



NFPA 241 Implementation

Presented by:
Peter Harrod, P.E.
Jeremy Souza



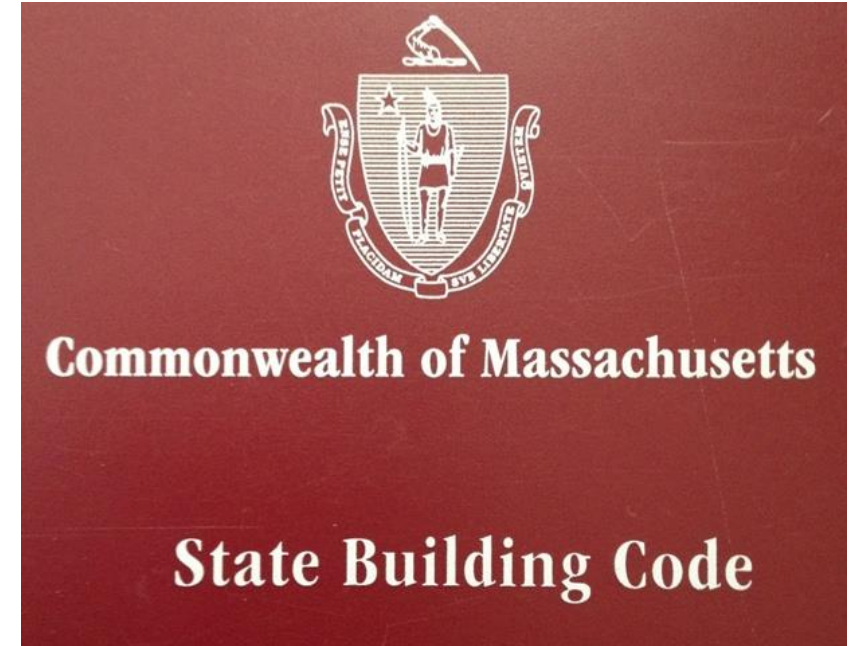
Learning Objectives

- Scoping and Purpose
- At what project milestones is the property owner's involvement necessary?
- Who is responsible for documentation and when/to whom is it submitted?
 - FPPM, CPM, GC, and Subcontractor
- What are the Contents of the GC's Project-Level NFPA 241 Plan?
- NFPA 241 Implementation and Inspections
- Common Challenges

Who is Code Red Consultants?

- Fire Protection / Life Safety Code Consulting Firm
 - Building Code Consulting
 - Performance Based Design
 - Construction Site Safety Planning & Impairment Plans
 - Design of Tier 1 “make-safe” sprinkler/fire alarm
 - Special Inspection Services on Smoke Control and Firestopping
- Independently owned and operated
- Currently 20 engineers with Masters Degree in FPE; 12 PE's
- Code Blog at ***WWW.CRCFIRE.COM***
 - REGISTER TO RECEIVE AUTOMATIC EMAILS

Why do I need to Concern Myself?



Why do I need to Concern Myself?

780 CMR: MASSACHUSETTS AMENDMENTS TO THE *INTERNATIONAL BUILDING CODE 2009*

CHAPTER 33: SAFEGUARDS DURING CONSTRUCTION

3309.2 Replace as follows:

3309.2 Fire Hazards. The provisions of this code and the Board of Fire Prevention Regulations at 527 CMR shall be strictly observed to safeguard against all fire hazards attendant upon construction operations. The fire protection **construction documents shall provide specifications for conformance to** this chapter and **NFPA-241** listed in Chapter 35 in order to safeguard against fires during construction, alterations and demolition of all buildings and structures regulated by this code.



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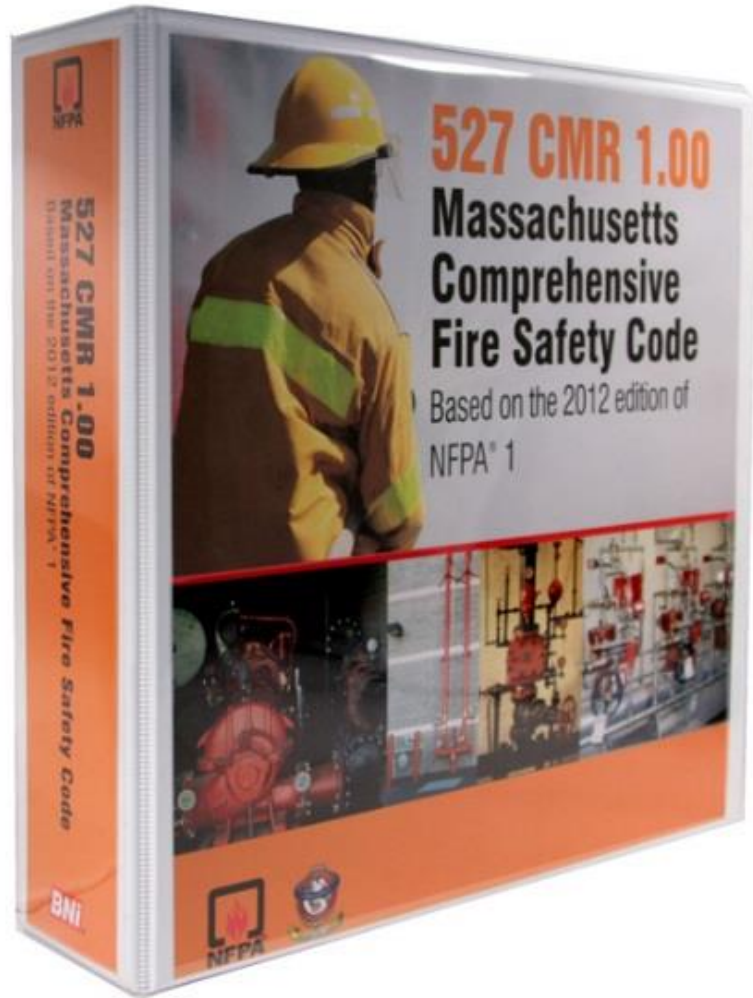
NFPA 241, as referenced by 527CMR

Chapter 16 Safeguarding Construction, Alteration, and Demolition Operations

16.1 General Requirements.

16.1.1 Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with **NFPA 241**, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, and this chapter.

NFPA 241, as referenced by 527CMR



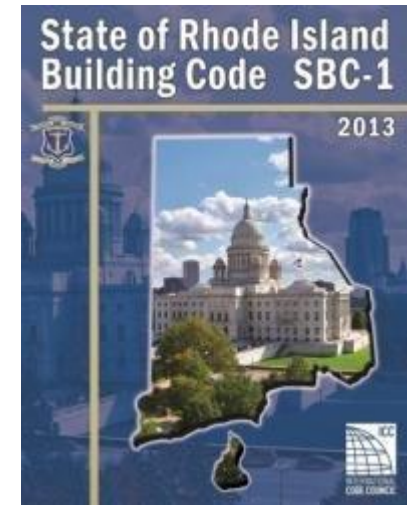
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3302.3 Fire safety during construction. Fire safety during construction shall comply with the applicable requirements of this code and the applicable provisions of ~~Chapter 33 of the International Fire Code.~~ **the Rhode Island Fire Safety Code.**



NFPA 241, as referenced by RI Fire Safety Code (Section 7)



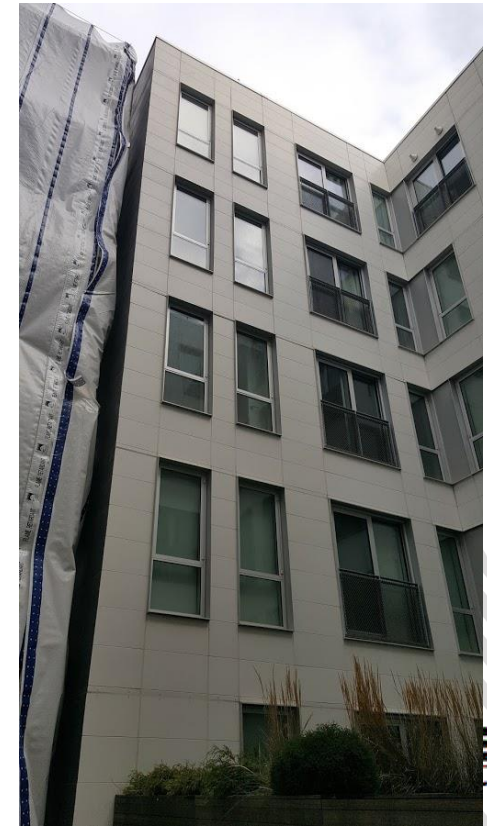
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Why its Required

- Maintain construction site fire safety
- Establish safe/adequate access for FD operations
- Outline manner in which FP/ egress systems will be maintained/ impaired during a renovation/ alteration
- Protect abutting buildings or occupied areas during continued construction



How does this get implemented on site?



How does this get implemented on site?

