Where - Risk Category IV Buildings

Towers,
Control Centers &
Emergency Hangers

Material Storage
Exceeding Table 307.1 (2)

Structures for
National Defense

What About Other Occupancy Types?

TABLE 1604.5 RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: ▪ Agricultural facilities. ▪ Certain temporary facilities. ▪ Minor storage facilities.
II	Buildings and other structures except those listed in Risk Categories I, III and IV
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: ▪ Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than [illegible] ▪ Buildings and other structures containing elementary school, secondary school or day care facilities with an occupant load greater than [illegible] ▪ Buildings and other structures containing adult education facilities, such as colleges and universities, with an occupant load greater than [illegible] Exceed maximum allowable quantities per control area as given in [illegible] or per outdoor control area in accordance with the International Fire Code; and Are sufficient to pose a threat to the public if released[a].
IV	Buildings and other structures designated as essential facilities, including but not limited to: ▪ Group I-2 occupancies having surgery or emergency treatment facilities. ▪ Fire, rescue, ambulance and police stations and emergency vehicle garages. ▪ Designated earthquake, hurricane or other emergency shelters. ▪ Designated emergency preparedness, communications and operations centers and other facilities required for emergency response. ▪ Power-generating stations and other public utility facilities required as emergency backup facilities for Risk Category IV structures. ▪ Buildings and other structures containing quantities of highly toxic materials that

…including but not limited to:

Applies to ANY Occupancy

2015 IBC 1705.1.1

"Special inspections shall be required for proposed work that is, in the opinion of the building official, unusual in its nature, such as, but not limited to the following examples: [illegible] that prescribe requirements not contained in this code or in standards referenced by this code."

…in the opinion of the building official… unusual in its nature… such as…

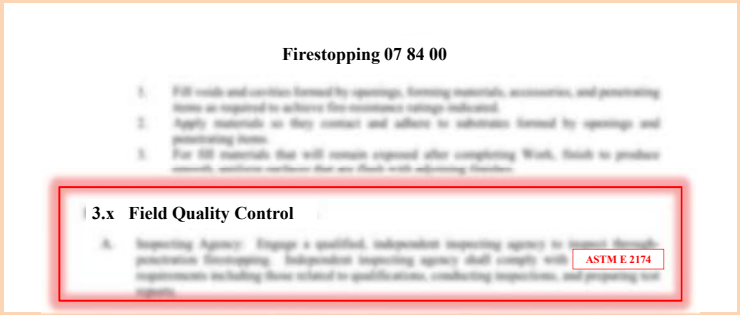
…systems to be installed according to manufacturers instructions & requirements… not contained in this code

Applies to ANY Occupancy

110.3.8 Other inspections. In addition to the inspections specified above, the *building official* is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced by the department of building safety.

…authorized to make or require other inspections of any construction work…

Read the Firestop spec



Firestopping 07 84 00

3.x Field Quality Control

ASTM E 2174

Look for it during Plan Review

Inform during Plan Review!

Who Pays?

NEW!

1704.2 Special Inspections and tests

Where application is made to the building official for construction as specified in Section 105, the owner or owner's authorized agent, other than the contractor, shall employ one or more *approved agencies* to provide special inspections and tests during construction on the types of work specified in Section 1705 and identify the

"...owner or owner's authorized agent, other than the contractor, shall employ..."

REVIEW

1. It Will NOT Happen Without YOU!
2. Current Failure Rates are 90%+
3. Sections 1702 & 1705 Are Your Authority
4. Can Fail Visually, Cannot Pass Visually

NEXT

1. What Are The Inspection Standards?
2. Inspectors **MUST** be *Approved* Beforehand
3. How Inspections Should Be Conducted
4. What Reports *Shall* Be

How Do You Spot A Qualified Inspector?

