

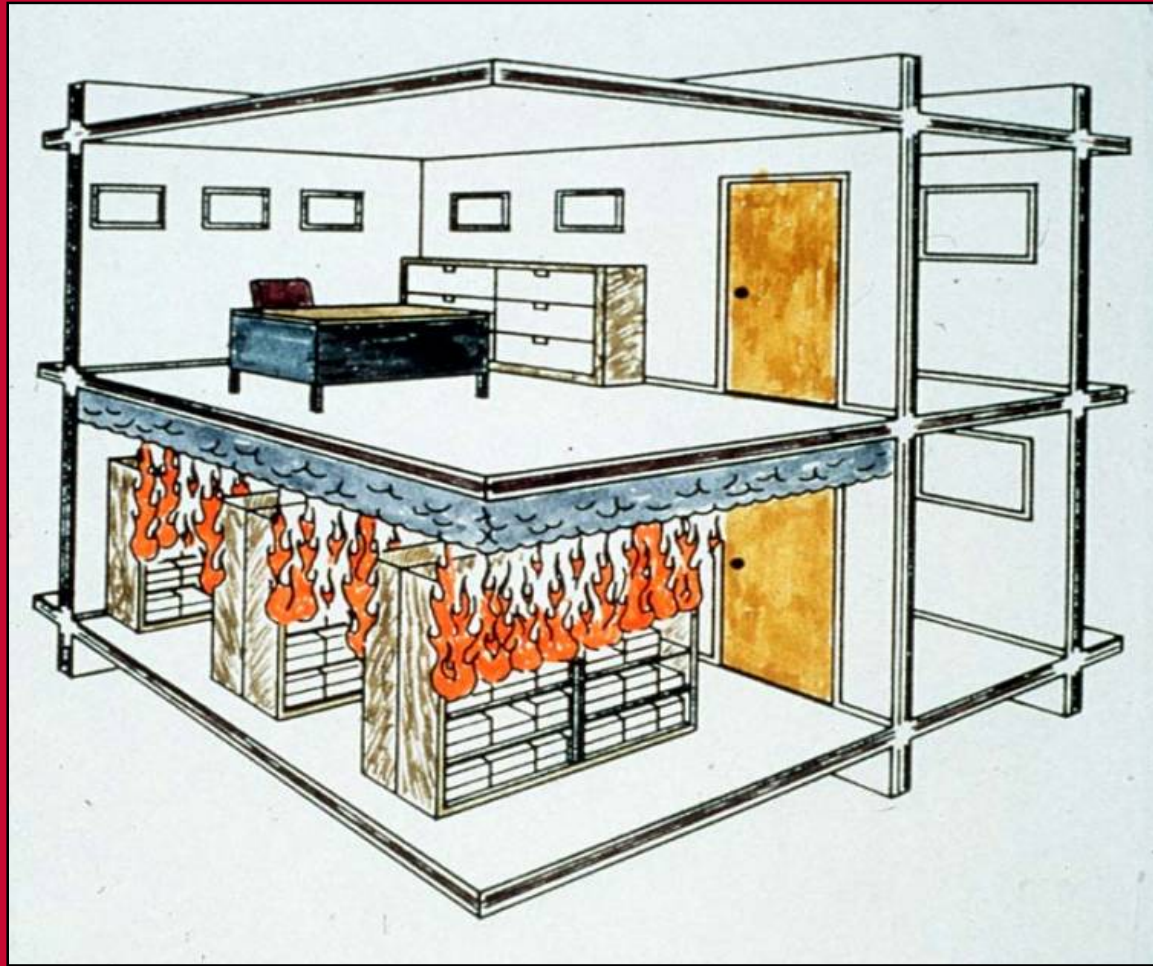
Testing of Fire Resistance and Smoke Resistant Assemblies