- The Owner shall designate a person responsible for the fire prevention program and who shall ensure that it is carried out to completion (NFPA 241, 7.2). **Fire Prevention Program Manager**
- New Construction
 - Ideally, Owner assigned, full time individual
 - Often it's GC's FPPM
 - In either case, on site full time
- Existing Building
 - Owners FPPM and/or Impairment Coordinator; and
 - GC's FPPM
 - In either case, on site full time



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WWW.CRCFIRE.COM

Whittier Choice
100 Cabot Street, Boston, MA
Construction Fire Safety Plan
Building Permit ERT#: TBD

January 5, 2018

Prepared for:

Boston Fire and Inspectional Services Departments
1010 Massachusetts Avenue
Boston, MA 02118

Implemented & Enforced by:

Building A: Fire Prevention Program - Points of Contact		
Name	Evan Kelley	David Lopes
Title	Fire Prevention Program Manager	Alternate Fire Prevention Program Manager
Company	NEI Construction	Janey Construction
Phone Number	339-987-9637	617-869-1094
Email Address	ekelley@neigc.com	dlopes@janeyco.com

Prepared By:

Code Red Consultants
154 Turnpike Road, Suite 200
Southborough, MA 01772
(617) 500-7633


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Peter Harrod, P.E.

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Chris Lizewski, P.E.


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NFPA 241 CONSTRUCTION FIRESAFETY PLAN

1. Project Overview

Address: 7 Canal Walk Providence, RI 02903

Building Permit #

Building Name: Rhode Island School of Design Auditorium

Project Description	
Description of Work	The project consists of HVAC and structural upgrades within the Basement and Second Floor (Fan Room Level) of the RISD Auditorium Building. As part of this project there will not be any modifications to existing partitions. Throughout the demolition and construction, the building will remain partially occupied by professors and interns; however, the auditorium will not be occupied.
Location of Work	The work area will consist of approximately 7000 sf at the Basement Level and 500 sf on the Second Floor.
Floor(s) Occupied During Construction?	The entirety of the building will remain occupied during construction. This includes most of the First-Floor area. The existing means of egress will not be affected by this scope of work.
Anticipated Start Date	June 6, 2018
Anticipated Completion Date	August 29, 2018
Roles and Responsibilities	
Building Owner	Rhode Island School of Design (RISD)
Owner's FPPM	Paul Mullen; pmullen@risd.edu; (401) 413-7009
General Contractor	Shawmut Design and Construction
GC's Project FPPM	Jim Hogan; hhogan@shawmut.com; (857) 324-0959
GC's Alternate Project FPPM	Steven Guntharp; sguntharp@shawmut.com; (617) 608-7164
Base Building Information	
Number of Stories	Five (5) stories
Gross Area of Renovation	Approximately 6,500 sf of Basement and 500 sf of Second Floor (Fan Room Level) [building footprint is 11,500 sf Total per Floor]
Occupancy Classification of Work Area	Group S-2; MEP
Occupancy Classification of Building	Group A-1; Auditorium Group B; Offices & Classrooms
Construction Type	Type IIB Construction (Unprotected noncombustible construction)
Master 241 Plan	N/A
24/7 Building Security Present	Campus security provided by RISD Department of Public Safety. Dedicated security for the building is not provided. Dedicated security for the construction site is not provided.

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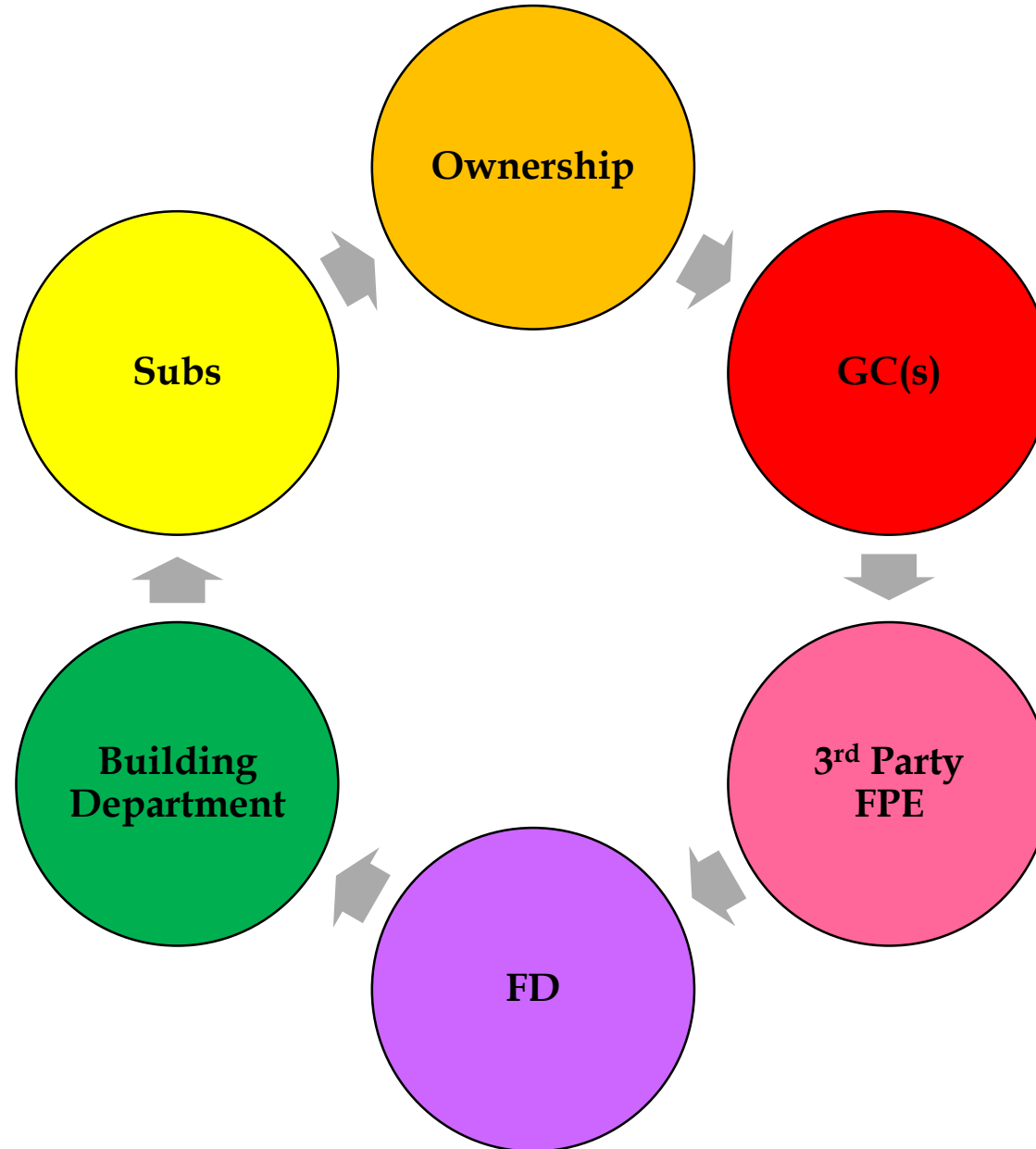
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Haven't We Been Doing This For Years?

- Impairment Plan (IP) does not equal an NFPA 241 Plan.
 - An NFPA 241 Plan is comprehensive to all fire safety
 - No sprinkler/fire alarm alteration scope? Sorry, NFPA 241 Plan still req'd
- Rather, the IP is an appendix to the 241. Needed when:
 - Disabling of fire alarm systems or devices;
 - Planned shutdowns of portions of fire protection systems
 - Modifying means of egress or smoke control arrangement;
- No impairment work should commence until a permit is in hand.

Who Are The Stakeholders?



WHEN DOES 241 DOCUMENTATION NEED TO BE FILED?

WHEN DOES 241 DOCUMENTATION NEED TO BE FILED?

- Whenever a building permit is secured.
- Whenever an impairment is needed.
- Whenever means of egress is altered.
- When requested by the AHJ.

In all cases, the level of detail depends on project complexity

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- Whenever m
- When request

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CITY OF CAMBRIDGE
FIRE PREVENTION BUREAU
 ISO Class 1 Fire Department
 HEADQUARTERS
 491 BROADWAY, CAMBRIDGE, MA. 02138



Peter A. Donovan
 Deputy Chief/Fire Marshal

Paul Marinelli
 Captain

Steven J. Lawless
 Captain

Christopher G. Towski
 Lieutenant

TEL (617) 349-4918
 FAX (617)-349-4979

D TO BE FILED?

Construction Project
Fire Prevention Program Manager
 In conformance with 527 CMR, 780 CMR and NFPA 241.