All Special Inspections

1705.2.1
Special inspector qualifications.

The special inspector shall provide written documentation (1) demonstrating (2) his or her competence (3) and relevant experience (4) or training (5). Experience or training shall be considered relevant (6) when the documented experience or training is related in complexity (7) to the same type of special inspection activities (8) for projects of similar complexity (9) and material qualities. These qualifications are in addition to qualifications specified in other sections of this code.

"Before the start of construction…"

Firestop Inspector Statement of Qualifications

Shall provide written documentation of…

…competence

…relevant experience

…training

Considered relevant when…

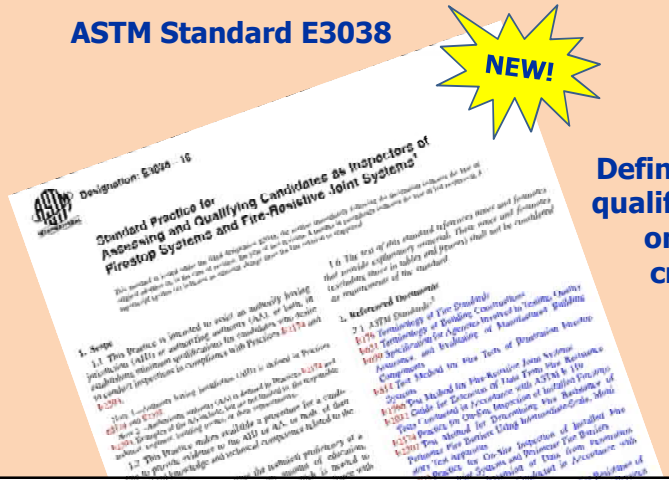
…related in complexity

…same type of inspection

…projects of similar complexity

How Do You Evaluate All of That??

ASTM Standard E3038



Defines who is qualified based on clear criteria

ASTM Standard E 3038

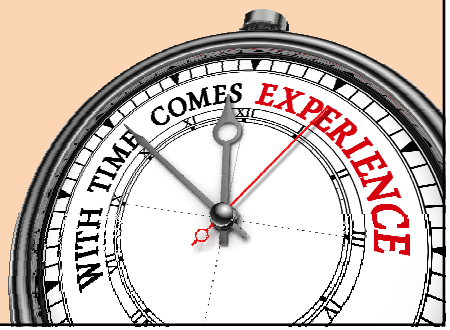
Pre-requisite experience

In *firestop*…

…inspection – 2 yrs

…engineering – 2 yrs

…installation – 4 yrs



Geo/Tech is Not…

≠

Concrete Testing is Not…

≠

Weld Inspection is Not…



≠

ASTM Standard E 3808

Qualifications

Standardized firestop industry training and examinations

IFC Certificate Holder

Underwriters Laboratories Qualified Firestop Contractor Program

Designated Responsible Individual (DRI)

FM APPROVED FIRESTOP CONTRACTOR FM STANDARD 4991

ASTM Standard E 3038

Training

Training cards ≠ certification!

IFC requires 8 hours + exam

IFC

VERICON UNIVERSITY PEOPLE. PROPERTY. PROTECTED

HILTI

3M STI

RECTORSEAL

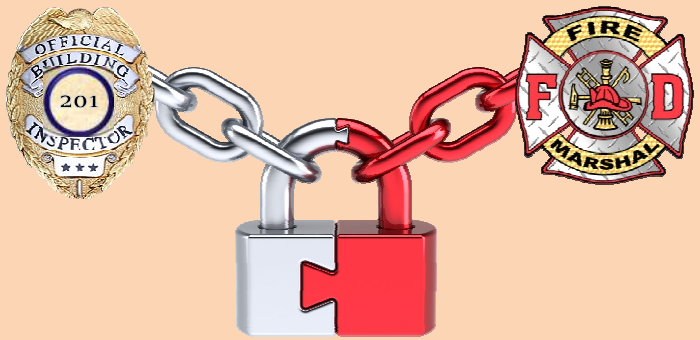
ASTM Standard E 3038

Conflict of Interest Affidavit

Divested from & not a competitor of the:

