartmentation
  - Fire Barriers, Fire Walls/Floors, Smoke Barriers
  - Firestopping, Fire Dampers, Swinging and Rolling Fire Doors, Fire Rated Glazing
- Detection & Alarm Systems
- Sprinkler Suppression Systems
- Education & Egress–
  - Building Owners & Managers, Building Occupants and Firefighters

Continuity

Effective Compartmentation & Features

Objective – Share Knowledge

- Barriers are for Safety – DIIM
  - Properly ***Designed*** and Specified
    - ***Tested and Listed Systems*** – Directories, Tables
    - *Specified*
  - Professional ***Installation*** Companies, Workforce
  - Properly ***Inspected*** – by Companies, Workforce
  - ***Maintained*** **–**
    - NFPA 101 - 2000 (TJC, CMS)
    - International Fire Code - IFC 2012 - Annually (Local)
- ***Effective Compartmentation for Fire & Life Safety***

ASHE Regions

- Thanks for 2014 and 2015
- Future?
  - 2 Day Symposiums
  - 1 Day Symposiums

Today's Speakers

- Jonathan Flannery, ASHE
- Anne Guglielmo, The Joint Commission
- Lennon Peake, Koffel Associates
- Bill McHugh, Firestop Contractors International Association

Barrier Management Systems - Symposium

Improving Barriers Nation Wide