MFL Walls – What are they and why are they important?

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Agenda

- Introduction to FM Global & FM Approvals
  - FM Approval Guide
- What is an MFL?
- MFL Limiting Factors
  - Space Separation and Fire Walls
- Protection of Openings and Penetrations
  - FM Global Data Sheet 1-22
FM Global

- A commercial and industrial insurance company with a different focus and message
- Believe that the majority of losses are preventable through engineering
- Research based engineering
- Mutual company focus
- $435 million membership credit to our clients in 2017
  - Fifth straight year
  - 10th year since 2001
FM Approvals

- Third party certification and testing organization (owned by FM Global)
- Focused solely on Approving products and services that promote Property Loss Prevention
- Conduct follow-up surveillance audits
- Publish online FM Approval Guide and RoofNav
- Write FM Approval Standards based on research
  - FM 4990 Firestopping (December 2009)
  - FM 4991 Firestop Contractors (October 2013)
## FM Approved Contractors

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FM Approval Guide

www.approvalguide.com
What is an MFL?

- Maximum Foreseeable Loss (MFL)
- The largest loss that may be expected from a single fire (or other insured peril) to any given property taking into consideration the impairment of the active fire protection systems.
- The impairment of the fire protection system indicates that control of the fire/peril is solely dependent on physical barriers (passive protection).
MFL Limiting Factors

- Space Separation
- MFL Fire Walls
Space Separation

- The distance required to prevent a fire from jumping from one area to the next.

- How do we figure this out?
  - Construction
  - Occupancy
  - Exposure
  - Distance
  - Space
Space Separation
Space Separation
MFL Fire Walls

- Must be designed by a registered structural or civil engineer
- Must have a 4 hour fire resistance rating
- Structural stability
- Not bearing walls – no gravity loads
- Other factors – earthquake zone, hurricane prone region, explosion hazards
MFL Fire Walls
MFL Fire Walls

Source: http://www.johnivison.com/design-and-construction-of-firewalls/
MFL Fire Walls - Materials

- Concrete Masonry Units (CMU) aka concrete block
- Tilt Up Concrete
- Precast Concrete
MFL Fire Walls - Materials

- Use only assemblies or materials listed by a nationally recognized testing laboratory that provide the needed fire resistance.
- Wall must resist heat, impact, hose streams and expansion forces.
- Masonry, brick, and concrete are the preferred materials for MFL walls.
- Gypsum board walls should be discouraged since they are subject to damage from impact or prolonged hose streams during an MFL fire.
MFL Fire Walls – Structural Stability
MFL Fire Walls – Structural Stability

- Cantilever Walls – entirely self-supporting
- Tied Walls – laterally supported by the steel building frames on each side, which are tied together through the wall. The frames must be of sufficient strength so the force of collapsing steel on the fire-exposed side is resisted by the steel framing on the cold side.
- Double Walls – consist of two one-way walls back to back, with no connections between the two.
- One-way Walls – laterally tied to steel framing members on one side only
MFL Fire Walls – Roof Cover / Parapet

50 ft gravel surface, each side

2-1/2 ft parapet
MFL Fire Walls – End Walls

X distance depends on building height and comes from DS1-22 Table 2
Protection of Openings

FM Approved
Fire Doors
Protection of Penetrations

- Ideal world – no penetrations through MFL Fire Wall.
- Real world – ?
- FM Global Data Sheet 1-22
  - Outlines all requirements for MFL
  - Free
  - Download at www.fmglobaldatasheets.com
  - Section 2.2.2.11 Pipes, Conduit, Cables, and Ducts Penetrations
Example Recommendations:

- Position pipes, conduit, and cables (regardless of size) penetrating MFL fire walls to pass through the wall as close as practical to, but no more than 3 ft (1.0 m) above, the finished ground floor level. Provide a steel sleeve with a 1 in. (25 mm) annular clearance around the pipe or conduit, to be filled with an FM Approved fire stop assembly with a minimum 3-hour fire rating.
- Provide 3-hour rated fire doors or dampers in the section of duct that penetrates the wall and securely fasten it to the wall at the opening.
- Provide two dampers for a double wall (one damper in each wall) with a slip joint between the walls. Install access panels nearby.

Note: These are not comprehensive recommendations. See Data Sheet 1-22 for recommendations.
Section 2.2.2.11.1 – Where penetrations by pipes, conduit, cables, and or ducts, spaces are created for expansion or other joints in the building at top, bottom or in MFL Walls, provide through or membrane penetration or joint firestop materials that when installed to the tested and listed system, become firestop systems that conform to FM 4990, Approval Standard for Firestopping, or equivalent tested assembly.

Where MFL walls have been penetrated by pipes, conduit, cables, and or ducts, or spaces are created for expansion or other joints in the building at top, bottom or in MFL walls, firestop materials should be installed by an **FM 4991 Approved Firestop Contractor**.
MFL Walls – Why are they important?

- Safer for occupants, employees and responders
- Because we want our insureds to stay in business
  - Smaller insurance claims -> lower premiums
  - Reduced operational downtime
  - Eliminate loss of market share
Thank you.

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