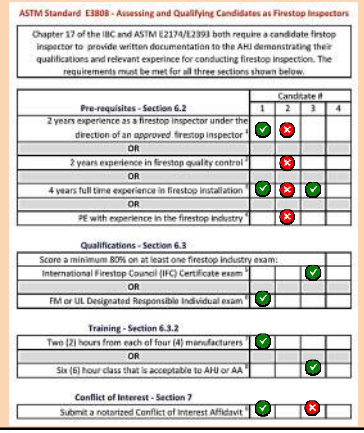
Installer
Contractor
Distributor of products
Manufacturer of products

Manufacturer reps CANNOT inspect!



Who are you going to allow to be an extension of you??

Checklist & Commentary & Questionnaire

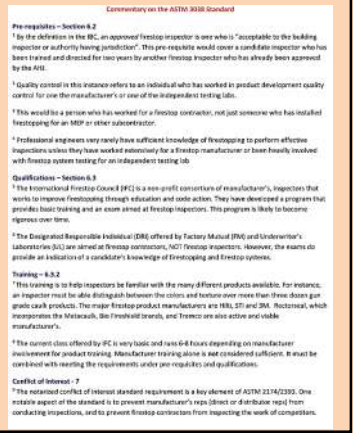


ASTM Standard E3808 - Assessing and Qualifying Candidates as Firestop Inspectors

Chapter 17 of the IBC and ASTM E2174/E2393 both require a candidate firstop inspector to provide written documentation to the AHJ demonstrating their qualifications and relevant experience for conducting firestop inspection. The requirements must be met for all three sections shown below.

	Candidate #			
Pre-requisites - Section 6.2	1	2	3	4
2 years experience as a firestop inspector under the direction of an *approved* firestop inspector [1]	✓	✗		
OR				
2 years experience in firestop quality control [2]		✗		
OR				
4 years full time experience in firestop installation [3]	✓	✗	✓	
OR				
PE with experience in the firestop industry [4]		✗		
Qualifications - Section 6.3				
Score a minimum 80% on at least one firestop industry exam:				
International Firestop Council (IFC) Certificate exam [5]			✓	
OR				
FM or UL Designated Responsible Individual exam [6]	✓			
Training - Section 6.3.2				
Two (2) hours from each of four (4) manufacturers [7]	✓			
OR				
Six (6) hour class that is acceptable to AHJ or AA [8]			✓	
Conflict of Interest - Section 7				
Submit a notarized Conflict of Interest Affidavit [9]	✓		✗	

Check box on sign-in sheet to have this emailed to you



Commentary on the ASTM 3038 Standard

Pre-requisites – Section 6.2

[1] By the definition in the IBC, an approved firestop inspector is one who is "acceptable to the building inspector or authority having jurisdiction". This pre-requisite would cover a candidate inspector who has been trained and directed for two years by another firestop inspector who has already been approved by the AHJ.

[2] Quality control in this instance refers to an individual who has worked in product development quality control for one the manufacturer's or one of the independent testing labs.

[3] This would be a person who has worked for a firestop contractor, not just someone who has installed firestopping for an MEP or other subcontractor.

[4] Professional engineers very rarely have sufficient knowledge of firestopping to perform effective inspections unless they have worked extensively for a firestop manufacturer or been heavily involved with firestop system testing for an independent testing lab

Qualifications – Section 6.3

[5] The International Firestop Council (IFC) is a non-profit consortium of manufacturer's, inspectors that works to improve firestopping through education and code action. They have developed a program that provides basic training and an exam aimed at firestop inspectors. This program is likely to become rigorous over time.

[6] The Designated Responsible Individual (DRI) offered by Factory Mutual (FM) and Underwriter's Laboratories (UL) are aimed at firestop contractors, NOT firestop inspectors. However, the exams do provide an indication of a candidate's knowledge of firestopping and firestop systems.