To be completed by the Fire Prevention Program Manager appointed for the construction project located at: *(Please print all fields except signature)*

 (Address of Property)

 (When Applicable- Specify Location within the Property -i.e. floor number)

 (Name of Building Owner or Authorized Representative)

 (Name of Fire Prevention Program Manager)

 (Email Address of Fire Prevention Program Manager)

 (Cell Phone Number of Fire Prevention Program Manager)

 (Company Name of Fire Prevention Program Manager)

 (Today's Date) (Project Target Completion Date)

 (Signature of Fire Prevention Program Manager)

complexity

NFPA 241 Application to Campus Building/Renovation Campaign

TIME OF PERMIT

General Contractors
Project 241 – New
Construction

AFTER TCO

Building
Owner's 241
Plan

GC#1 T.I.
Project 241

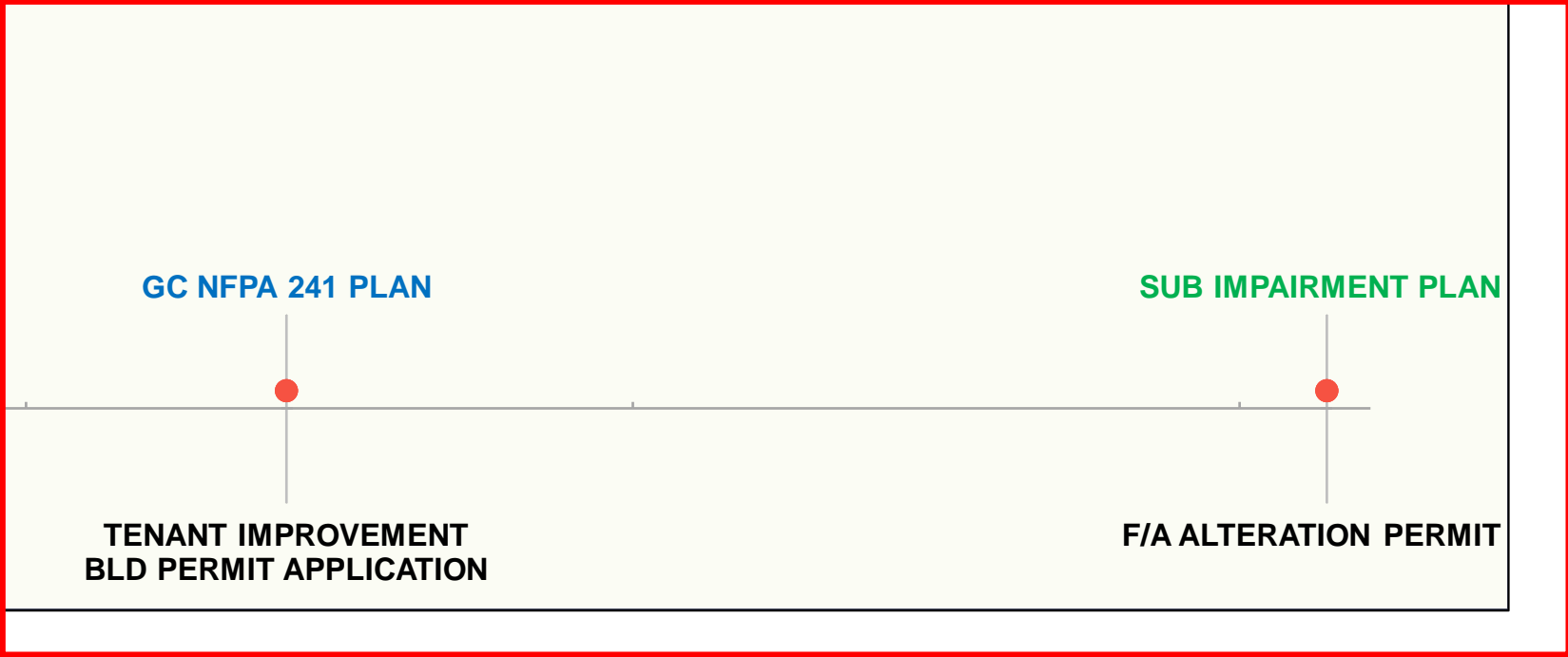
F/A Sub
Impairment Plan

Sprinkler Sub
Impairment Plan

Means of Egress
Impairment Plan

SCHEDULE OF DOCUMENTATION ISSUANCE TO AHJ

MASTER BUILDING NFPA
241 PROGRAM



NFPA 241 CONSTRUCTION FIRESAFETY PLAN

1. Project Overview

Address: Example

Building Permit # Example

Project Description	
Description of Work	The project consists of the renovation of the entire second floor and half of the third floor with additional work being completed in all three exit stairs and bathrooms. The work includes installing a pre-action sprinkler system within the basement switchgear room. The work being completed will constitute a change in use from Use Group B to Use Group A-3.
Location of Work	The work area will consist of approximately 21,000 sf on the Second Floor and 11,000 sf on the Third Floor.
Floor(s) Occupied During Construction?	The entirety of the building will be occupied during construction, including the basement, first, half of the third, and fourth floors.
Anticipated Start Date	January 2017
Anticipated Completion Date	
Roles and Responsibilities	
Building Owner	Example
Building Management Company	Example
Owner's FPPM	Example
General Contractor	Example
Project FPPM	Example
ISD Inspector	Example
Fire Alarm Contractor	Fire Alarm Demo and Temp System Phase I: Example
Fire Protection Contractor	Fire Protection Demo Phase I: Example
Fire Alarm Maintenance Company	Example
Base Building Information	
Number of Stories	4 Stories above grade with 1 Basement Level below grade
Height	64' - 6"
Gross Area of Renovation	Approximately 32,000 gsf
Gross Total Building Area	Approximately 110,000 gsf
Occupancy Classification	Use Groups A-3, B, and S-2
Construction Type	Type IIA Construction (noncombustible, protected construction)
Master 241 Plan	No. A Master NFPA 241 Program for is not yet created.
24/7 Building Security Present	Security provided by PD. Dedicated security for the building is not provided.