Rich Walke

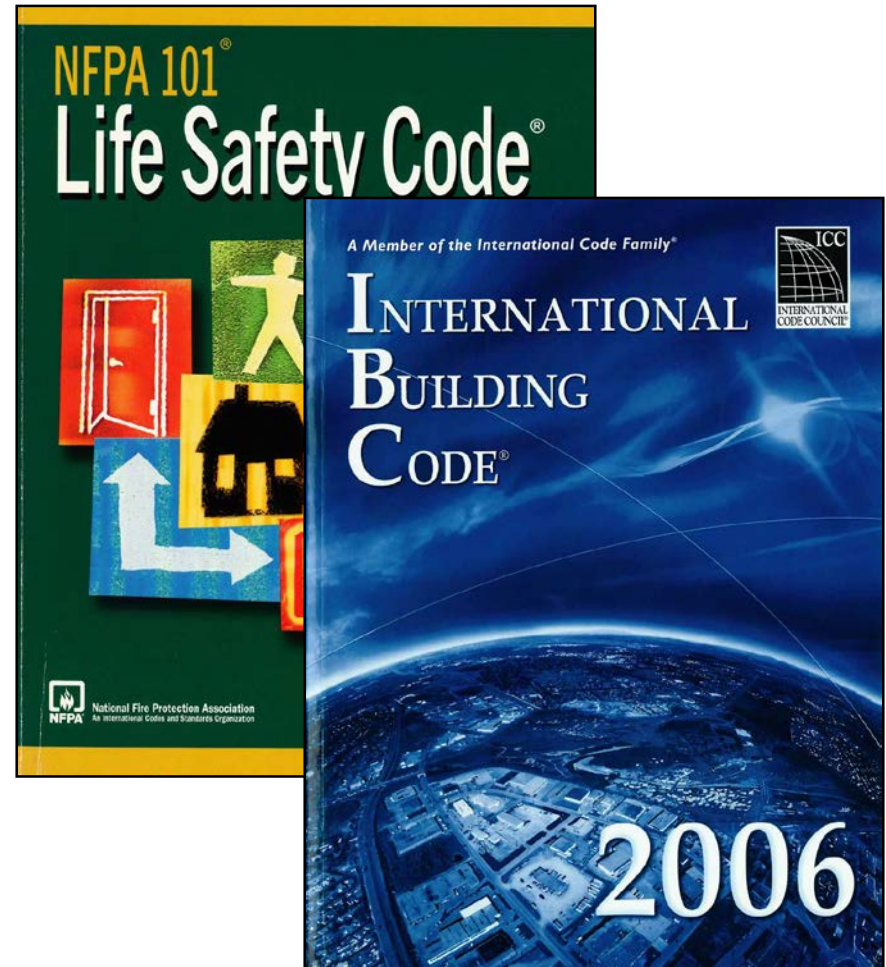
UL Codes and Advisory Services

Fire-Resistance-Rated Construction



Fire-Resistance-Rated Construction

Code
Requirements
for
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



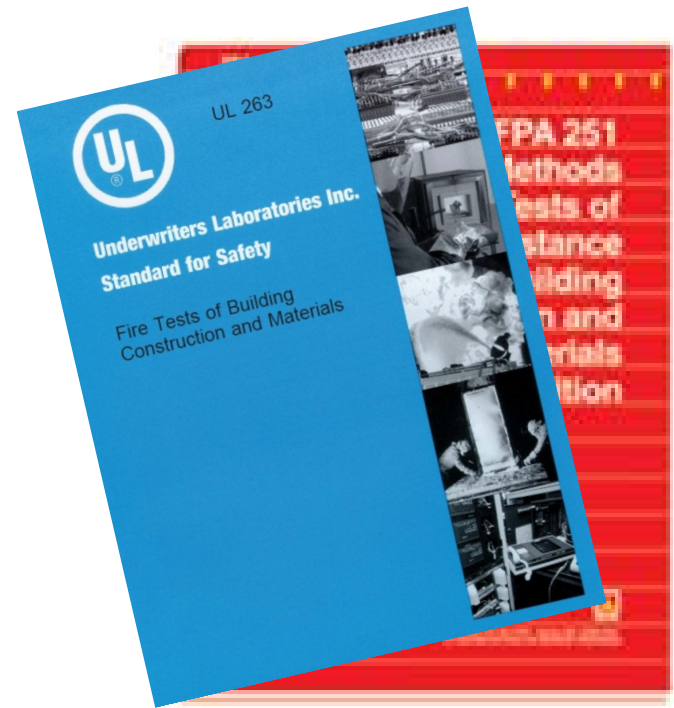
Fire-Resistance-Rated Construction

Establishing
Fire-Resistance
Ratings



Standards

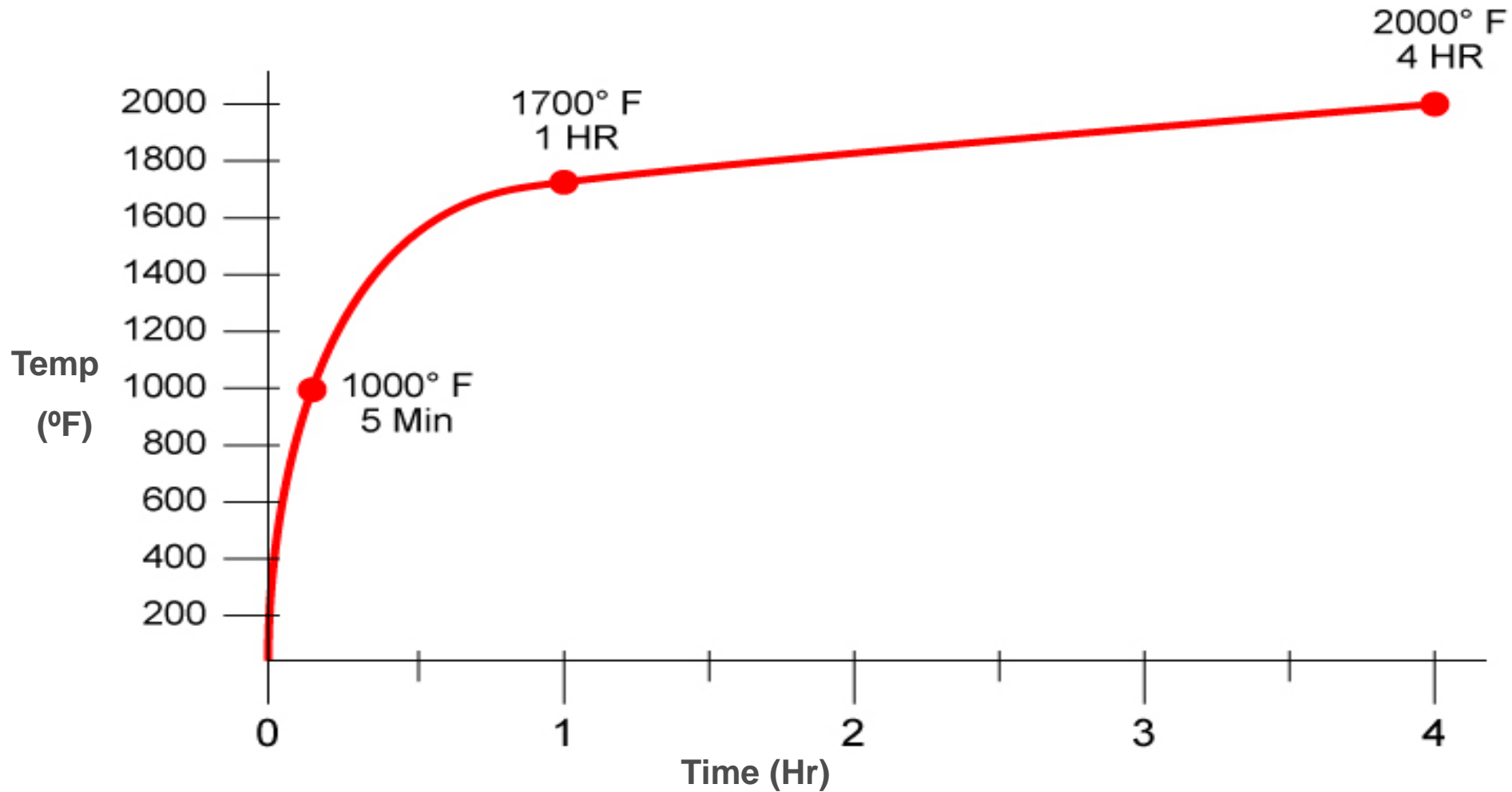
- ANSI/UL 263
- ASTM E119
- NFPA 251 (Withdrawn)



