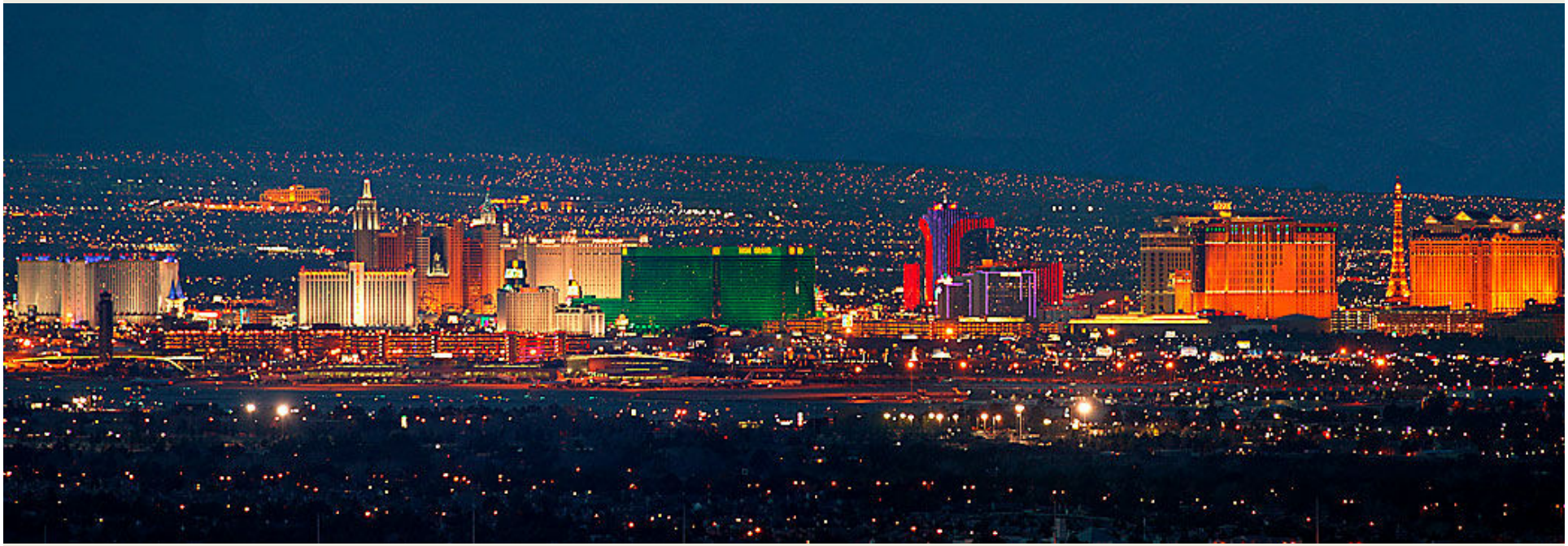
CONSTRUCTION WITHOUT OVERSIGHT



Douglas H. Evans, P.E., FSFPE
DHE FPE LLC
Las Vegas, NV

Learning goals

- Building Code requirements to limit fire and smoke propagation.
- Building Code requirements for occupant safety.
- Passive containment and protection of building components is pertinent even in fully sprinklered buildings.
- Constant oversight by qualified individuals is vital to help ensure life safety and property protection.
- Enforcement is a necessity in today's society.

Overview

In 2008, Clark County Building Department instituted a rigorous inspections program to uncover unreported building code violations in the existing resorts on the world-famous Las Vegas Strip. The violations discovered were primarily due to substantial work conducted without permits or inspections and inadequate or improper maintenance. An overview of the various types of violations and their extent will be discussed.

www.clarkcountynv.gov

BUILDING ADMINISTRATIVE CODE OF CLARK COUNTY

- 22.02.050 Existing Occupancy.
- 22.02.055 Maintenance.

All buildings, structures, pools, spas, signs, and building service equipment, existing and new, **and all parts thereof shall be maintained** in a safe condition. All devices or safeguards which are required by the technical codes shall be maintained **in conformance with the technical code under which installed. The owner** or designated agent **shall be responsible** for the maintenance of buildings, structures, pools, spas, signs and their building service equipment. To determine compliance with this subsection, the Building Official may cause any structure to be re-inspected.

Licensed Resort Hotel
Periodic Inspection

(1) General. **Buildings licensed** as a business under Clark County Code Title 30 **as a Resort Hotel** shall be **subject to periodic inspections** to review existing building conditions and maintenance for building code safety compliance. The periodic inspection shall be performed no more than once a year. The inspection shall include **all areas** within the resort hotel, including but not limited to guestrooms, corridors, service areas, stairways, kitchens, dining areas, bars, casino areas, offices, stages and showrooms. Guestrooms will be inspected on each floor of each hotel, with a minimum of twenty percent of the total guestrooms to be inspected. Discrepancies noted during the inspection shall be submitted via written report to the property owner with a designated time frame for correction. Discrepancies requiring an applicable building permit shall be so noted. Failure to correct discrepancies within the designated time frame may result in issuance of a misdemeanor citation and/or revocation of the Certificate of Occupancy.