Training – 6.3.2

[7] This training is to help inspectors be familiar with the many different products available. For instance, an inspector must be able distinguish between the colors and texture over more than three dozen gun grade caulk products. The major firestop product manufacturers are Hilti, STI and 3M. Rectorseal, which incorporates the Metacaulk, Bio-Fireshield brands, and Tremco are also active and viable manufacturer's.

[8] The current class offered by IFC is very basic and runs 6-8 hours depending on manufacturer involvement for product training. Manufacturer training alone is not considered sufficient. It must be combined with meeting the requirements under pre-requisites and qualifications.

Conflict of Interest - 7

[9] The notarized conflict of interest standard requirement is a key element of ASTM 2174/2393. One notable aspect of the standard is to prevent manufacturer's reps (direct or distributor reps) from conducting inspections, and to prevent firestop contractors from inspecting the work of competitors.

In accordance with ASTM E2174 - E2393

- Are You Getting Code Required Reports??
- Know & Follow the Inspection Standards?
- Independent – No Conflict of Interest
- AHJ Approved – Beforehand!

Protocol #1 – Installation Observation

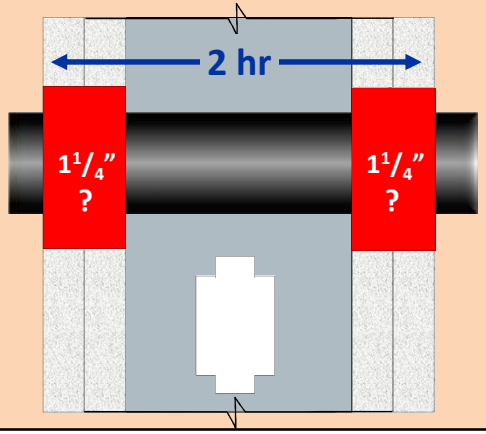
Randomly observe installation of 10% of <u>each type</u> of firestop per 10,000 sq. ft.

...or

POST-INSTALL DESTRUCTIVE TESTING

Why Destructive Testing?

Why Destructive Testing?

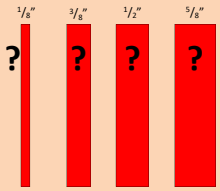


5/8" Gypsum removed

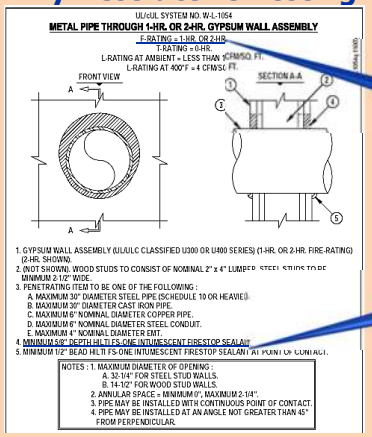
Chemically bound H_20

Replaced with what?

How much?



Why Destructive Testing?



F-Rating
1 or 2 hours

Minimum 5/8" depth

Why Destructive Testing?

How Much Destructive Testing?

Through Penetrations

Minimum 2%, not <1 of each TYPE.

Per floor or per 10,000 sq ft.

One wrong? Do one more…

…up to 10% of total.

What Reports Should You Get?