SCHEDULE OF D

MASTER BUILDING NFPA 241 PROGRAM



SUB IMPAIRMENT PLAN



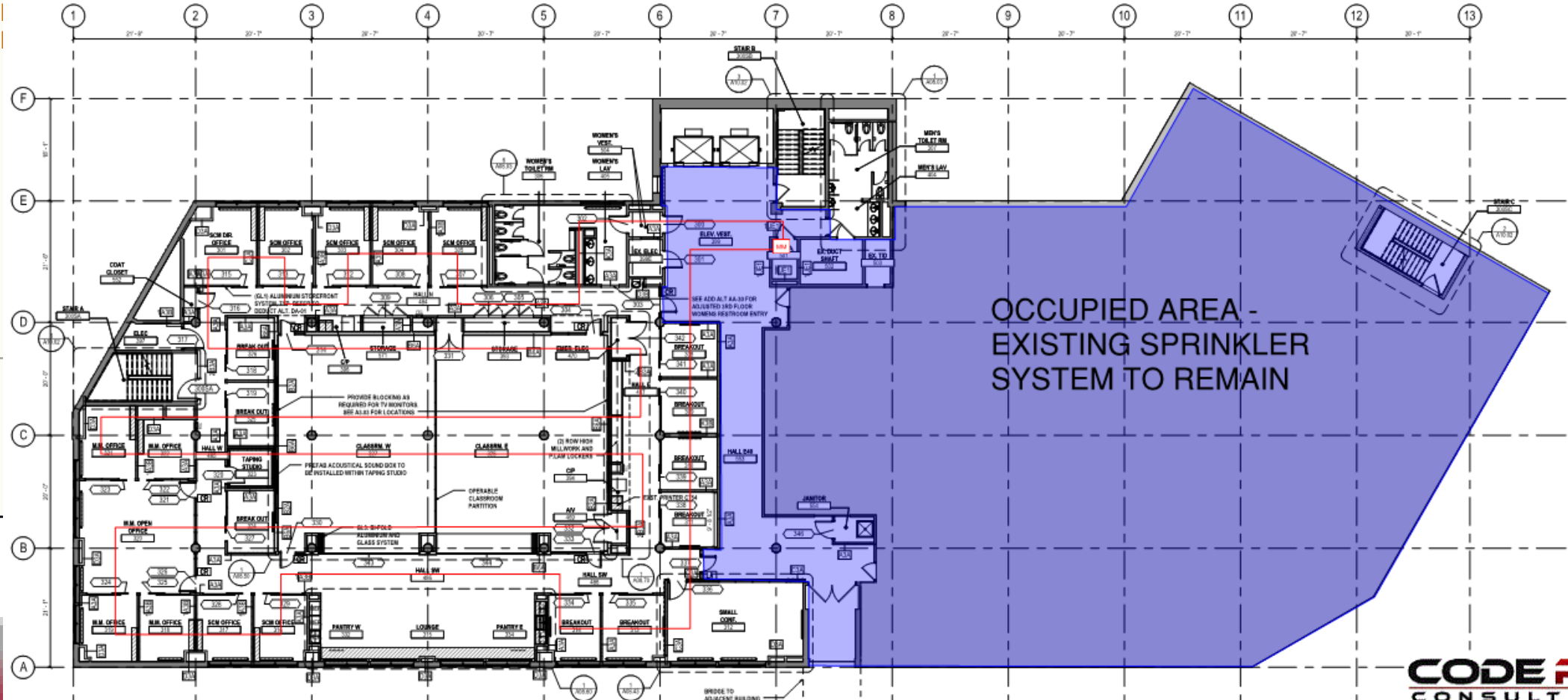
F/A ALTERATION PERMIT

LEGEND

- OCCUPIED AREA
- MM MONITORING MODULE
- LINE TYPE HEAT DETECTION

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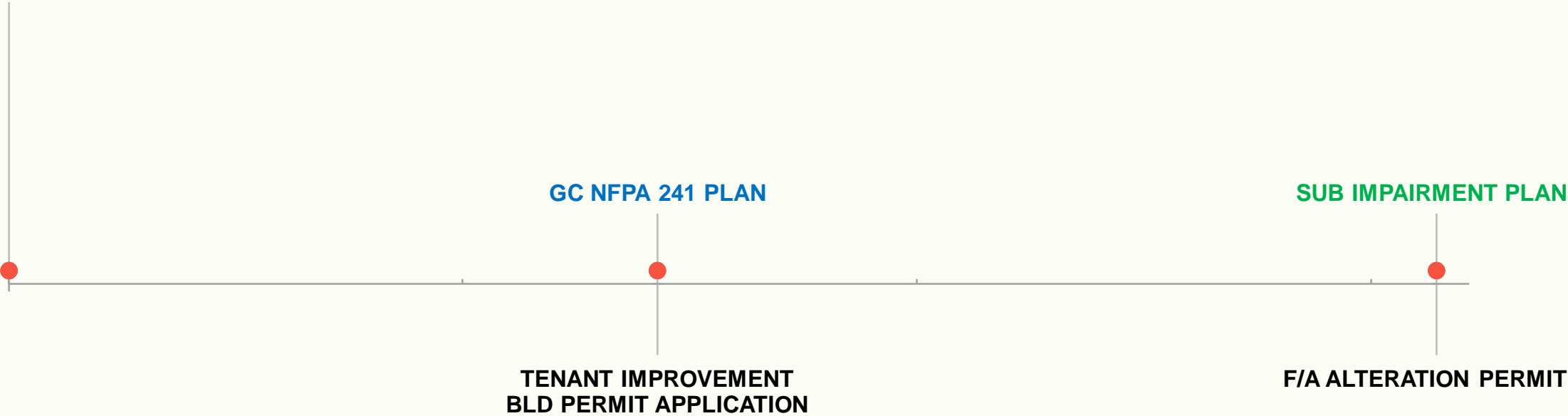
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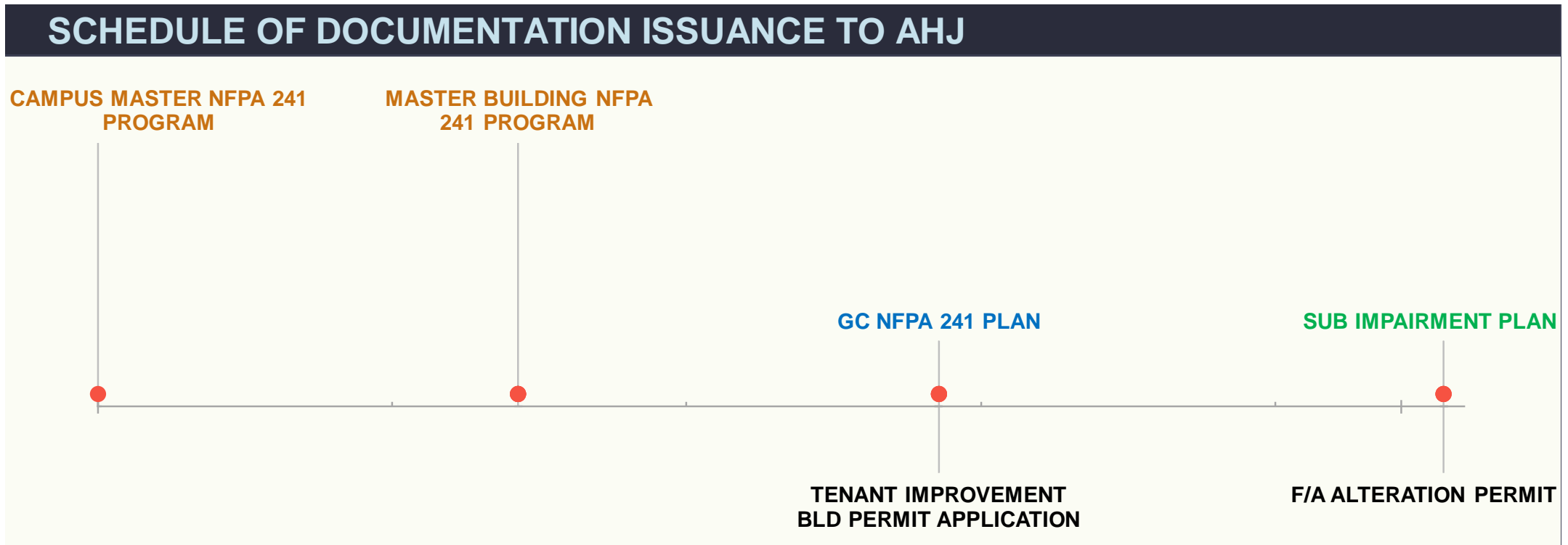
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SCHEDULE OF DOCUMENTATION ISSUANCE TO AHJ

MASTER BUILDING NFPA
241 PROGRAM



Documentation Issuance Timeline

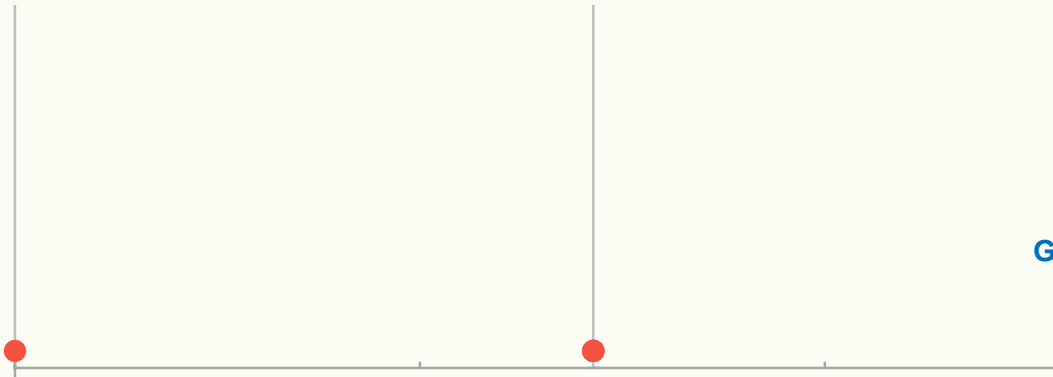


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MASTER BUILDING NFPA 241 PROGRAM



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General Heath Square Apartments
61 Heath Street, Boston, MA
Construction Fire Safety Plan
Building Permit ERT#: TBD

January 3, 2018


Prepared for:
Boston Fire and Inspectional Services Departments
1010 Massachusetts Avenue
Boston, MA 02118

Implemented & Enforced by:

Building A: Fire Prevention Program - Points of Contact		
Name	Dan Pope Jr.	Brian Porter
Title	Fire Prevention Program Manager	Alternate Fire Prevention Program Manager
Company	NEI Construction	NEI Construction
Phone Number	(339) 235-0542	(508) 726-3054
Email Address	danvpope.neigc.com	bporter@neigc.com

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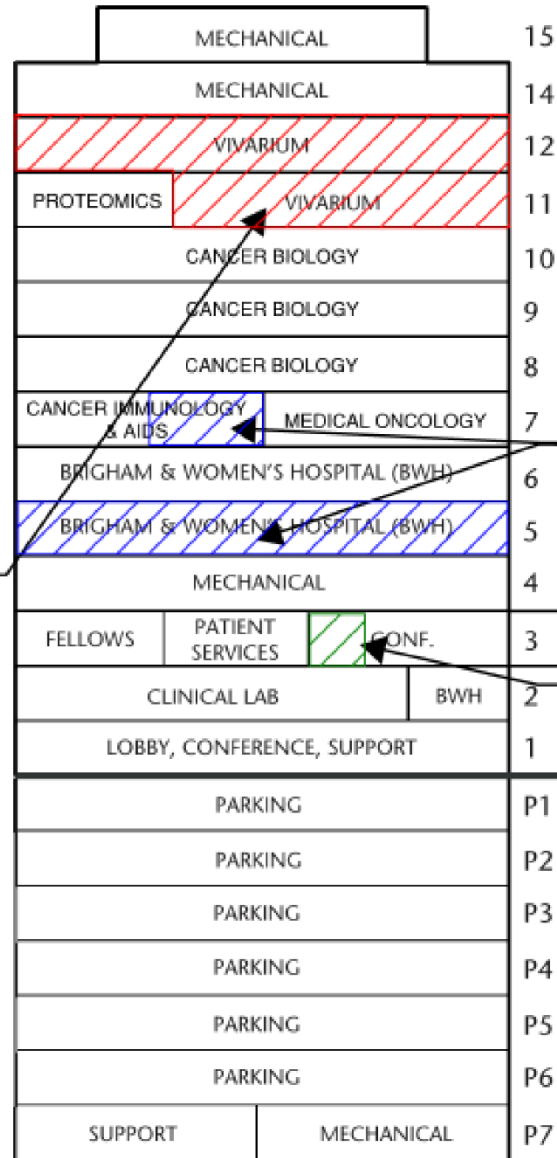

Chris Lizewski, P.E.


James McLaughlin, P.E.