Combustible Construction in Non-Combustible Buildings

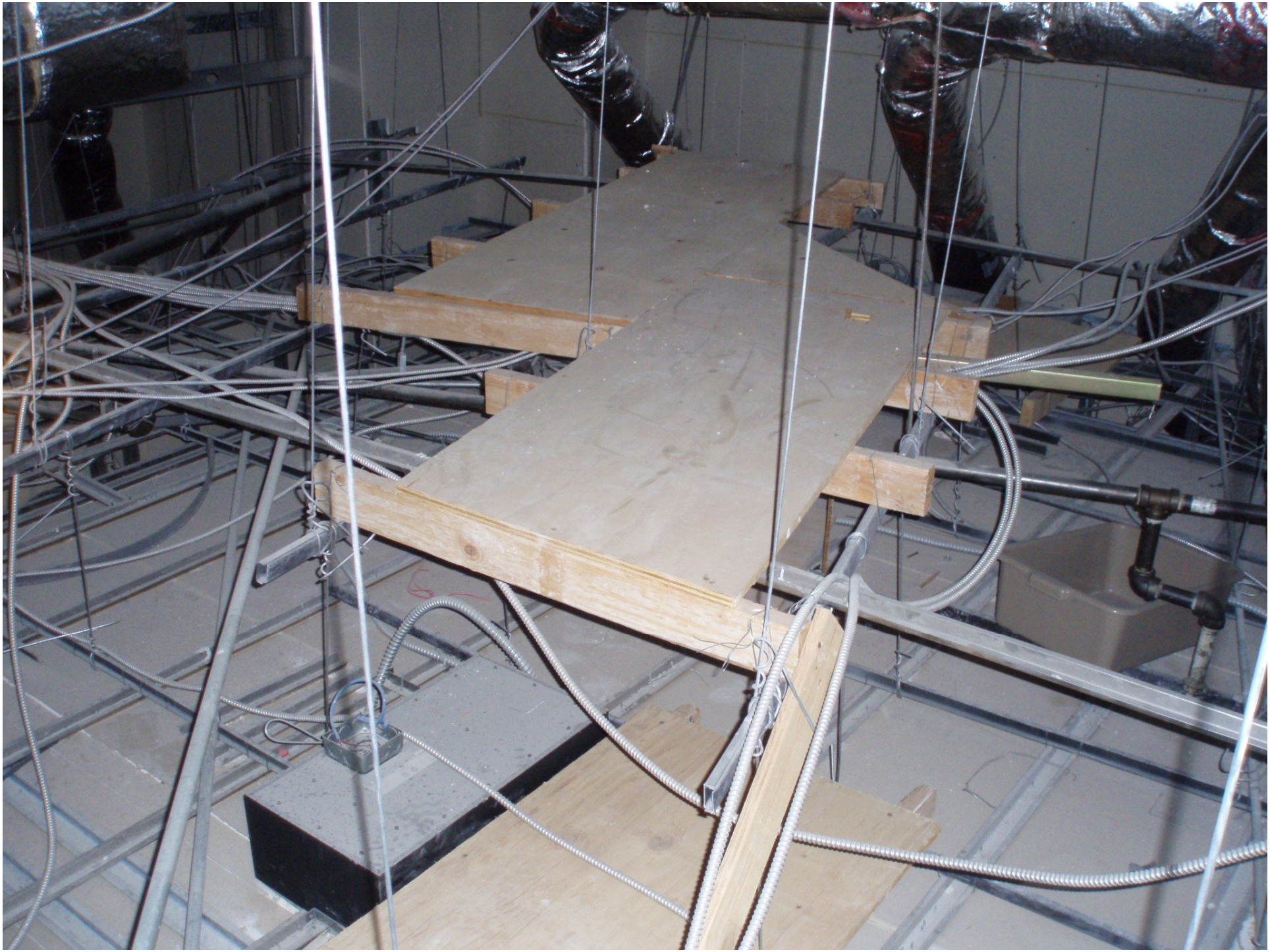

Wood room constructed for comm
equipment w/o permits. Basement
HK storage area.
08.29.2011 10:23