Chronological order

Within 2 days

% of deficiencies per type

1 page per system

Each Deficiency

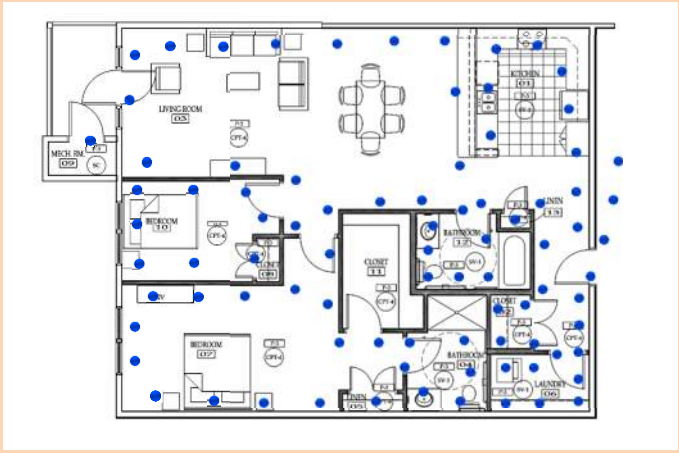
Within 1 day

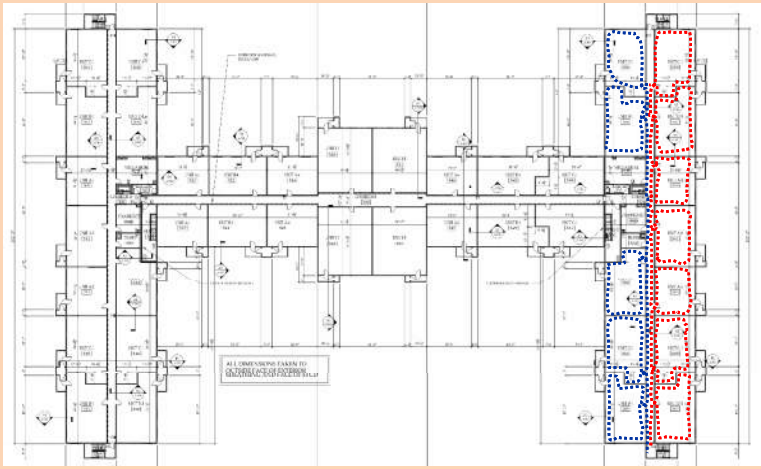
Total as % of all penetrations

Executive Summary

Type & quantity of each

How Long Should Inspections Take?





Four Possible Inspection Phases

Floor penetrations

Head of Wall

Four Possible Inspection Phases

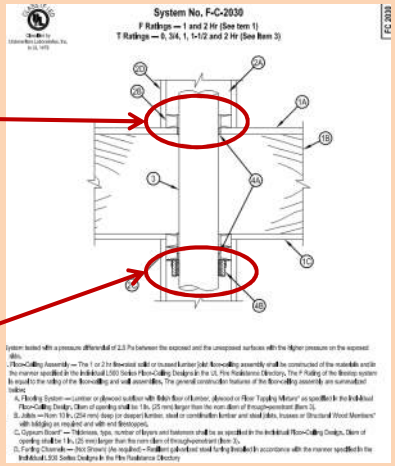
Through penetrations

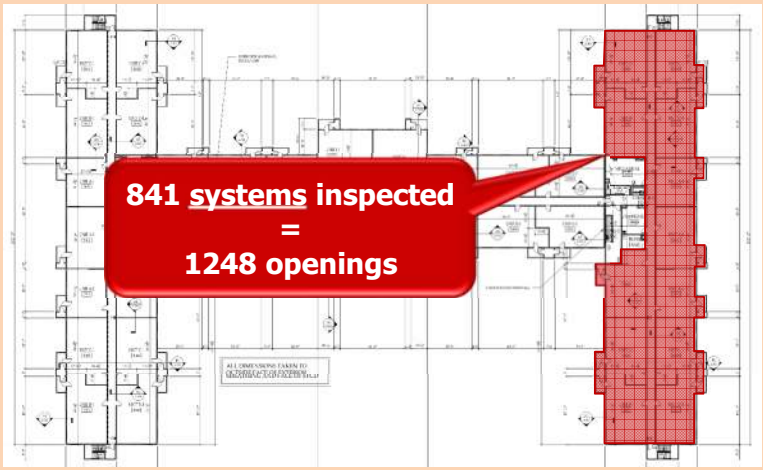
Low Voltage

Daily Summary is Key

System	Total Quantity	# Sampled	% Sampled	# Deficient	% Deficient	# Repaired
FC 2081	129	4	3%	0	0%	
FC 2160	46	2	4%	0	0%	
FC 2270	70	4	6%	0	0%	
FC 2389	56	2	4%	0	0%	
FC 3012	249	10	4%	1	0%	0
FC 3310	226	4	2%	0	0%	
FC 7013	12	4	33%	3	25%	3
WL 2237	73	4	5%	3	4%	3
	861	34	8%	7	14%	6