Building Components

- Columns
- Beams
- Floor/Ceilings or Roof/Ceilings
- Walls

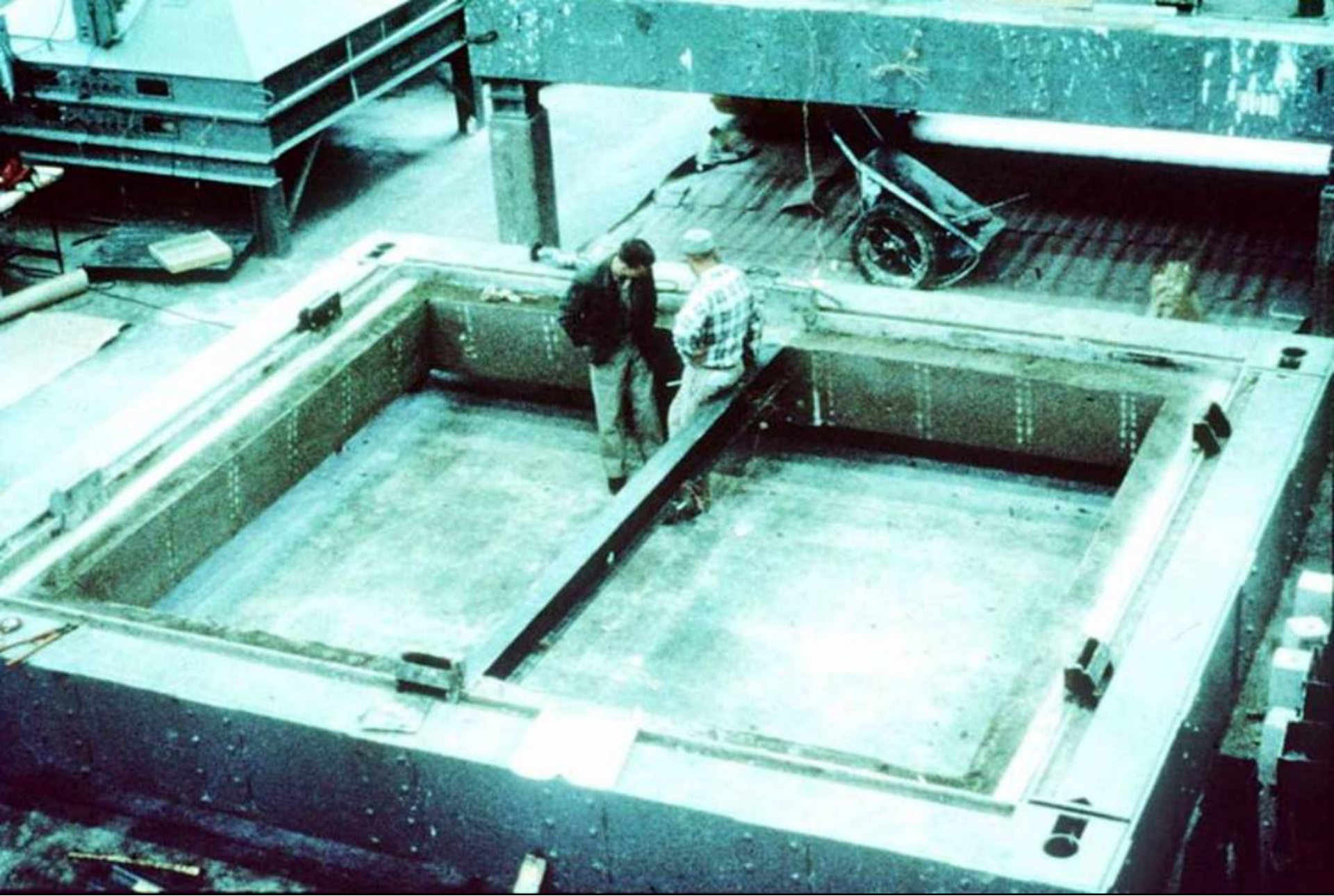
Time - Temperature Curve