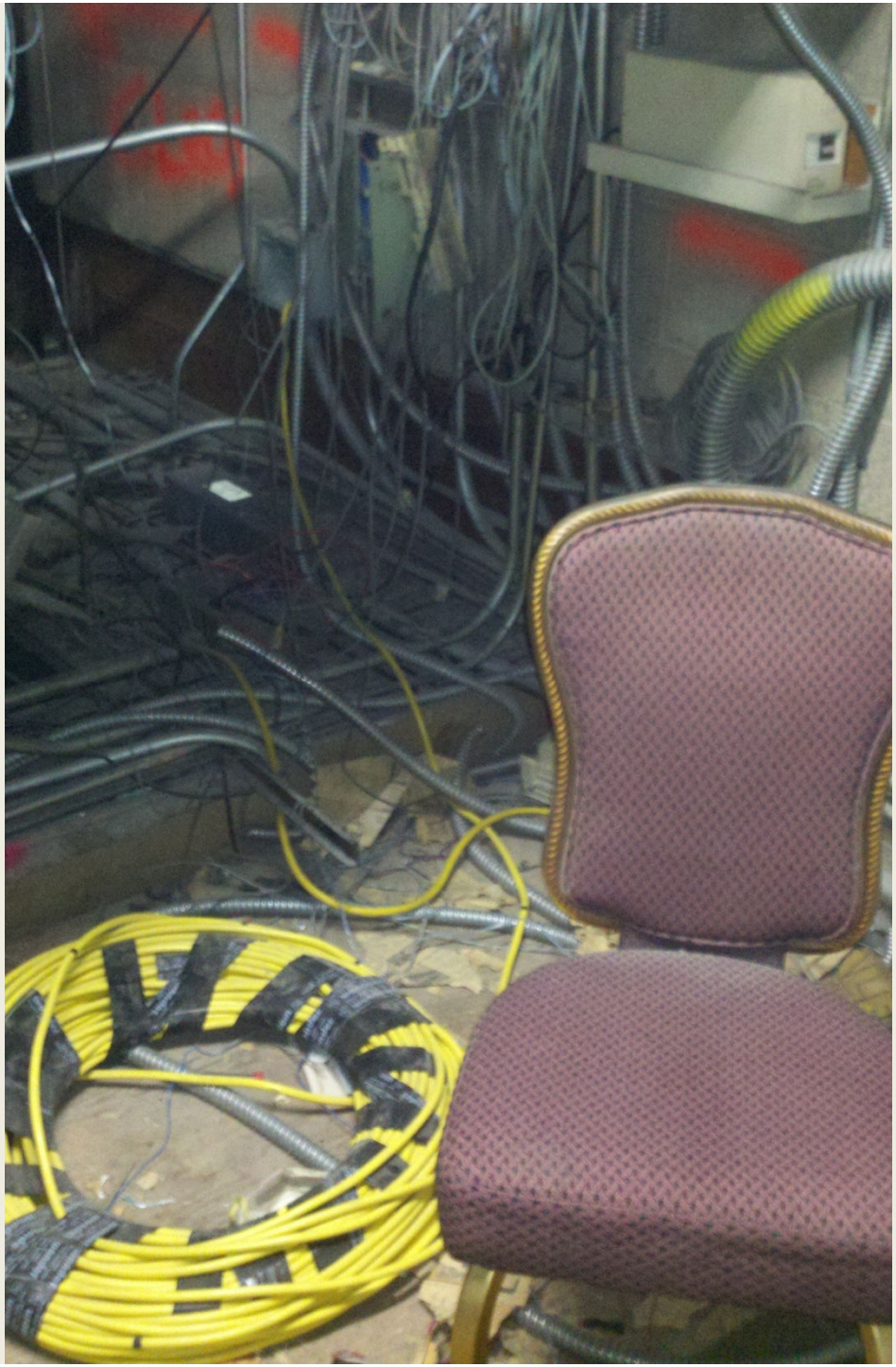

OTHER END UP
Frito Lay
VENDING & FOODSERVICE
Frito Lay
PREMIUM
PREMIUM


CAN LINERS
CAN LINERS
CAN LINERS
CAN LINERS
CAN LINERS
CAN LINERS
CAN LINERS


OATS

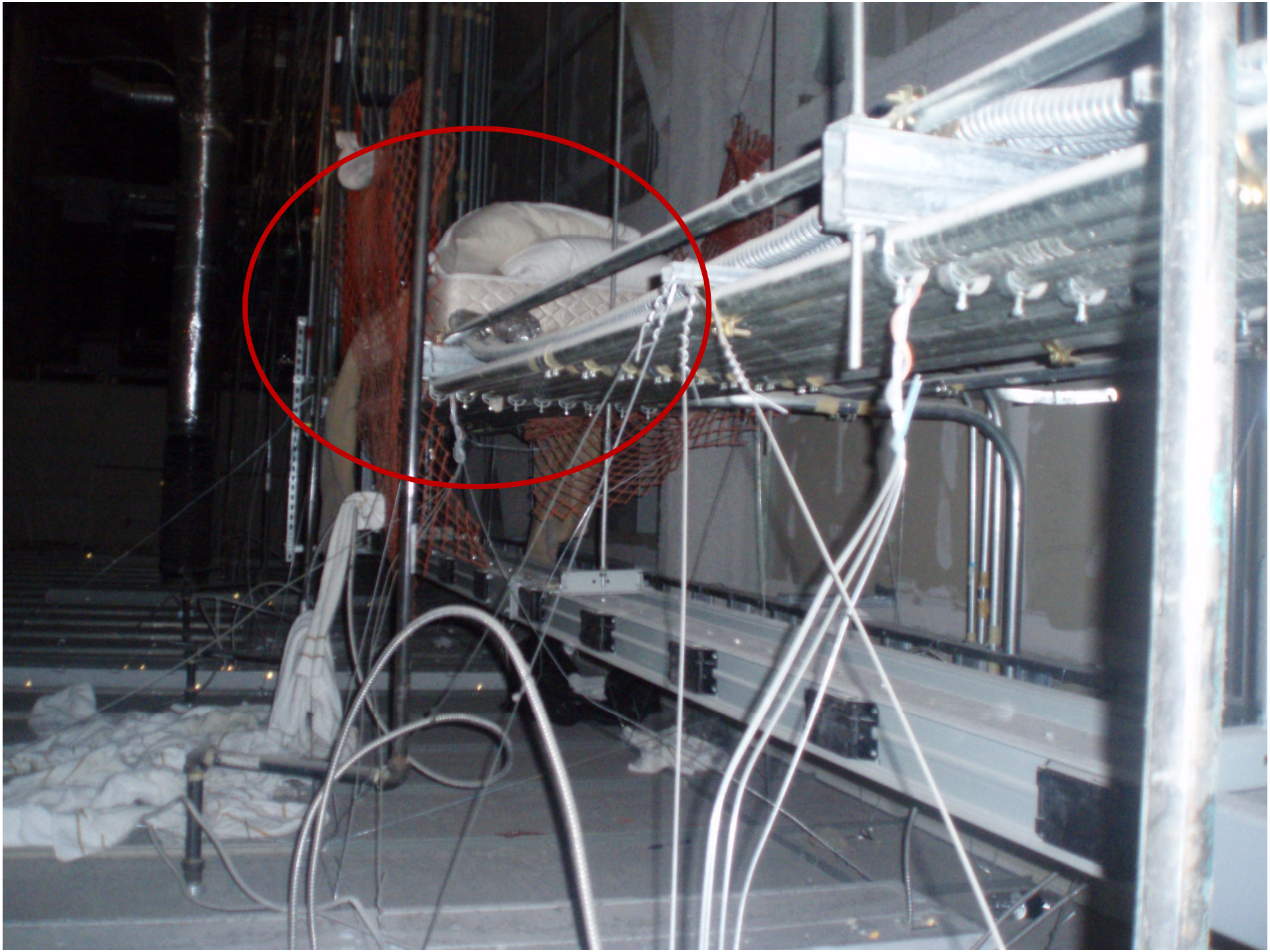
Combustibles in Plenums





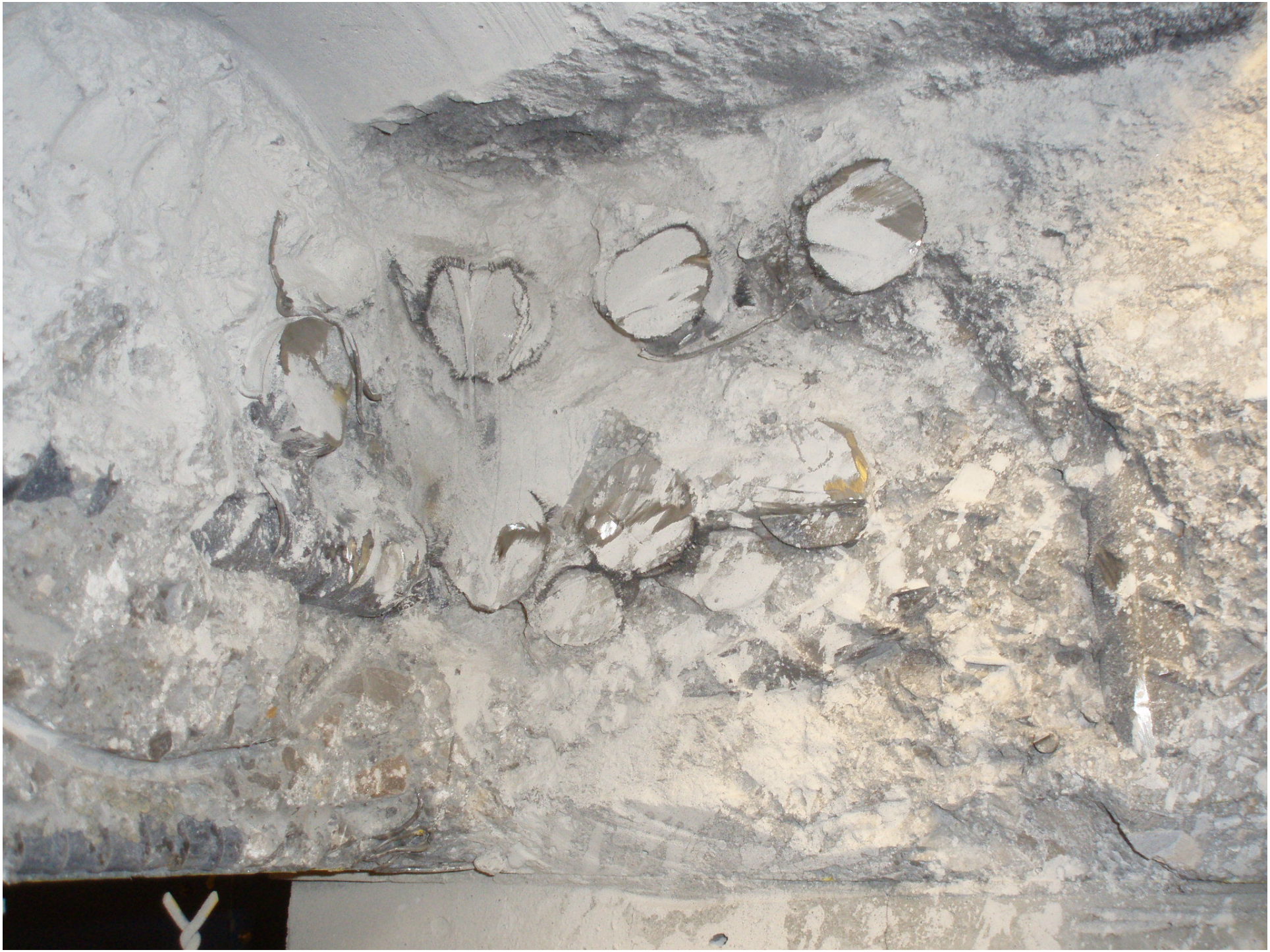

AKAI
MPD32
EDIROL


FRAGILE



STRUCTURAL MODIFICATIONS


CAUTION
LOW OVERHEAD
CLEARANCE
PE3



2018 IBC SECTION 1705
REQUIRED SPECIAL INSPECTIONS AND TESTS

- **1705.14 Sprayed fire-resistant materials.**
  - 1705.14.1 Physical and visual tests.
  - 1705.14.2 Structural member surface conditions.
  - 1705.14.3 Application.
  - 1705.14.4 Thickness.
  - 1705.14.5 Density.
  - 1705.14.6 Bond strength.
- **1705.15 Mastic and intumescent fire-resistant coatings.**
  - *Special inspections* and tests … shall be performed in accordance with AWCI 12-B.