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STACKING DIAGRAM

Ongoing Construction Project - Tenant Improvement	
Project Description	Interior renovations to the 11th and 12th floor for use as CMCF space
GC Name	
GC POC	FPPM FPPM Alternate
DFCI POC	FPPM FPPM Alternate
Anticipated Impairments	Temporary heat detection in lieu of sprinkler protection Smoke detector bagging including elevator lobbies



Proposed Construction Project - Tenant Improvement	
Project Description	Interior renovations to the 5th and a portion of the 7th floor for general wet lab fit out
GC Name	
GC POC	FPPM FPPM Alternate
DFCI POC	FPPM FPPM Alternate
Anticipated Impairments	Sprinkler alterations Occasional Smoke detector bagging

Ongoing Construction Project - Tenant Improvement	
Project Description	Interior renovations to 1900 SQ FT on the 3rd floor as office space.
GC Name	
GC POC	FPPM FPPM Alternate
DFCI POC	FPPM FPPM Alternate
Anticipated Impairments	Temporary heat detection in lieu of sprinkler protection Occasional Smoke detector bagging

May 3, 2017



ROLE OF THE OWNER'S FIRE PROTECTION PROGRAM MANAGER

- FPPM and/or 3rd party will develop a Master 241 Program
- Per building/address, develop a means to address FD's concerns re: impairment coordination
- Serve as internal Permit Authorizing Individual (PAI)
 - Ensure FD permits in hand
 - Authorize hot work and impairments in building, consistent with FD permits, based on other work conducted
- Liaise with GC to ensure that GC's Project Level 241 Plan is created, references Master 241 Program, and letter of recognition is sent as cover.

ROLE OF THE GC'S FIRE PROTECTION PLAN MANAGER

- GC's PM/FPPM and/or 3rd party will develop the 241 Plan
- Submit 241 Plan to CPM and Building FPPM for review
- Identify FPPM to be available on site to ensure implementation
 - Daily inspections
 - Hot work, fire watch, impairments, CO logs
 - Make necessary updates to logistics/narrative
- Host FD/ISD/CPM for site visits and address concerns
-

What's in the GC's plan?

- Pre-Incident Fire Plan
- Control of ignition sources and combustibles
- Roles and responsibilities of personnel
- Drawings depicting construction areas, temporary life safety measures, etc...
- Self Inspection Forms and Daily Logs

In all cases, the level of detail depends on project complexity

CONTENTS OF THE GC'S 241 PLAN

- Signature Page
- Stacking Diagram/Executive Summary
- Hazardous Operations
- Features of Fire Protection
- Fire Department Turnout Information
- Logs and Inspection Forms
- Impairments
- Typical floor plan with horns and FE's

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PRE INCIDENT FIRE PLAN - BUILDING DATA

This pre-incident fire plan is based on the procedures and information outlined in NFPA 1620 and NFPA 241.

Address	100 Cabot Street, Boston, MA	Entrance Locations	There are multiple construction gates along the perimeter of the construction fence on Whittier, Ruggles, and Cabot Street. Building A has a main entrance at the south corner. Building A, B, and C have private tenant entrances at each ground floor unit.
Building Name	Whittier Choice		
Occupancy Type	Group R-2 Group R-3		

Water Supply Information	Description
Hydrant Locations	Hydrants are located on Tremont, Whittier, Ruggles, and Cabot Street
Construction Standpipe Location and Necessary Pumping Pressure Info	Building A will have a construction standpipe located within Stair 1 (centrally located stair).

Building Fire Protection Systems	Description
FDC Locations	During construction, the Building 1 Fire Department connection will be located adjacent to Gate E which is accessed via Whittier Street.
FDC Info (Zoning, sprink, stand, combo)	The construction standpipe will be a combination sprinkler standpipe as construction progresses.
Sprinkler System Info (type, location)	N/A During Construction
Sprinkler/Standpipe Valve locations	N/A During Construction
Standpipe and Hose System (class/zone)	N/A During Construction
Fire Pump info and location(s)	None required.
Emergency Gen Info (location/make/size)	N/A During Construction
Fuel storage tank info	N/A During Construction
F/A System Info; Panel/Annun. Location	N/A During Construction
FF Service Lobby/Car Location	N/A During Construction
FF Communication System Type	N/A During Construction

Passive Fire Protection Info	Description
Construction Classification	Type V, Combustible
Unprotected Floor Openings?	No
Rated Corridors?	Yes - N/A During Construction
Elevator Lobby Description	N/A

Building Data	Description
Secure Key Box Location	At BFD Command Post at Gate A
Depth of Below-Grade Basement Level(s)	Building A: 11'-6" Below Grade

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Prepared for:
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Boston, MA 02118

Implemented & Enforced by:

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Name	Evan Kelley	David Lopes
Title	Fire Prevention Program Manager	Alternate Fire Prevention Program Manager
Company	NEI Construction	Janey Construction
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February 14, 2017

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Proposed Construction Activity Summary



LEGEND	
	OCCUPIED AREA
	AREA UNDER CONSTRUCTION

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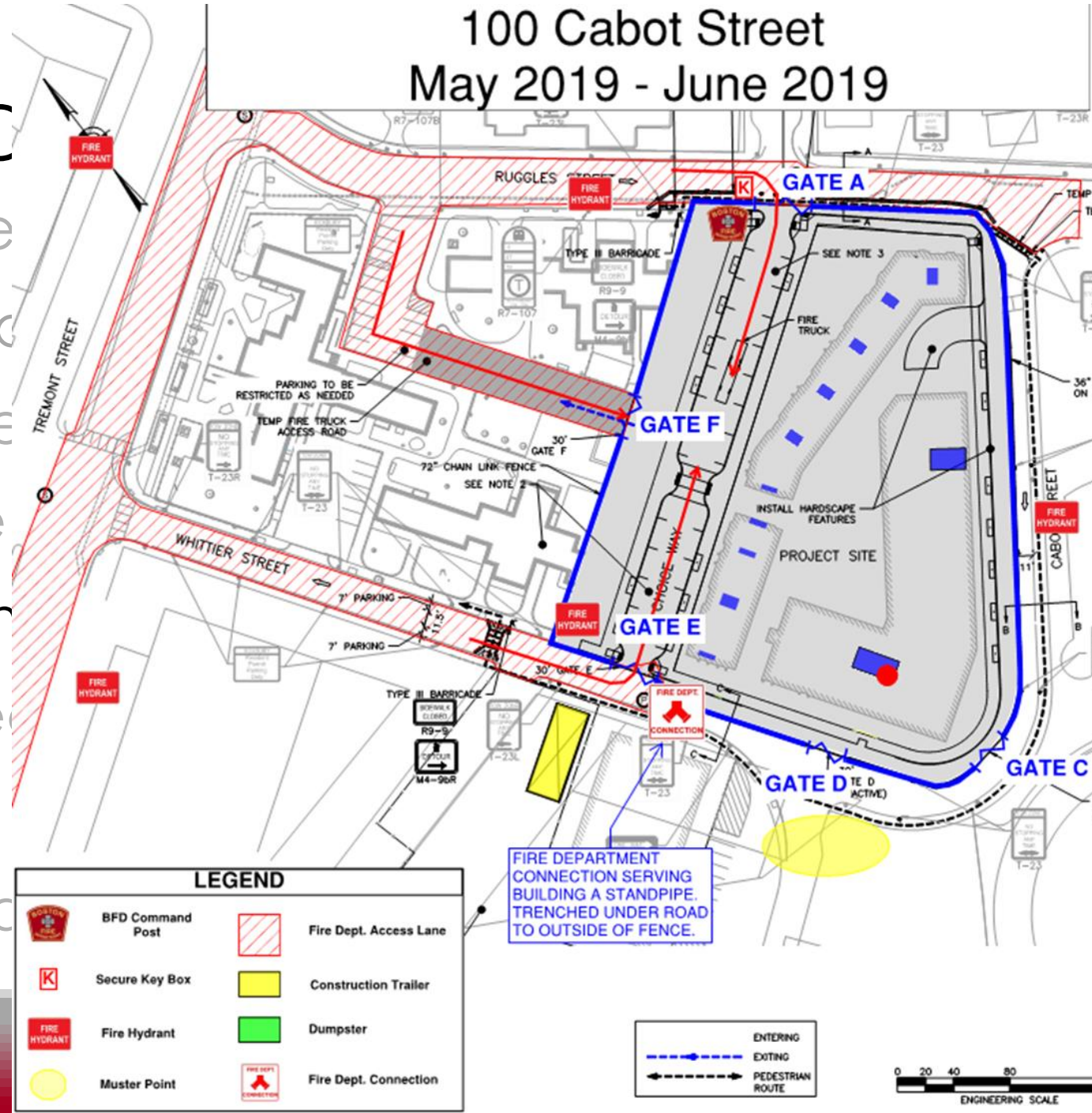
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100 Cabot Street May 2019 - June 2019

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Hot Work Log

Date	Time	Subcontractor	Type(s) of Hot Work	Locations(s)	Name of Fire Watch (Print)

Sample Inspection Form

Inspection Details			
Inspection Type	NFPA 241	Inspection Date	
Project		Inspected By	
		Reviewed With	