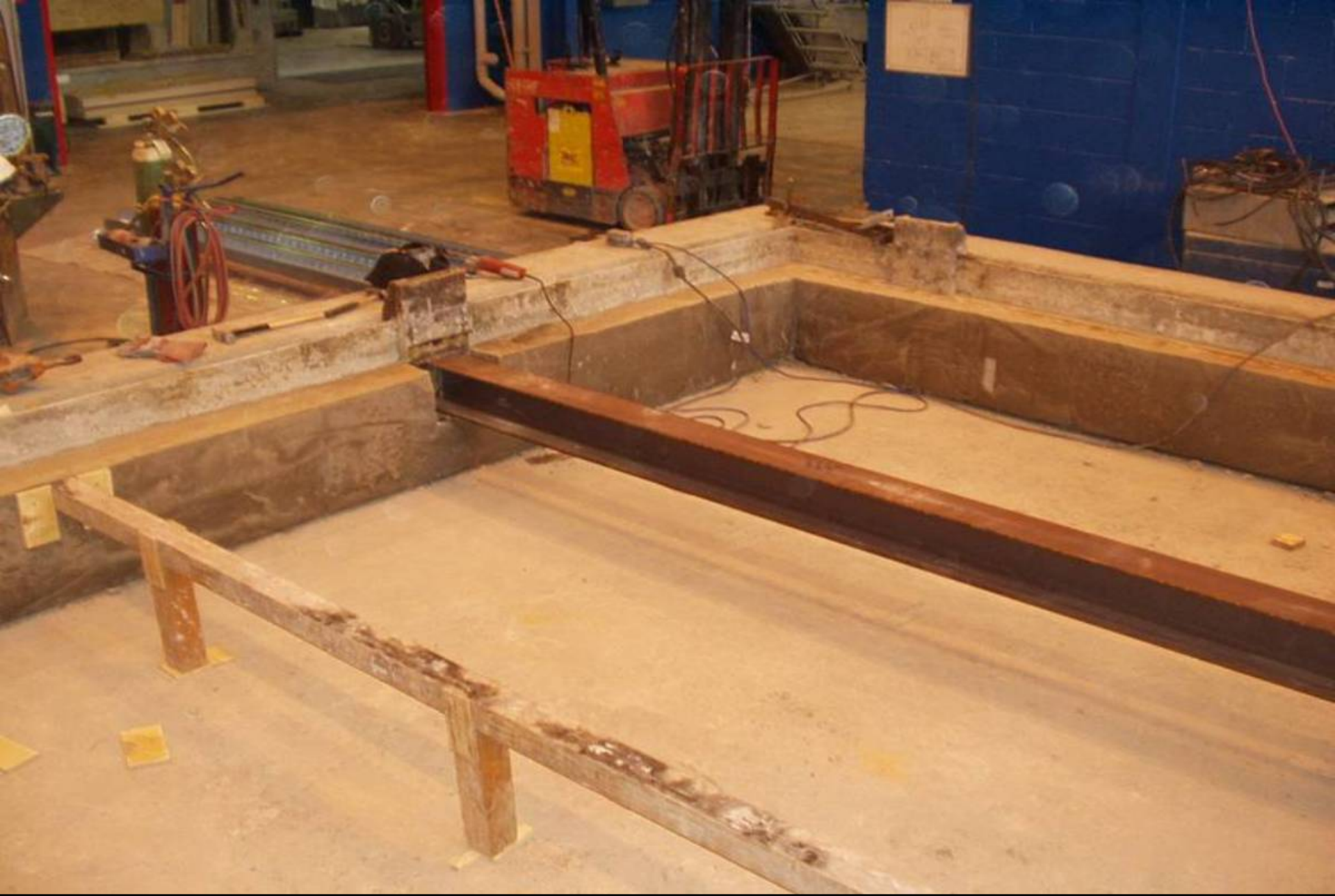


Floor/Ceiling or Roof/Ceilings

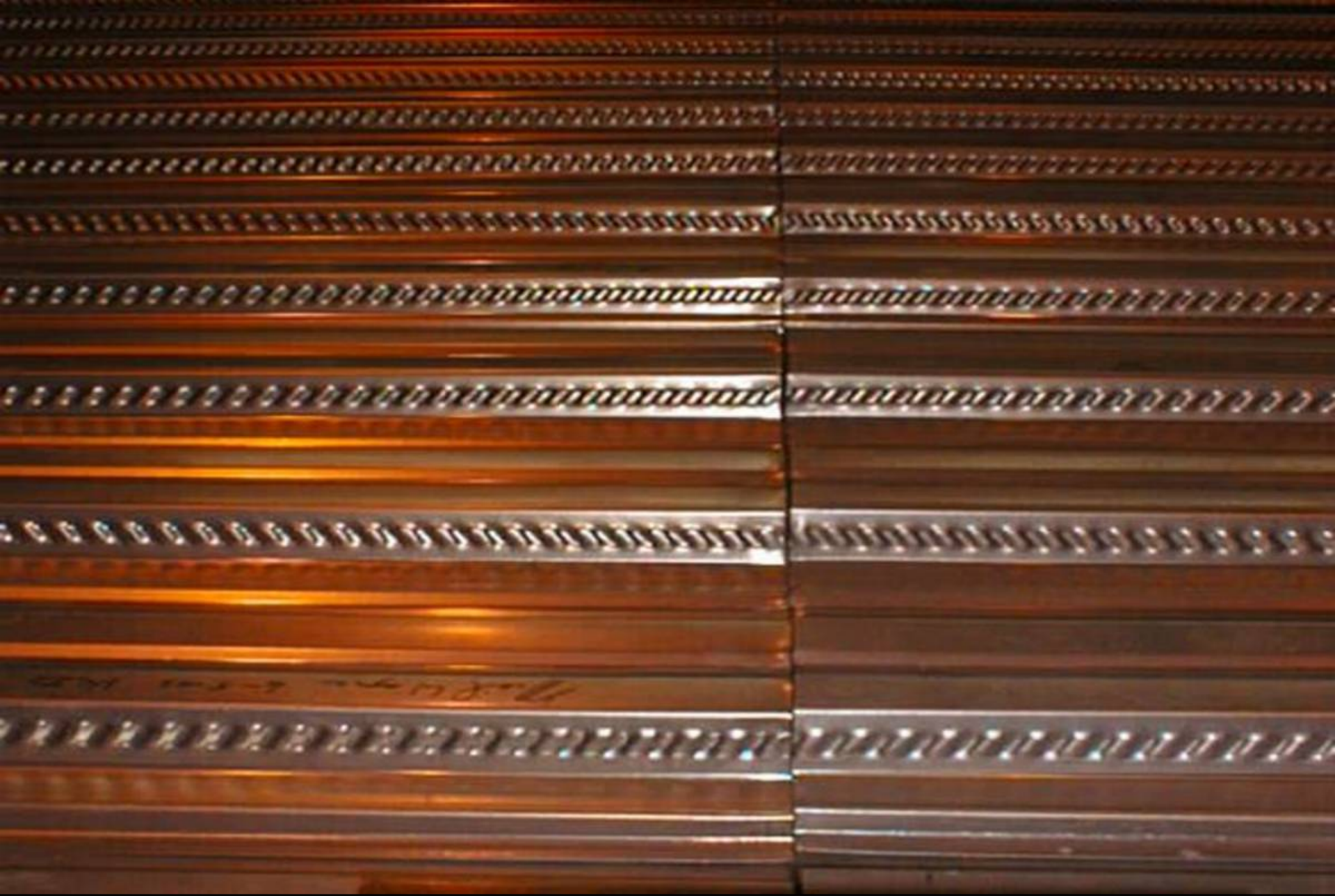
- Sample size – 180 sq ft / 12 ft
- Load applied – Per design