Egress Violations

IBC Chapter 10


NO UNAUTHORIZED
PERSONNEL ABOVE THIS
POINT
PLEASE PICK UP
YOUR TRASH


05.08.2012 09:42


05.08.2012 09:42


05.08.2012 09:41


GROVE LIFT
JOYSTICK


EXI


STAIR 228
NO ROOF ACCESS
B

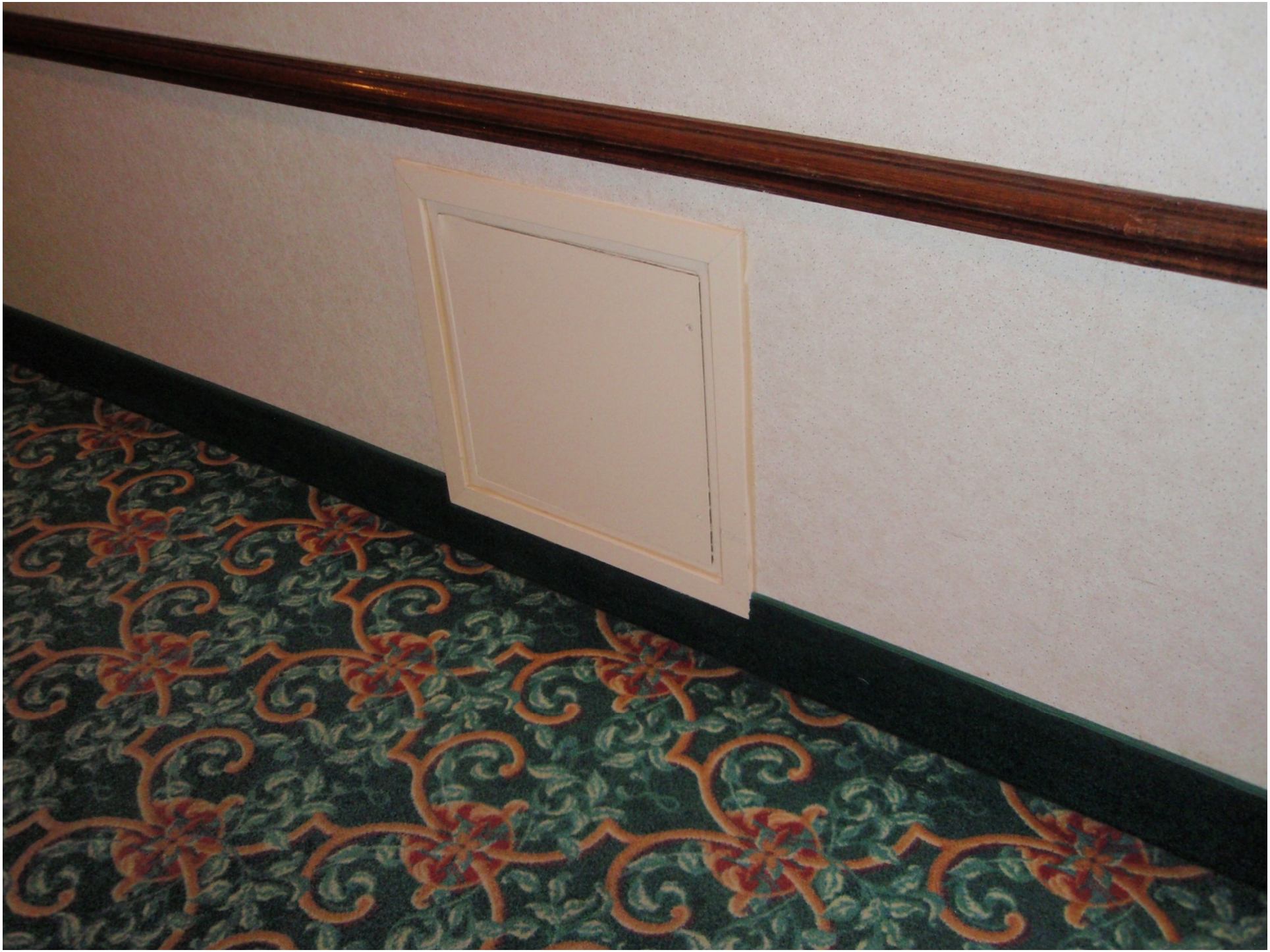

Lee


EXIT
THINK
SAFETY IS EVERYONE'S JOB
EXIT
Bowman Torque Chart
CAN U READ

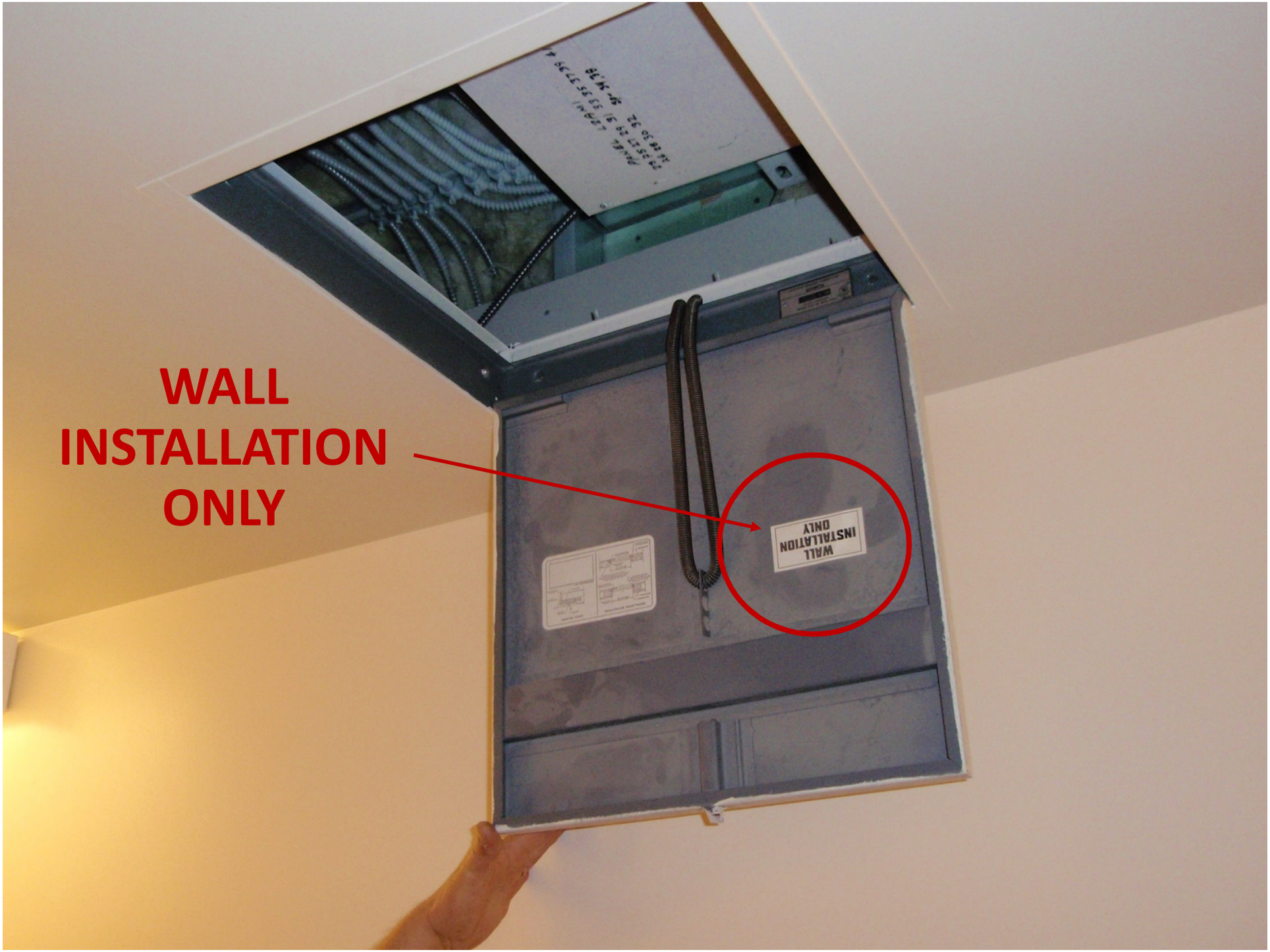
OPENING PROTECTIVES

IBC SECTION 716

- **Fire-resistance-rated glazing**
- **Fire-protection-rated glazing**
- **Fire door assemblies**