1248 openings inspected





416 beds - 4 floors

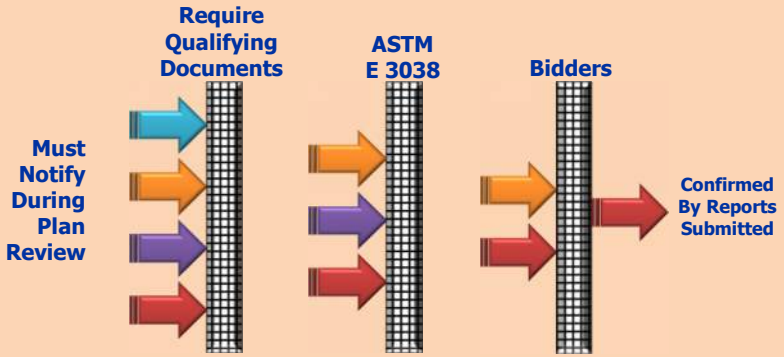
118,700 sq. ft.

12,800 penetrations

10,000 LF joints

28 inspections

3 Stage Approval Process



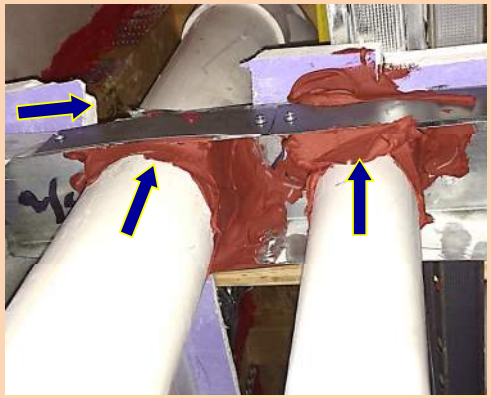
Preventing Bad Inspection

Caulk cannot cover collar

Wrong material

Installed over joint compound

Preventing Bad Inspection



No GWB lid

No collars at all

Wrong material

Preventing Bad Inspection

Seriously???

Preventing Bad Inspection

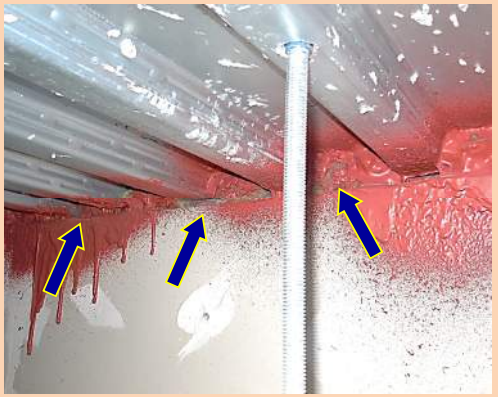
Correct material!

Nothing in annular space

Preventing Bad Inspection

No sealant
IN
The annular space

Preventing Bad Inspection

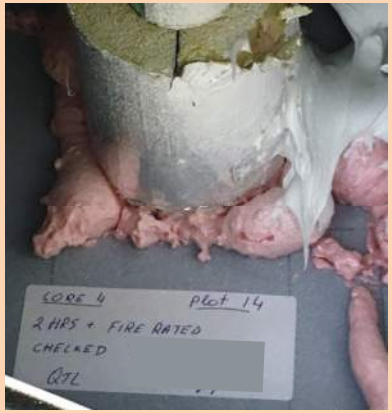


Installer: "It was hard to get to"