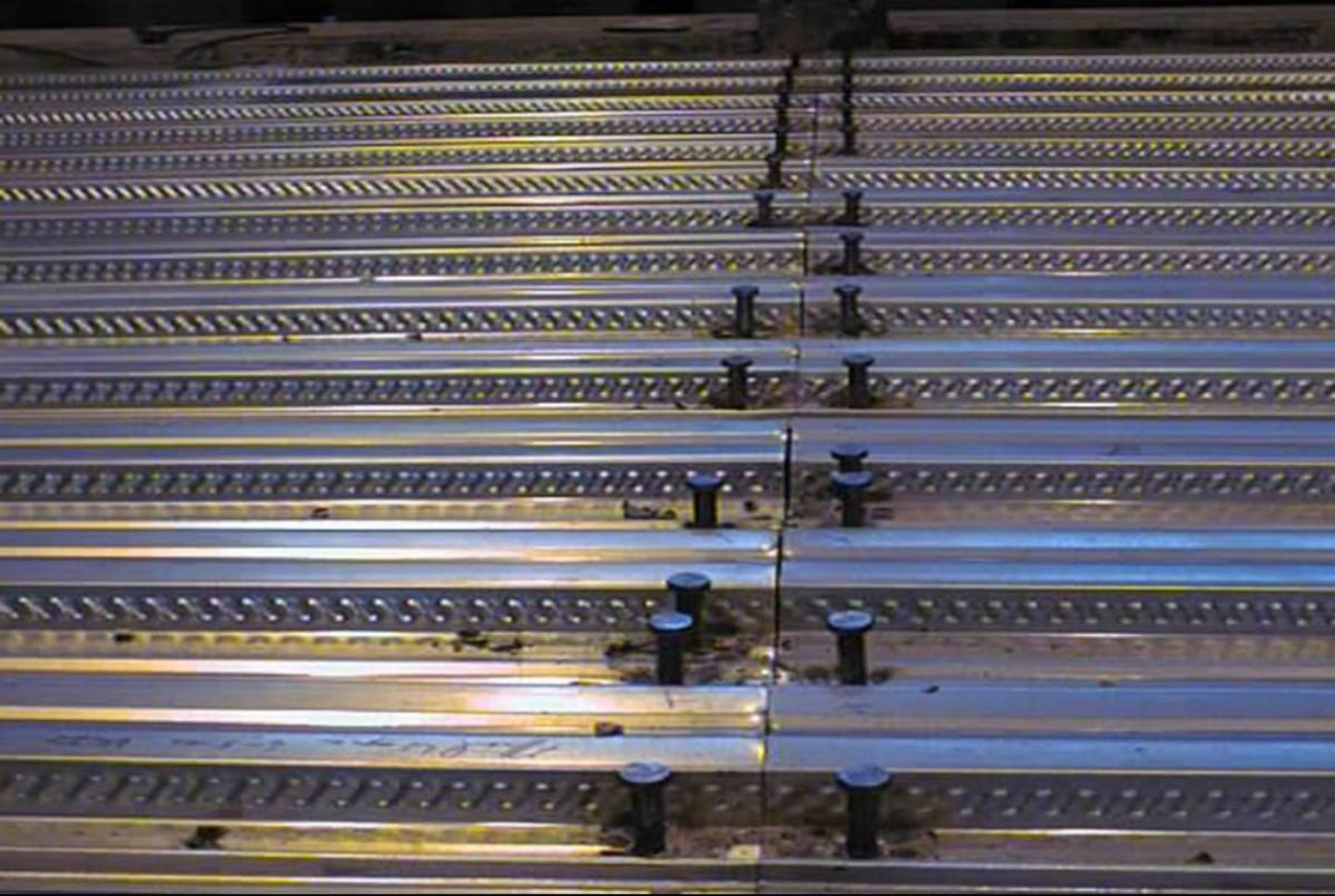
























Conditions of Acceptance Floor/Ceilings or Roof/Ceilings

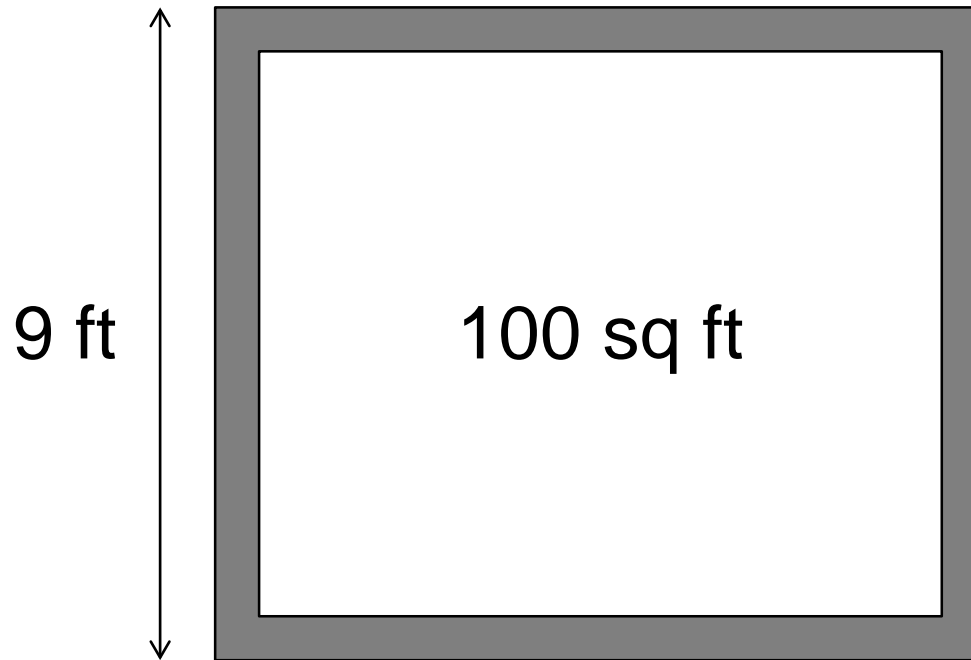
- Support load
- Flame passage
- 250°F / 325°F
- Support temperatures