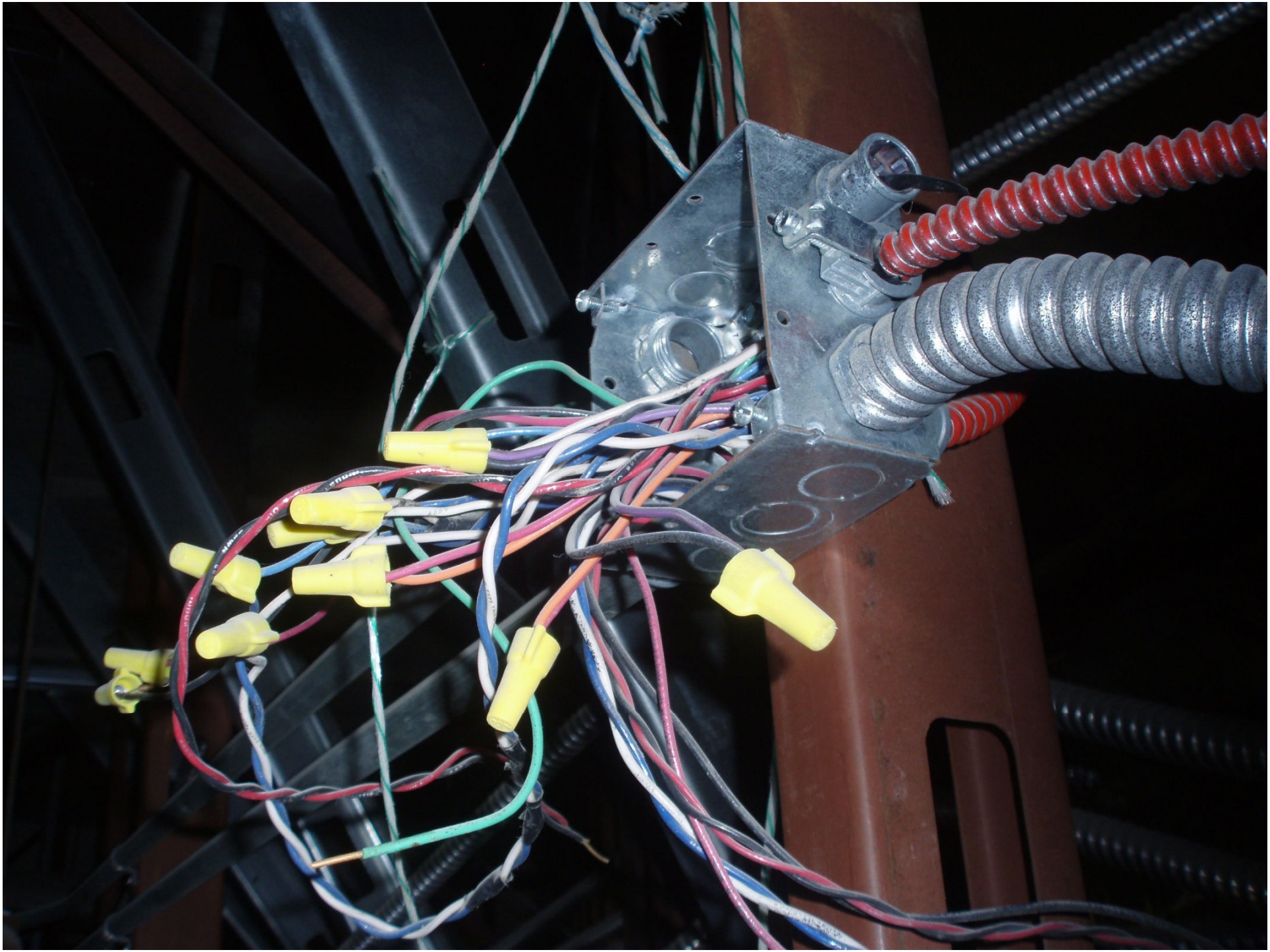


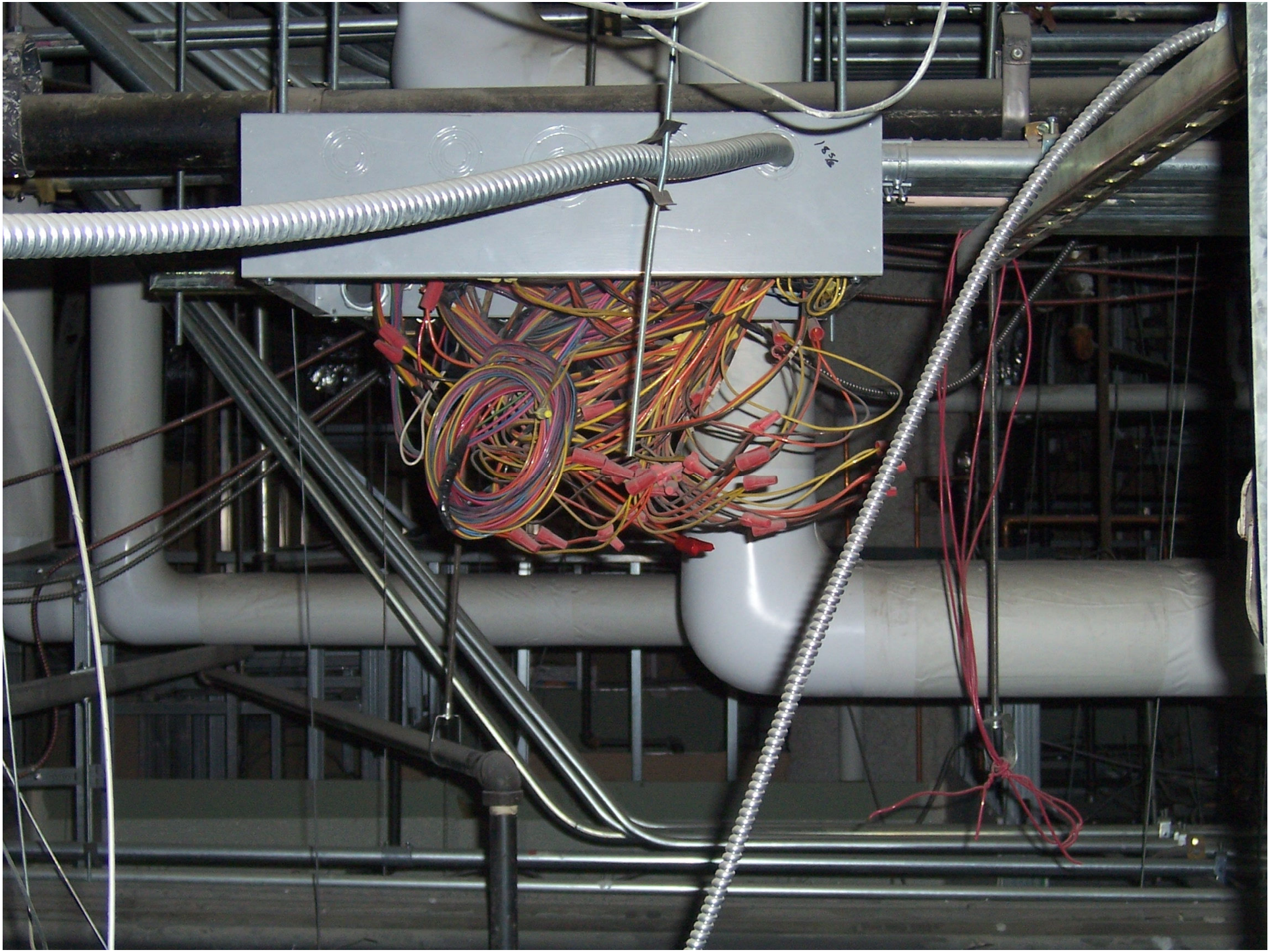

metal
access doors


WALL
INSTALLATION
ONLY
WALL
INSTALLATION
ONLY


ELECTRICAL
EQUIPMENT
ROOM
#9

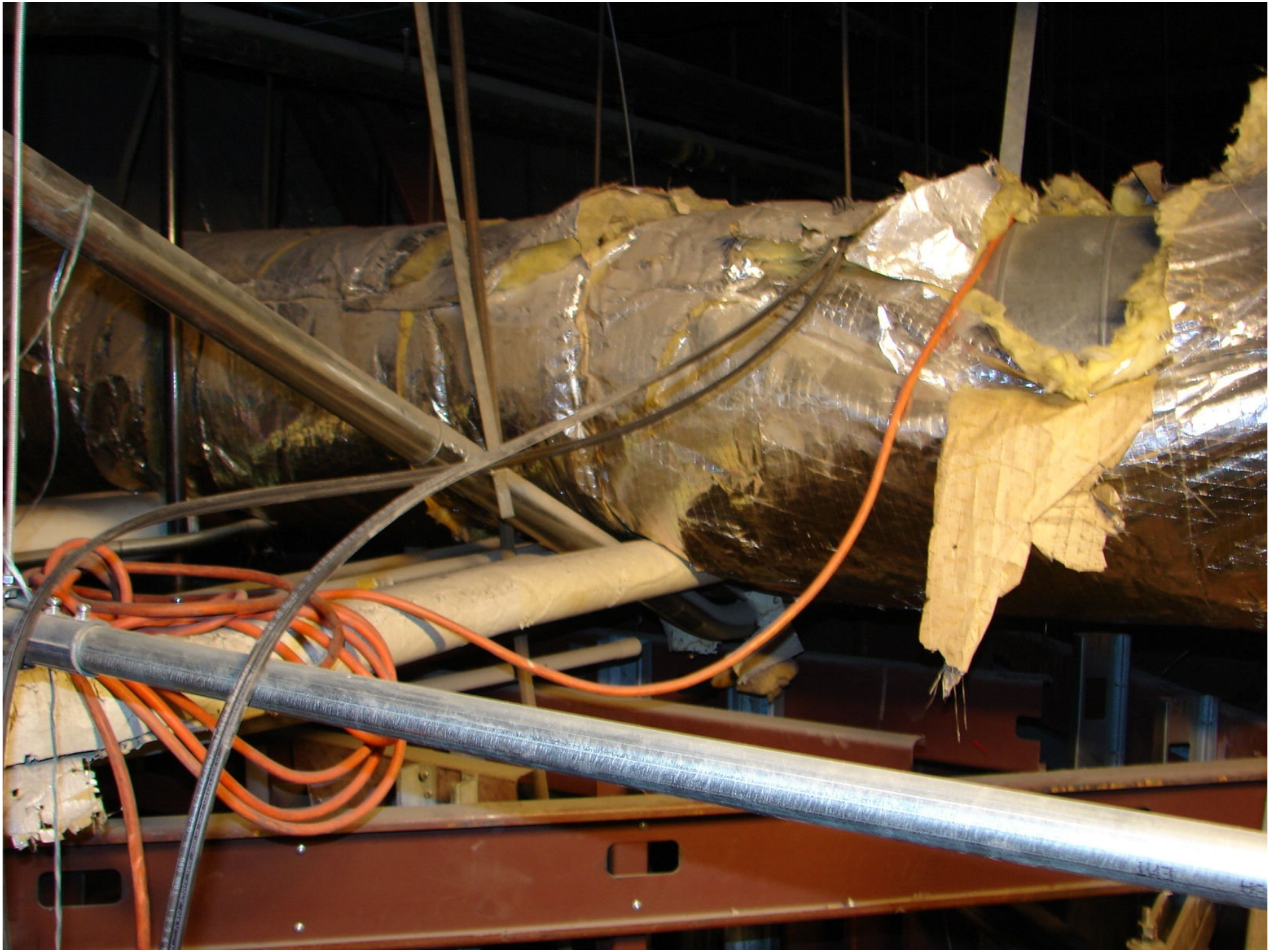
Electrical Violations





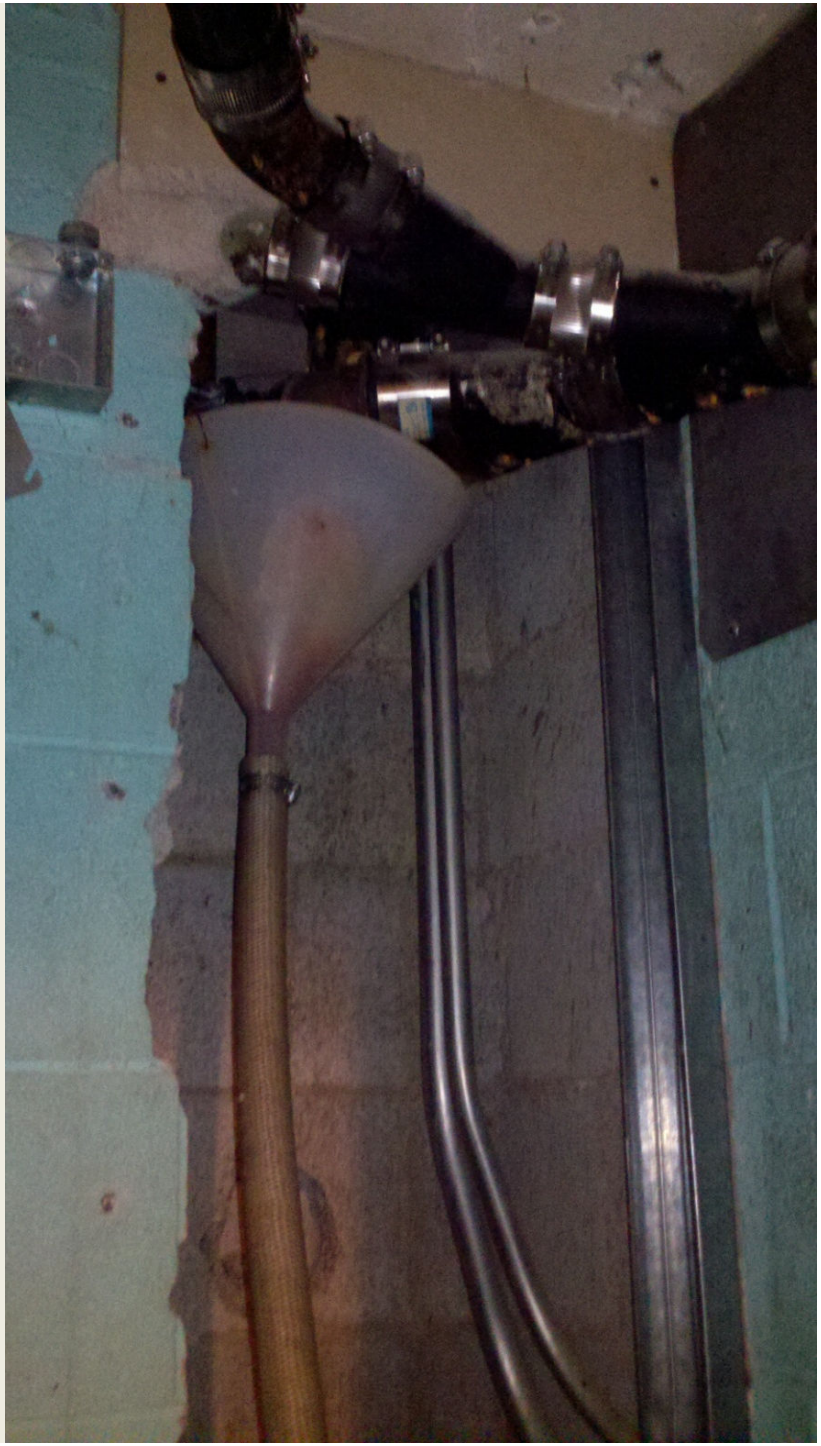

06.21.2012 07:21


07.26.2012 09:33



Plumbing Violations


WARNING
• Children can fall into bucket and drown.
• Keep children away from bucket with even a small amount of liquid.
TAIWAN




07.26.2012 09:07

SHAFT ENCLOSURES
IBC SECTION 713

Required to protect openings and penetrations through floor/ceiling and roof/ceiling assemblies.


01.30.2012 11:00

PENETRATIONS

IBC Section 714

- **Fire-resistance-rated walls** (IBC 714.4)
- **Horizontal assemblies (floor/ceiling)** (IBC 714.5)
- **Smoke Barriers** (IBC 714.5.4)

  – **Membrane penetrations**

  – **Through penetrations**

PENETRATIONS WITHIN HOUR
HOUR RATED CORRIDOR


3M 3M 3M
ETL VERIFIED TO TIA/EIA 568-B.2 CAT.5 --- U.S. PATENT# 5821466


3M


05.21.2012 07:35


G
F
E
D
C
B
A

IBC SECTION 1705
REQUIRED SPECIAL INSPECTIONS AND TESTS

- **1705.17 Fire-resistant penetrations and joints.**