Category : Sub-Category			
Personnel Shacks	Compliant (Y/N)	If No - Company Responsible	Corrective Action Needed
Smoke Detector Provided			
Portable and Spot Fire Extinguishers			
No Smoking Sign			
No storage and good housekeeping			

Hot Work	Compliant (Y/N)	If No - Company Responsible	Corrective Action Needed
Permit(s) in hand; details as necc			
Fire Watch provided			
Extinguisher at operation			
No combustibles present			
Hot work and Watch Logs Complete			

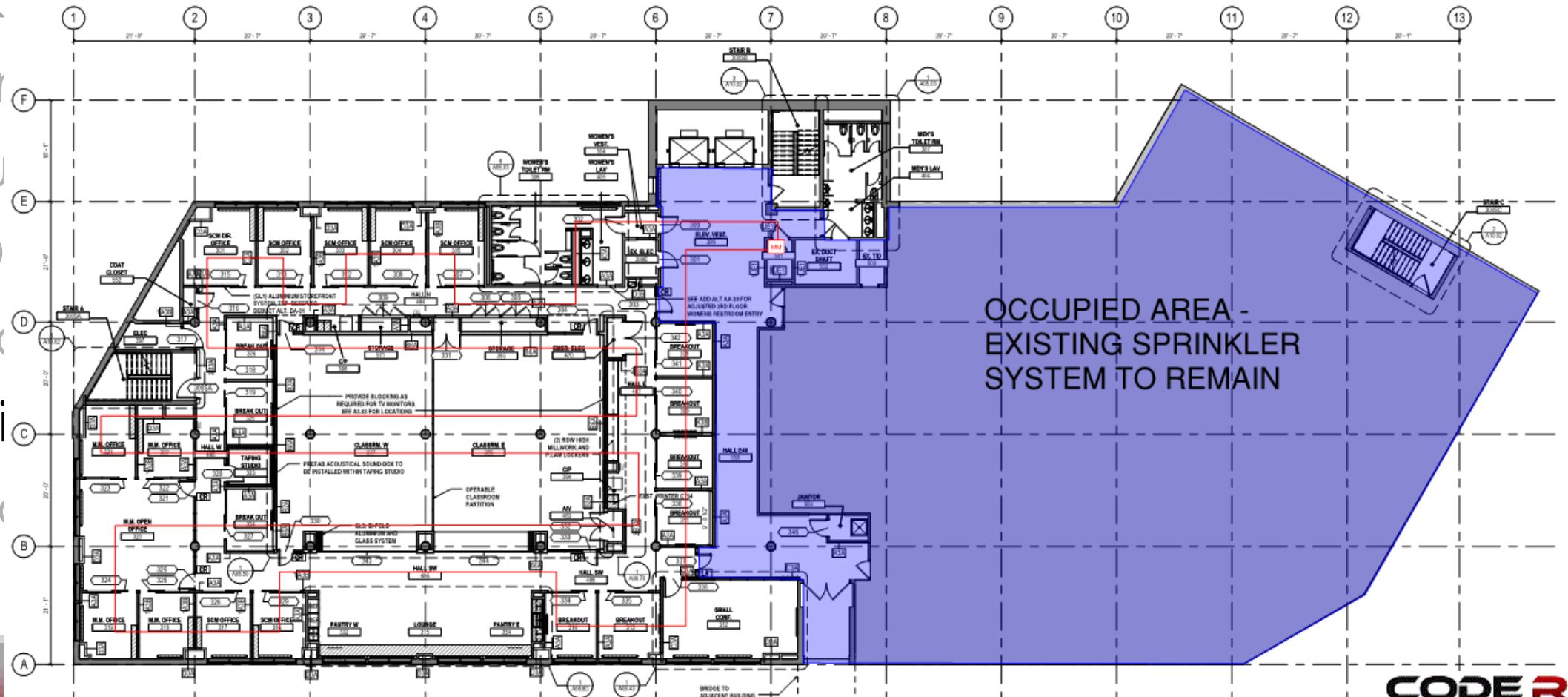
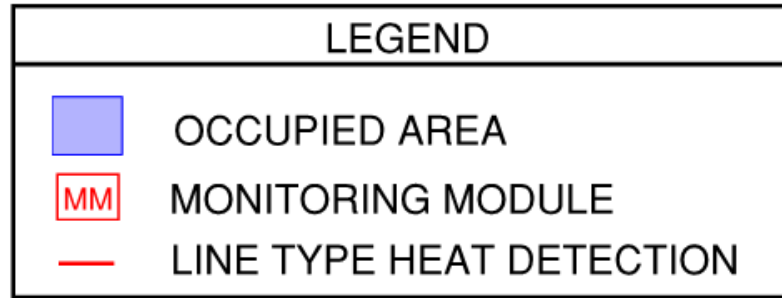
Flammable Liquids/Gases	Compliant (Y/N)	If No - Company Responsible	Corrective Action Needed
Permit(s)			
Removed From Building if not in use			
Cages/Cabinets per permits			
Separation/Barrier present			
Canisters Labeled Per Sub Contr			

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CON

- Signal
- Stack
- Hazard
- Feature
- Fire D
- Logs
- Impair
- Typical

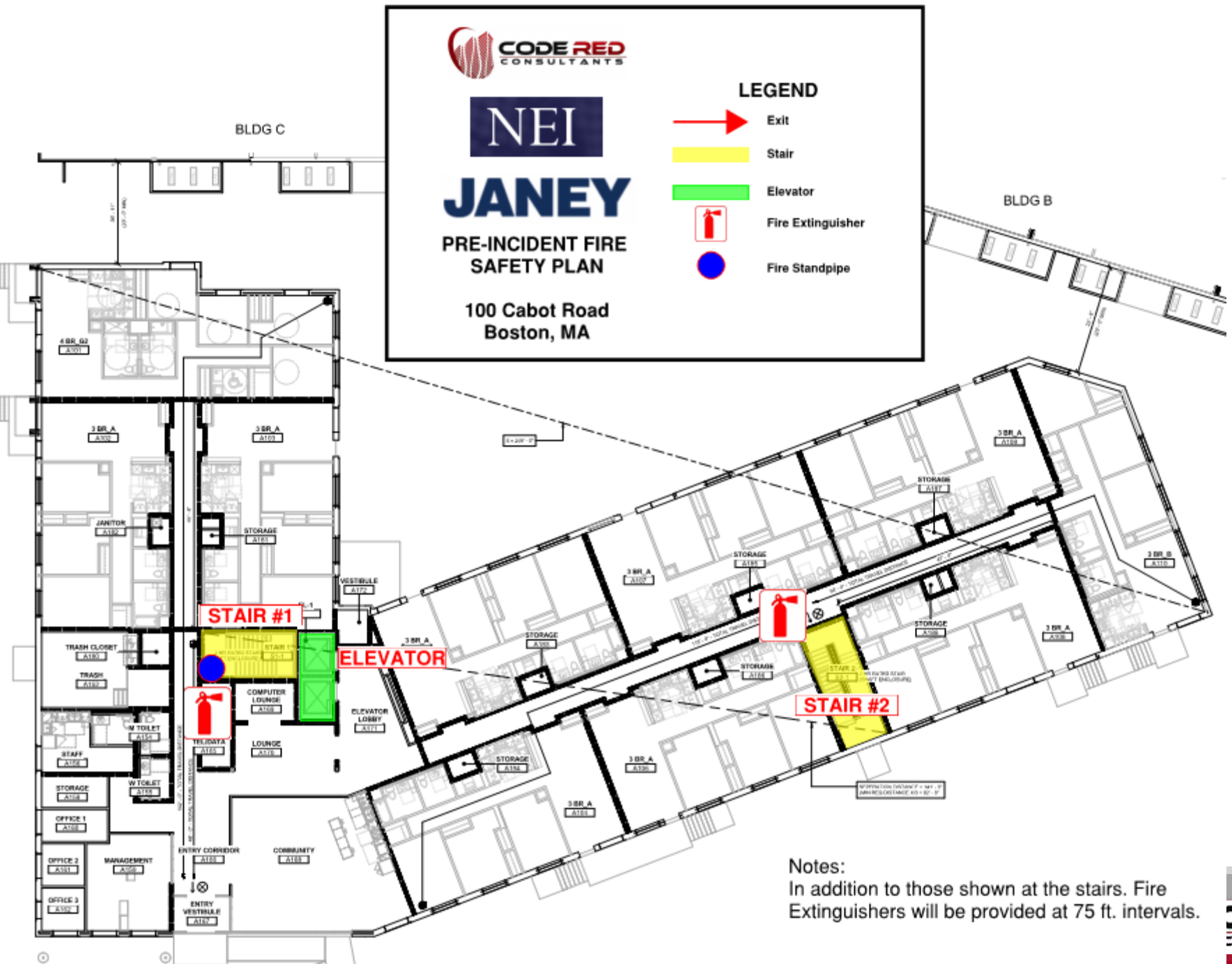


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NFPA 241 Coordination

- Fire Alarm System permit applications
- Fire Suppression System permit applications
- Temporary heat detection
- Impairment process

NFPA 241 IMPLEMENTATION - A LIVING, BREATHING DOCUMENT



December 4, 2018
Project #: 165171

Date: December 4, 2018

To: Boston Fire Prevention - Boston Fire Department
Name, Plans Reviewer - Boston Inspectional Services

From: Name - NEI FPPM

Re: NEI NFPA 241 Plan Addendum to include [Project Description constructed by GC Name]

Cc: Name - Fire Prevention Program Manager - NEI
Name - Alternate Fire Prevention Program Manager - NEI
Peter Harrod - Code Red Consultants

To Whom It May Concern,

As you are aware, a comprehensive NFPA 241 Construction Fire Safety Plan was delivered to Boston Fire Department (BFD) on [Date]. As anticipated, ongoing/proposed construction within the building has changed over time. To that end, please find this letter and the attached Proposed & Ongoing Construction Activity Summary, which will serve as an Addenda to the NEI NFPA 241 Plan.