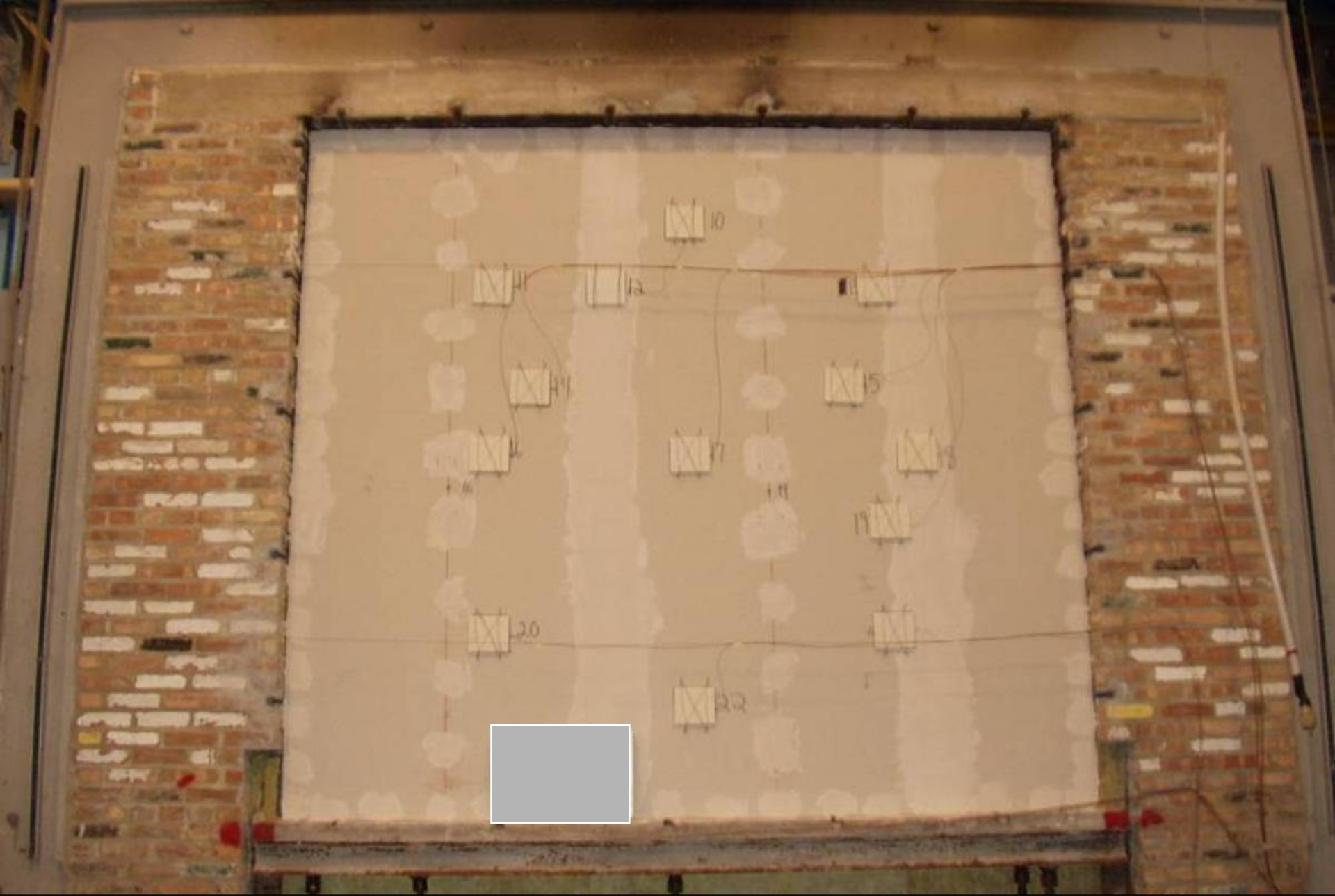


Video

Walls

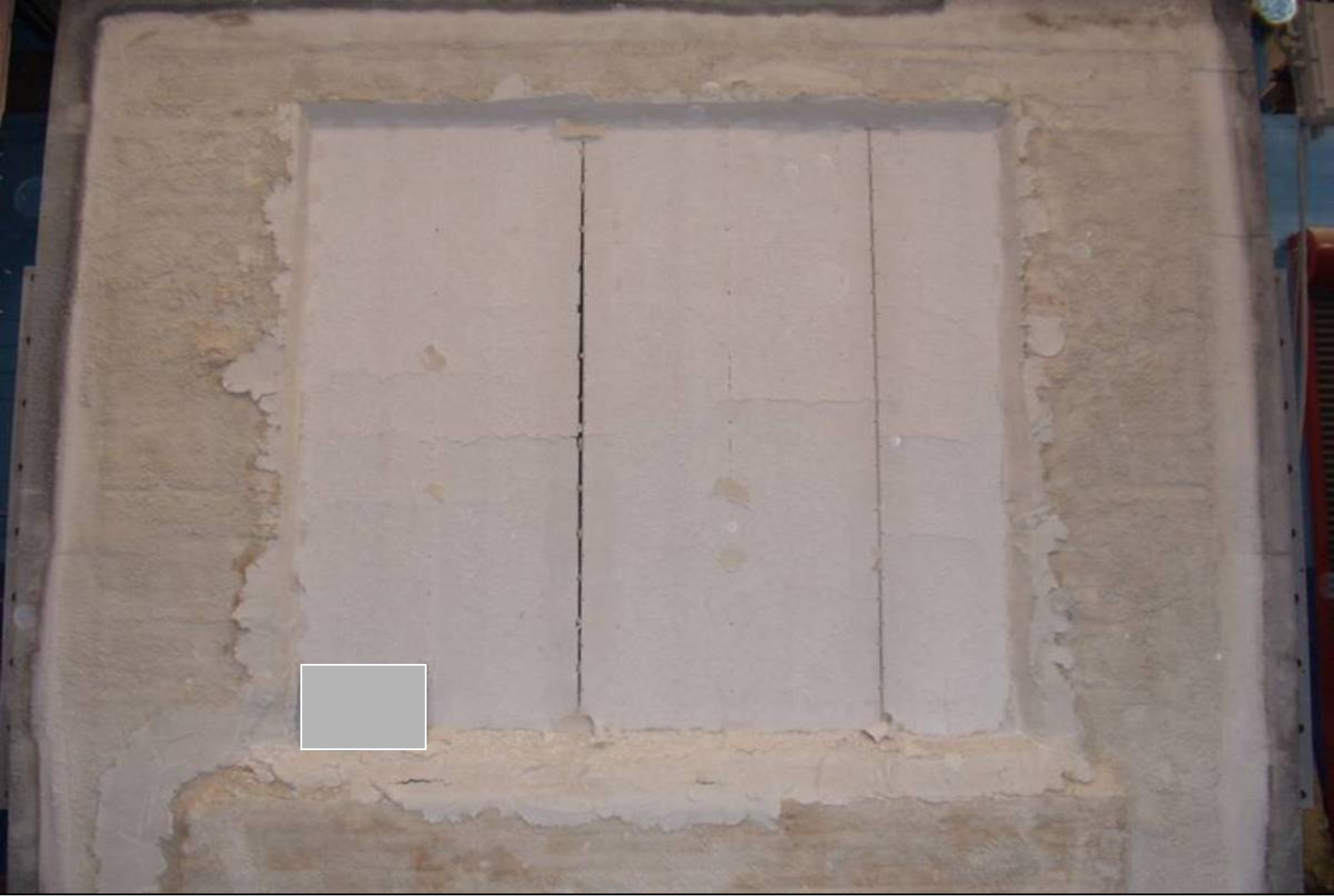
- Sample size - 100 sq ft / 9 ft
- Load applied - Per design