  - In *high-rise buildings* or in buildings assigned to *Risk Category* III or IV, *special inspections* for ***through-penetrations*, membrane penetration firestops, *fire-resistant joint systems* and perimeter fire barrier systems** that are tested and *listed* in accordance with Sections 714.4.1.2, 714.5.1.2, 715.3 and 715.4 shall be in accordance with Section 1705.17.1 or 1705.17.2.
  - **1705.17.1 Penetration firestops.**
    - in accordance with ASTM E2174
  - **1705.17.2 Fire-resistant joint systems.**
    - in accordance with ASTM E2393.

FIRE-RESISTANT JOINT SYSTEMS
IBC SECTION 715

Joints installed in or between fire-resistance rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved *fire-resistant joint system* designed to resist the passage of fire for a time period not less than the required *fire-resistance rating* of the wall, floor or roof in or between which it is installed.

DUCTS AND AIR TRANSFER OPENINGS
IBC SECTION 717

- **Fire dampers**
- **Smoke dampers**
- **Combination fire/smoke dampers**
- **Ceiling radiation dampers**

Summary

- Certain Building Code requirements are intended to limit fire and smoke propagation.
- Certain Building Code requirements are for occupant safety.
- Passive containment and protection of building components is pertinent even in fully sprinklered buildings.
- Constant oversight by qualified individuals is vital to help ensure life safety and property protection.
- Enforcement is a necessity in today's society.