Should you have any questions or require any additional information, please contact me directly.

Prepared by:

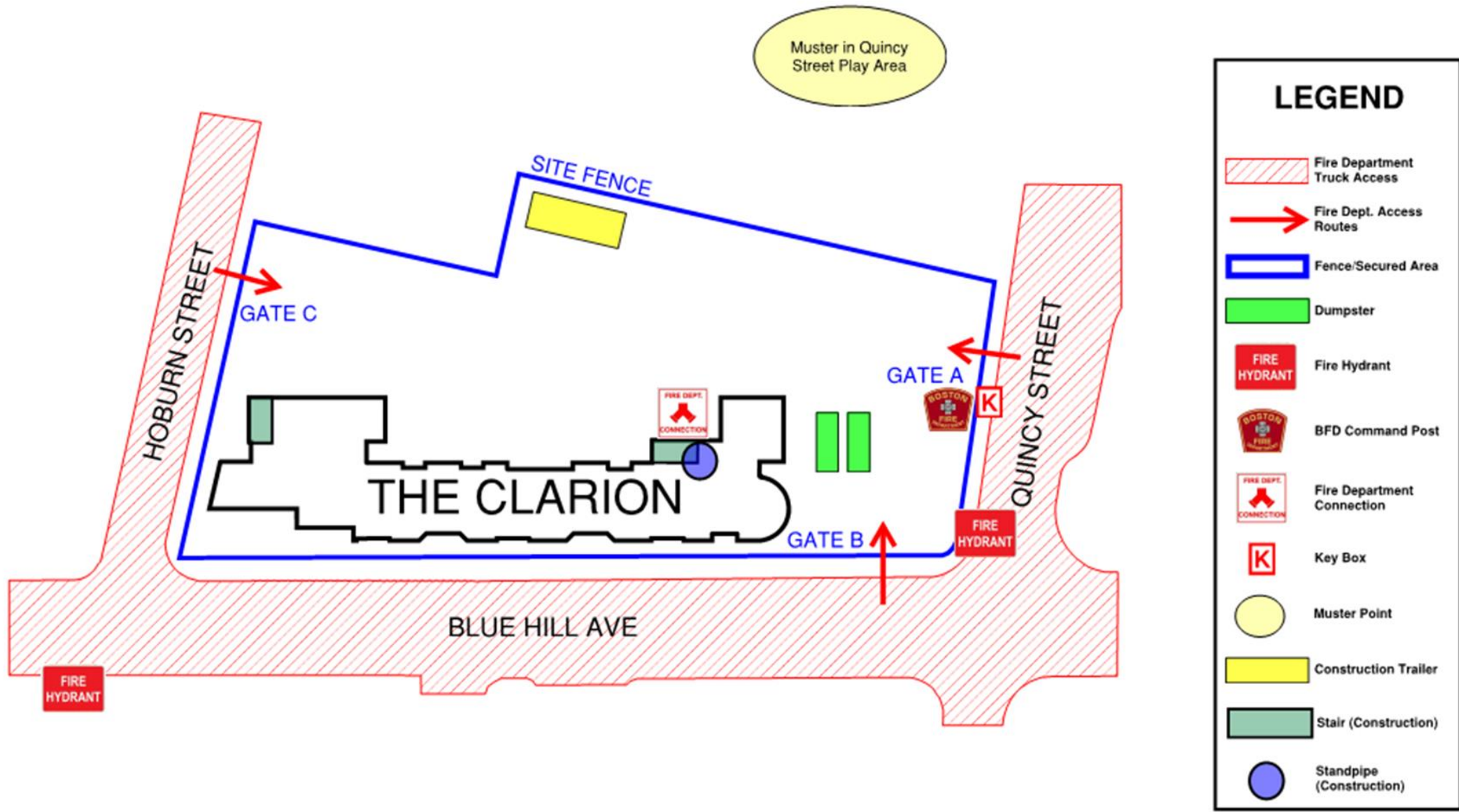
[FPPM]

Name Date

Contact Information

What to Identify on the Pre-Incident Plan

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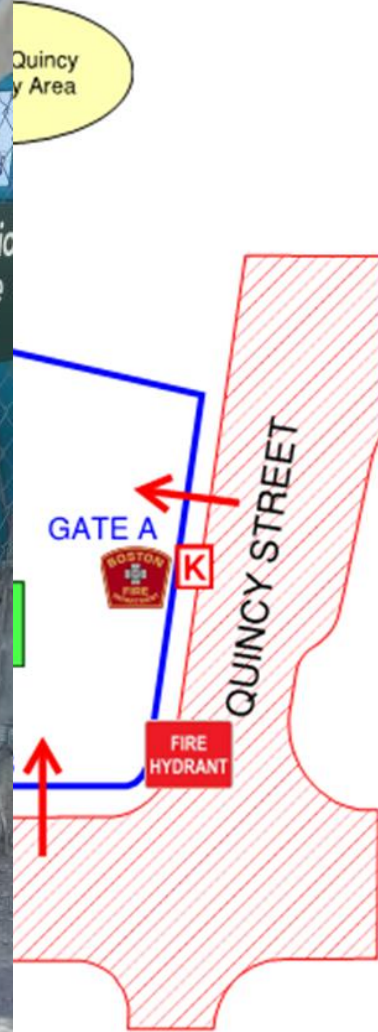
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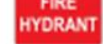







LEGEND

- Fire Department Truck Access
- Fire Dept. Access Routes
- Fence/Secured Area
- Dumpster
- Fire Hydrant
- BFD Command Post
- Fire Department Connection
- Key Box
- Muster Point
- Construction Trailer
- Stair (Construction)
- Standpipe (Construction)

What to Identify on the Pre-Incident Plan















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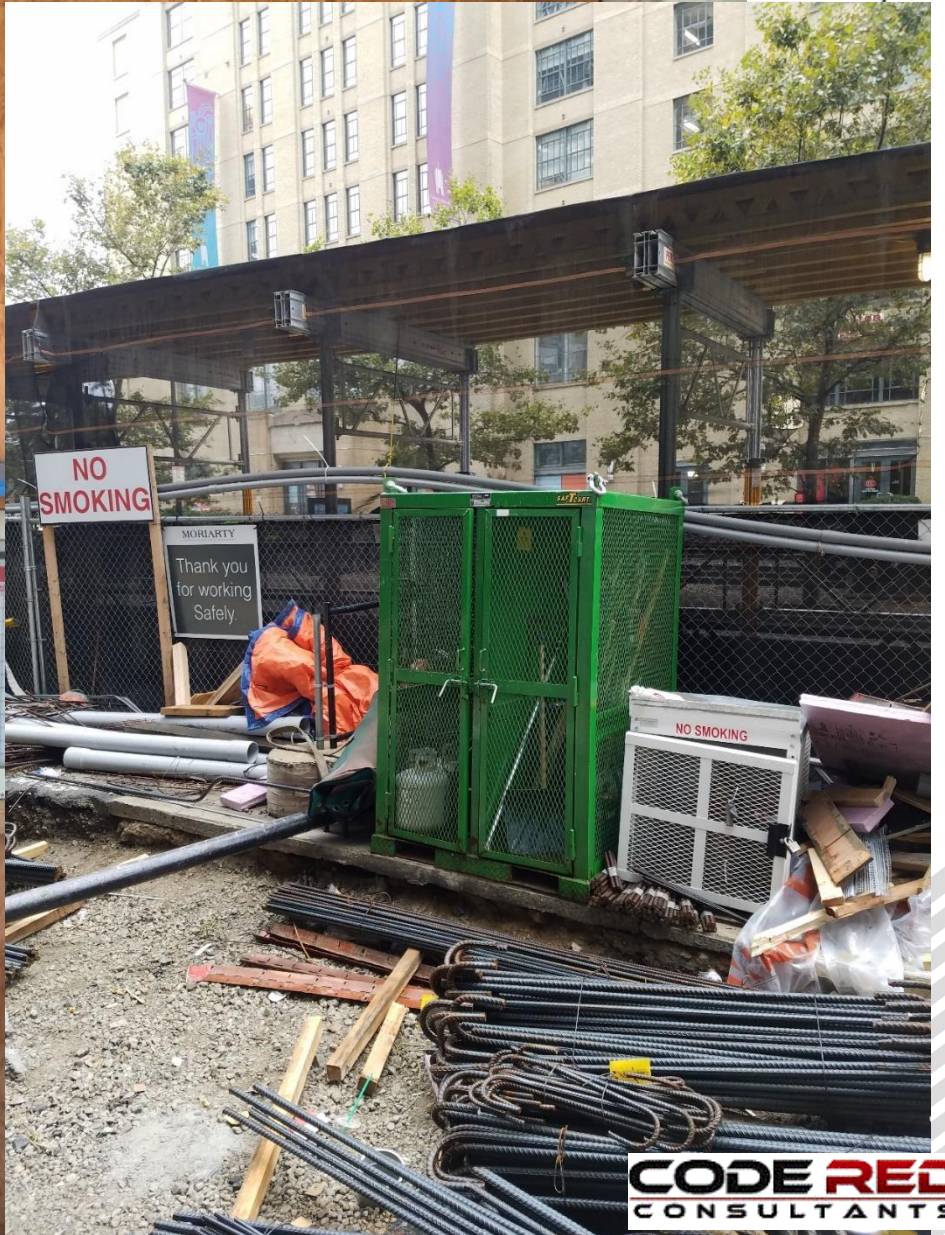
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241 Implementation- Knowledge Transfer to Subs