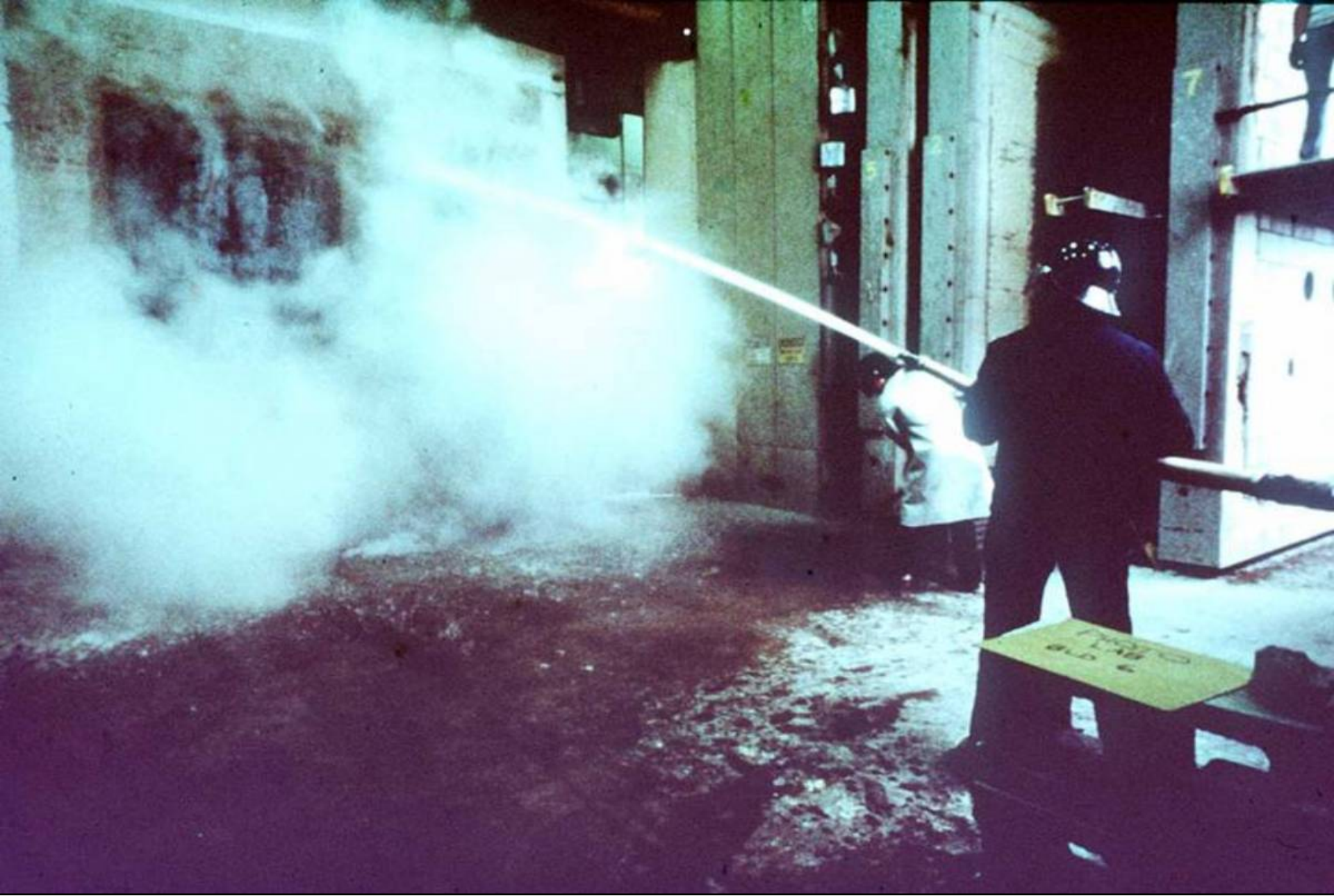












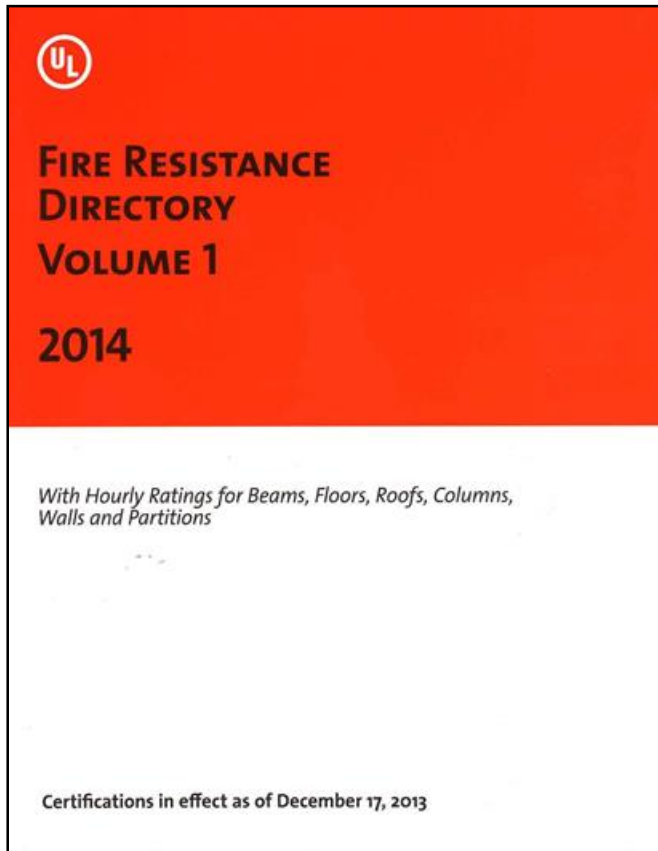


Conditions of Acceptance – Walls

- Flame passage
- 250°F / 325°F
- Support load
- Hose stream

Where are the Listings Found?

Hard Copy



Online

UL ONLINE CERTIFICATIONS DIRECTORY

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To begin a search, please enter one or more search criteria in the parameters below.

Company Name

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U.S. Zip Code

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Region

Postal Code (non-USA)

UL Category Code

UL File Number (EICC)

Keyword

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ABOUT THE OGD

You can use the UL Online Certification Directory to:

- Verify a UL Listing or Classification
- Verify a UL Listed product use
- Verify a product safety standard

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SPECIFIC SEARCHES

Fire Resistant Assemblies and Systems

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[Introduction: UL Recognized Components](#)
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FEATURED LINKS

UL

UL PRODUCT SPEC™ Quickly find, specify, or verify UL Certified products for your projects.

1. HOW DO YOU WANT TO SEARCH? **2. RESULTS**

- > Installation Code
- > Product Type
- > Products, Systems or Assemblies
- > UL Product Category Code
- > Master Format Number



Questions / Comments



Breaches in Fire-Resistance-Rated Construction

- Penetrations
- Joint Systems
- Opening Protectives
- Ducts and Air Transfer Openings

Breaches in Fire-Resistance-Rated Construction Cont.

Do breaches really impact the performance of a fire-resistance-rated assembly?

Absolutely!!!

MGM Grand Las Vegas, NV – 1980

- Fire confined to 1st floor
- 679 injured, 85 fatalities
- Most fatalities on upper floors due to smoke inhalation



Hilton Hotel

Las Vegas, NV – 1981