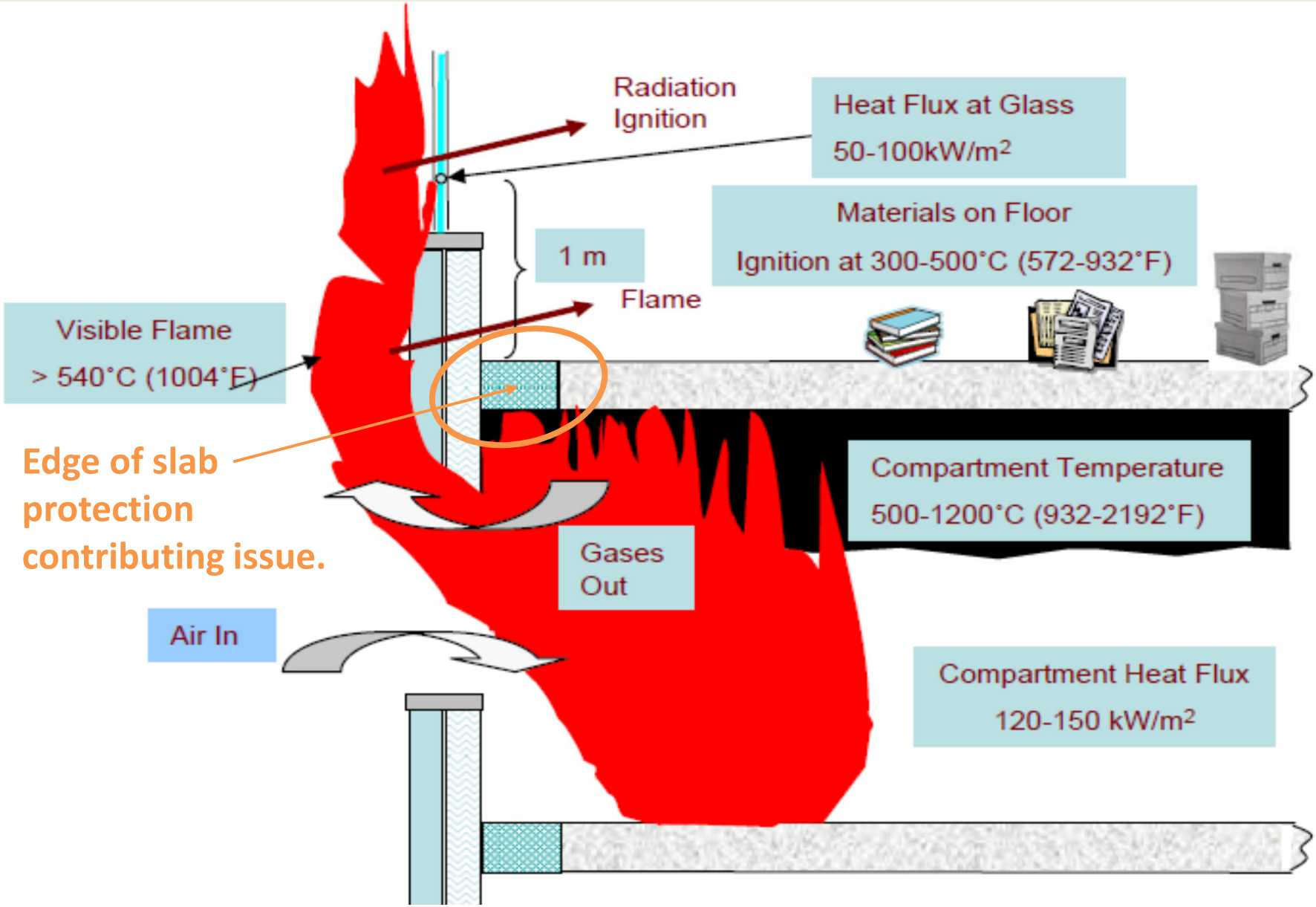

High-Rise Façade Fires
A World Wide Concern


24-storey Grenfell Tower i
Kensington, West Londor
June 14, 2017
72 lives lost

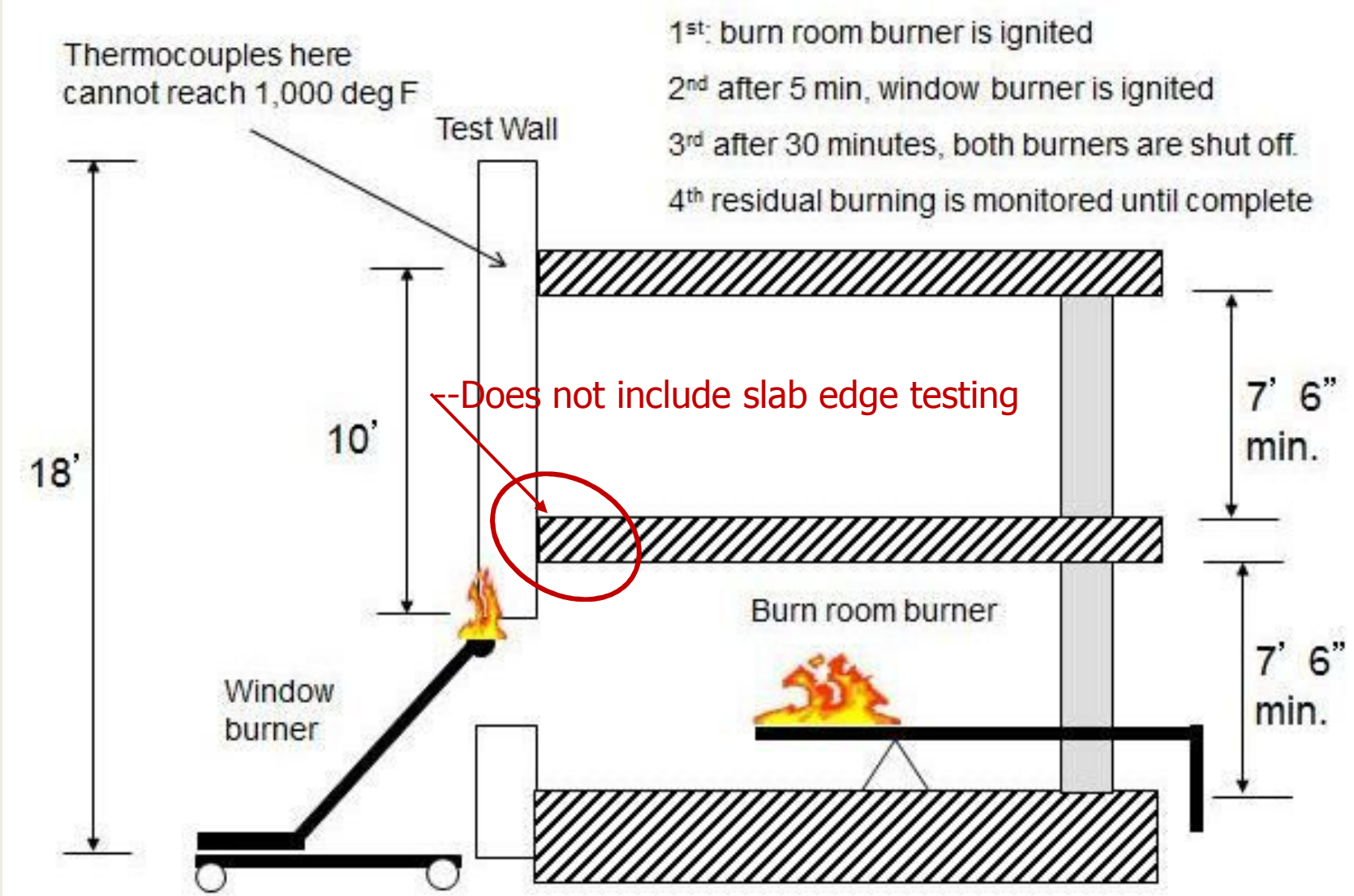
Notable Losses

- Torch Tower Dubai
  - February 2015 and again, August 2017 Aluminum Composite Panels (ACPs)
- Baku, Azerbaijan, May 19, 2015
  - 15 deaths; 63 injured
- The Address Downtown Dubai Hotel
  - New Year's Eva 2015 ACPs
- Polat Tower, Istanbul, Turkey, July 17, 2012
  - Fire started by faulty air conditioning unit
- Al Tayer Tower, UAE April 28, 2012
  - ACPs Ignited by cigarette butt
- The Monte Carlo Hotel Tower
  - Las Vegas, NV January 25, 2008
- Water Club Tower at the Borgata Casino hotel
  - Atlantic City, September 23, 2007
  - ACPs with polyethylene core
- And many more…..
- Additional Countries impacted
  - China, Australia, New Zealand, Hungary, Scotland, Germany, Russia, France, South Korea, Canada, India, Spain, Qatar, …

MECHANISMS OF FIRE SPREAD



NFPA 285 – Test Apparatus



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