Fire and Smoke Barriers in NFPA 101

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Active vs Passive Fire Protection
Fire Barrier Construction
Opening Protectives
Penetrations
Fire Barrier Examples
Smoke Barriers
Smoke Partitions
Fire Protection Schemes

VS.
Passive Fire Protection

- Structural Fire Protection and Fire Rated Construction
- Compartmentation and subdivision of building spaces
- Fire and smoke barriers/partitions
- Opening protectives
  - Fire/smoke doors
  - Dampers
  - Fire windows
- Penetration protection
  - Firestopping
Codes and Standards
Fire Compartment
Fire Barriers – Horizontal Continuity

- Fire barrier to fire barrier
- Shaft enclosure
- Horizontal exit or smoke barrier
- Exit enclosure
- Corridor enclosure
- Outside wall to outside wall
- Outside wall to Fire barrier
- Around hazardous area
Fire Barrier

Floor/ceiling or roof/ceiling assembly

Ceiling by itself

1-hr Fire Barriers
Fire Barriers – Vertical Continuity
Fire Barriers – Vertical Continuity
Fire Barrier Classification

- Exit enclosure
- Exit access corridor
- Hazardous area
- Shaft

2-hour enclosure
1-hour enclosure
Fire Doors and Windows
NFPA 80

- Installation
- Door Operation
- Clearances
- Hardware
- Glazing
- Inspection, Testing, Maintenance
- Repairs and Modifications
- Doors, Windows, Fire Dampers, Fabric Fire Safety Curtains
Fire Rated Glazing

FireLite PLUS

16 CFR 1201 CAT. II
ANSI Z97.1-2004 U A
8mm LAMINATED

D-H-45
OH-45

6259
R-13377
ANSI/UL9/10B/10C
# 101: Glazing in Fire Doors - Labeling

## Table 8.3.3.12 Marking Fire-Rated Glazing Assemblies

<table>
<thead>
<tr>
<th>Fire Test Standard</th>
<th>Marking</th>
<th>Definition of Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM E119, or ANSI/UL 263&lt;sup&gt;a&lt;/sup&gt; NFPA 257</td>
<td>W</td>
<td>Meets wall assembly criteria</td>
</tr>
<tr>
<td></td>
<td>OH</td>
<td>Meets fire window assembly criteria, including the hose stream test</td>
</tr>
<tr>
<td>NFPA 252</td>
<td>D</td>
<td>Meets fire door assembly criteria</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>Meets fire door assembly hose stream test</td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>Meets 450° F (232° C) temperature rise criteria for 30 minutes</td>
</tr>
<tr>
<td></td>
<td>XXX</td>
<td>The time, in minutes, of fire resistance or fire protection rating of the glazing assembly</td>
</tr>
</tbody>
</table>

Fire Protection-Rated Door
Self-Closing
NFPA 101: Tables 8.3.3.12 & 8.3.4.2

- Table 8.3.3.12 applies to NEW only
- Much of 8.3.4.2 applies to NEW only also
- Minimum fire-protection rating based on fire-resistance rating of component
- Glazing and vision panel size
- Label requirements
Penetrations in Fire Barriers
Penetrations in Fire Barriers
Penetrations – Don’t
Penetration Testing Criteria

- ASTM E 814, Standard Test Method for Fire Tests of Through Penetration Fire Stops
- ANSI/UL 1479, Standard for Fire Tests of Through-Penetration Firestops
Penetrations, cont’d

- Transitions
- Membrane Penetrations
- Joints (not a penetration but addressed in fire barrier section)
HVAC Opening Protectives
HVAC - Do

Diagram showing air grilles, nonrated partitions, air transfer openings, and fire dampers (FD).
HVAC – Don’t
Fire Barriers - Summary

- Fire damper
- Vision panel
- Ceiling
- Sealed
- Fire resistance rated
- Limit use of windows
- Fire protection rated door with closer
Fire Barriers, Where? Exit Enclosure
Horizontal Exits

- 1 1/2-hr doors
- 2-hr wall
- Protection required for new (need not exceed 1-hr)
Exit Passageways in Mall
Vertical Openings
Vertical Openings
2-Story Openings
Protection of Hazardous Areas – 1-hr Fire Barrier

1-hour

45-minute, self or automatic-closing

1-hour
New Hazardous Area Protection with Sprinkler Protection
Smoke Barrier
Smoke Barrier Details

- Continuity
- Fire barrier used as a smoke barrier
- Opening protectives
- Smoke dampers, access and identification
- Penetrations
Smoke Barrier

- Air-handling duct
- Seal
- Closer
- Detector
- Damper
- Automatic release
- Smoke barrier
Smoke Partition
Smoke Partition Details

- Continuity
- Opening Protectives (less restrictive than fire barriers)
- Penetrations (no firestop systems required)
- Joints
- Air transfer openings (smoke dampers required)
Thank you.

Questions?