- Fire spread from 8th to 23rd floor in 25 minutes at exterior of building
- 8 fatalities



First Interstate Bank Los Angeles, CA – 1988

- Fire spread from 12th to 16th floor through improperly protected penetrations and through unprotected perimeter joint
- Lunch bags were used to protect penetrations
- One fatality



One Meridian Plaza Philadelphia, PA – 1991

- Fire spread from 22nd to 30th floor through improperly protected penetrations and through perimeter joint
- Three fire fighter fatalities, 24 FF injuries



Code Requirements

- IBC – Breaches shall be protected
 - Section 712 – Penetrations
 - Section 713 – Fire-Resistant Joint Systems
 - Section 715 – Opening Protectives
 - Section 716 – Ducts and Air Transfer Openings
- Each type of breach has a unique fire test standard associated with it which compliments ANSI/UL 263 and ASTM E119



Code Requirements Cont.

- LSC – Breaches shall be protected
 - Penetrations
 - Joint Systems
 - Opening Protectives
 - Ducts and Air Transfer Openings
- Each type of breach has a unique fire test standard associated with it which compliments NFPA 251

Questions / Comments



Fire Resistive Construction

UL's Online Search Tools



UL's Online Search Tools

- Online Certifications Directory
- Product Spec
- Code Link



Online Certifications Directory

- Helps you achieve code compliance
- Is continuously updated
- Needs no password
- Is free – no charge for use
- www.ul.com/database

Product Spec

- Helps identify designs meeting project parameters
- Needs no password
- Is free – no charge for use
- Covers everything discussed at this symposium
- www.ul.com/productspec



Code Link

- Correlates model code sections to UL product categories
- Covers many model codes and editions (IBC, IFBC, NEC, etc.)
- Flexible search capabilities
- Powerful tool to locate appropriate Listings
- www.ul.com/codelink



Questions / Comments



Thank You for Attending!!!

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