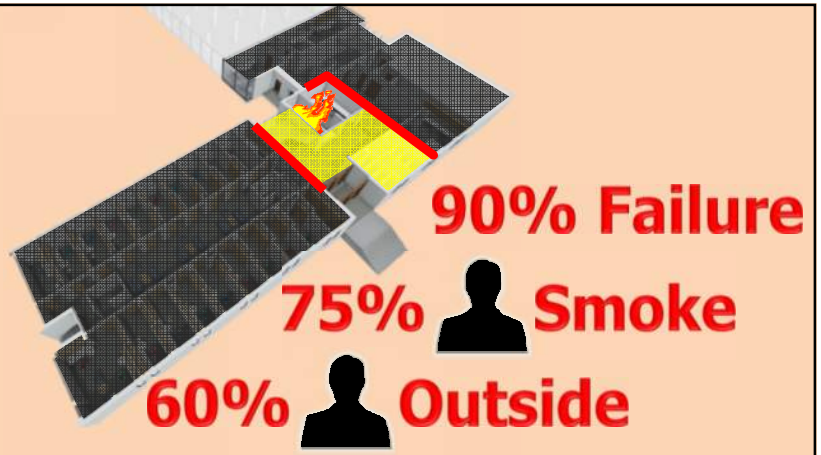
Inspector: "It was hard to get to!"

Preventing Bad Inspection

Preventing Bad Inspection



Preventing Bad Inspection



REVIEW

1. ASTM Standards are Now Code
2. AHJ Must *Approve* the Inspector
3. No One Can Inspect From the Floor!!
4. No One Can Inspect Just Visually!!

Mock Up Review

Wrapping it all up!

8 slides left!

Please complete sign in form

Certificate & CEU Reporting

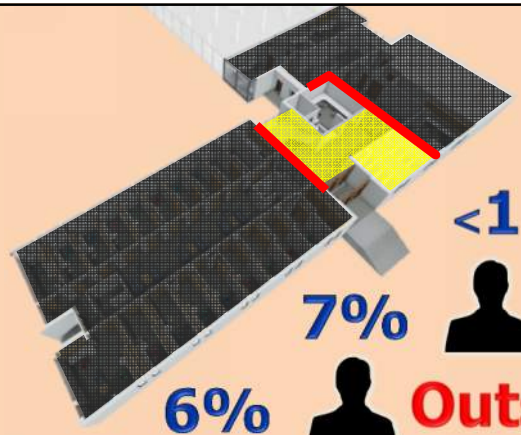
Check boxes for items you want:

✓ASTM 3808 Checklist & Questionnaire

✓Monthly Newsletter

✓ Sample Inspection Reports

Please complete evaluation form

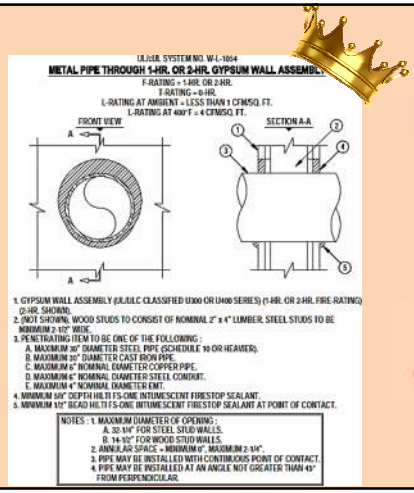


<1% Failure

7% Smoke

6% Outside

People. Property. Protected.



Systems Rule!

Without systems installers are just smearing "red stuff"

No basis for inspection

90% deficient

Need Total Enforcement

Special inspection of firestopping is a culture change, not just a code change

Set the Rope!!
Who Gets In
Who Stays Out

Section 1705.17
Section 1705.2
ASTM 3038

What's Right
What's Wrong

Systems
Systems
Systems
ASTM 2174/2393

If Not Now, When?

If Not You, Who?

Final Questions??

Thank you. Thank you very much!