Firestop Maintenance
Important Note:

• Firestop was installed & inspected in both buildings
• Maintenance could be the main factor
BEFORE

AFTER
Damage of installed Firestop Systems

During the usage of buildings, Installed Firestops can be damaged due to:

- Mechanical or Electrical commissioning defects may be still there
- Wrong or inappropriate usage of different services
- Maintenance of different services in the buildings (repairs, pulling cables, …)
- Shocks can occur at anytime to pipes, busways, ducts, … etc.
- Buildings might have undergone some type of Renovation or Upgrade

→ Damage of installed firestop systems, can happen at any time & due to different reasons.
Firestop damaged due to pulling new cables in the electrical room
Firestop damaged around plumbing due to excess water leakage
Codes Requirements
The Codes Approach:
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]
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]

4.5.8.5 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]
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.
CHAPTER 1-
SECTION 21
FIRE STOPPING

21.15.2 The required fire resistance rating of installed firestop systems shall be **visually inspected by the owner or owner’s inspection agency annually.** Damaged, altered or breached firestop systems shall be properly repaired, restored or replaced to comply with applicable codes as per the guidelines of Civil defense.

21.15.3 Any new **Openings** made therein for the passage of through penetrants, **shall be protected with approved firestop system to comply with applicable codes as per the guidelines of Civil defense.**
Tips for Successful Survey:

1. Ask for The Fire plan of the building that shows the fire zones

2. Ask to walk with someone who knows the building

3. Check electrical / mechanical rooms

4. Check openings above fall ceiling in the corridors (Through Penetrations & Joints)

5. Check Perimeter Fire Barriers

6. Look for & around rated doors

7. Report / discuss the problems you saw

8. Refer to ASTM E 2174 & ASTM E 2393 for guidance
When Surveying:

The way you think it is:

The way you might find it
Hint:

To Facilitate the inspection

- All systems should be labeled
- Labels should include the Listing Number or the EJ Number
...What about existing old buildings...
...What about existing old buildings...

OR
Existing Buildings in the Codes:

- **IEBC:** “International Existing Building Code”
- **NFPA 914:** ”Code for Fire Protection of Historic Structures”

Due to the importance of protecting the existing buildings, NFPA & ICC have developed specialized new codes.
9 Steps to follow:

1. Conduct premises' Survey (if Fire plan is not available)
2. Identify the level of PFP required based on building type (Code)
3. Coordinate (Owner, Facility Manager & Tenants)
4. Design
5. Install
6. Label
7. Inspect
8. Hand Over
9. Maintain
Case Study (Dubai):

Assume that:

- Firestop regulations started being properly enforced in Dubai since early 2000’s

- All Firestop systems installed in the buildings since 2000 till to date are properly & accurately installed
Case Study (Dubai):

Best Case Scenario:

→ A minimum of 10,000 buildings still need firestopping only in Dubai
### Buildings by Type and Location (U/R) - Emirate of Dubai


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<tbody>
<tr>
<td>Residential (1 to 2 levels)*</td>
<td>5,868</td>
<td>4,120</td>
<td>4,136</td>
<td>1,423</td>
<td>820</td>
<td>783</td>
<td>4,445</td>
<td>3,300</td>
<td>3,353</td>
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<tr>
<td>Residential (over 2 levels)</td>
<td>4,236</td>
<td>2,880</td>
<td>2,483</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4,235</td>
<td>2,878</td>
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<tr>
<td>Villa</td>
<td>22,979</td>
<td>17,719</td>
<td>15,655</td>
<td>729</td>
<td>507</td>
<td>392</td>
<td>22,250</td>
<td>17,212</td>
<td>15,263</td>
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<tr>
<td>Arabic house</td>
<td>9,253</td>
<td>13,776</td>
<td>10,404</td>
<td>206</td>
<td>688</td>
<td>439</td>
<td>9,047</td>
<td>13,088</td>
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<td>Popular house</td>
<td>3,592</td>
<td>3,784</td>
<td>4,091</td>
<td>987</td>
<td>1,129</td>
<td>905</td>
<td>2,605</td>
<td>2,655</td>
<td>3,186</td>
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<td>Shed</td>
<td>756</td>
<td>725</td>
<td>1,908</td>
<td>7</td>
<td>12</td>
<td>4</td>
<td>749</td>
<td>713</td>
<td>1,904</td>
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<td>Sandaka</td>
<td>1,262</td>
<td>1,746</td>
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<td>122</td>
<td>177</td>
<td>274</td>
<td>1,140</td>
<td>1,569</td>
<td>2,752</td>
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<tr>
<td>Caravan</td>
<td>291</td>
<td>263</td>
<td>766</td>
<td>91</td>
<td>38</td>
<td>34</td>
<td>200</td>
<td>225</td>
<td>732</td>
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<td>Est. buildings</td>
<td>7,370</td>
<td>7,010</td>
<td>5,240</td>
<td>299</td>
<td>462</td>
<td>371</td>
<td>7,071</td>
<td>6,548</td>
<td>4,869</td>
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<tr>
<td>Other buildings**</td>
<td>52</td>
<td>128</td>
<td>710</td>
<td>10</td>
<td>54</td>
<td>63</td>
<td>42</td>
<td>74</td>
<td>647</td>
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<tr>
<td>**Total</td>
<td>55,659</td>
<td>52,151</td>
<td>48,419</td>
<td>3,875</td>
<td>3,889</td>
<td>3,266</td>
<td>51,784</td>
<td>48,262</td>
<td>45,153</td>
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</tbody>
</table>

* Includes residential (room/ rooms)

** Includes (tents - hut... etc)

Ministry of Planning 1995

Ref. Statistics Center – Dubai 2011
Case Study (Dubai):

Best Case Scenario:

➔ A minimum of 10,000 buildings still need firestopping only in Dubai

➔ How Many Lives are still in Danger…?
Questions & Open Discussion
Thank You