- FD inspections are unannounced
- All workers should be able to at least answer the following:
 - Who is the project FPPM?
 - Who is the owners FPPM?
 - Where is the 241 plan kept?
 - Where is the hot work white board?
 - Must be active and accurate
 - Where are the impairment and hot work permits?
 - Must be active and accurate

241 Implementation- Field Offices

- Temporary trailers
 - Required separation distance from adjacent buildings and bldg. under construction
 - Stacked trailers may require sprinkler protection
- Shanties inside building
 - Local smoke detectors, FRT including door, extinguisher, no combustible insulation or flammable liquid storage
 - Daily inspections by FPPM requires keys to shanties
 - No TCO generally permitted with shanties in building

NFPA 241 Lessons Learned over Past 12 Months



NFPA 241 Lessons Learned over Past 12 Months

- Stairs
 - Code compliant 7x11 stair must extend to not more than 1 floor below the cured deck (not turned over floor). this includes compliant landings. This is for emergency evac purposes and right out of 241. The stair can be temporary as necessary.
 - Signage must remain at each stair floor landing, even when painting; suggest tying/chaining to standpipe if necessary. Include floor number, exit signage, and evac maps that illustrate current exit arrangement.
 - Fire extinguishers and air horns mounted at stairs.

NIEPA 241 Lessons Learned over



Lessons Learned over



Lessons Learned over



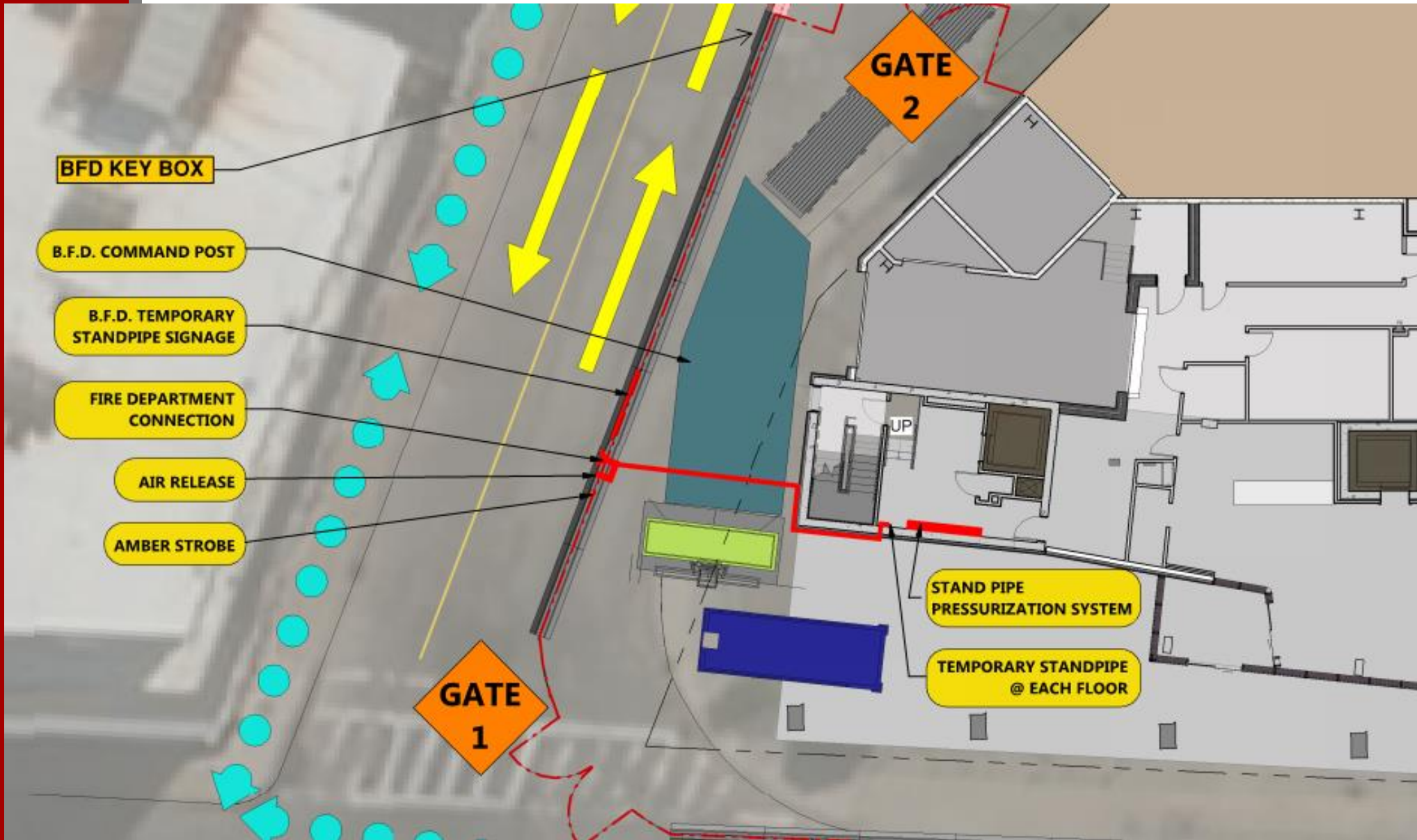


Construction Standpipes



Construction Standpipes

- Temporary standpipe should be available when floor level of cured (or walkable) working deck is 30-feet above lowest FD access.
- Standpipe should climb to 1 floor below the cured (or walkable) deck (not to be confused with the lowest “turned over floor”).
- Make sure signage is provided at FDC, with required pumping pressure indicated on the sign.
- Free and unobstructed access to FDC



BFD KEY BOX

B.F.D. COMMAND POST

**B.F.D. TEMPORARY
STANDPIPE SIGNAGE**

**FIRE DEPARTMENT
CONNECTION**

AIR RELEASE

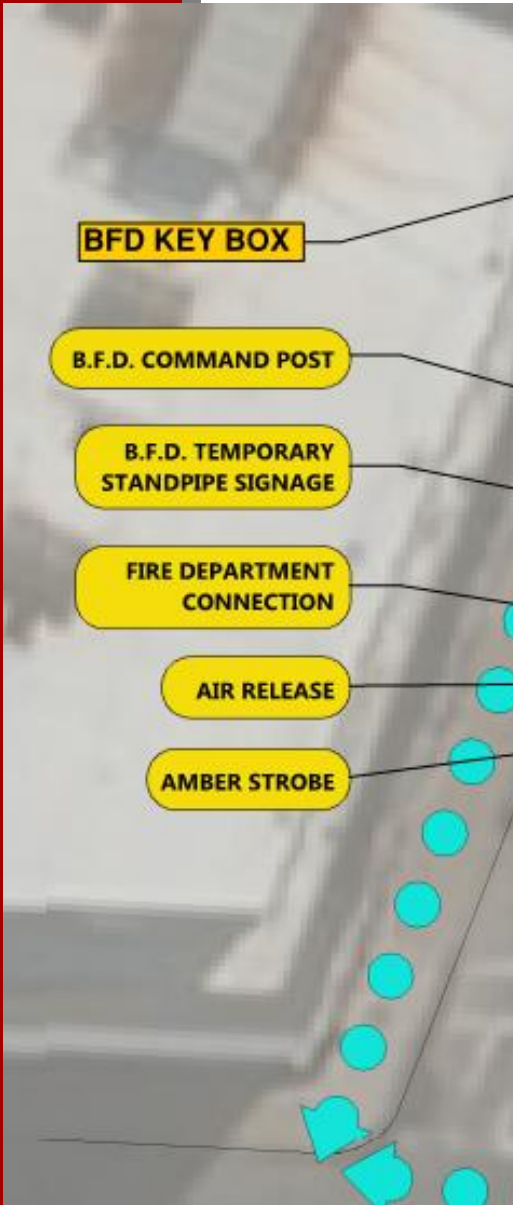
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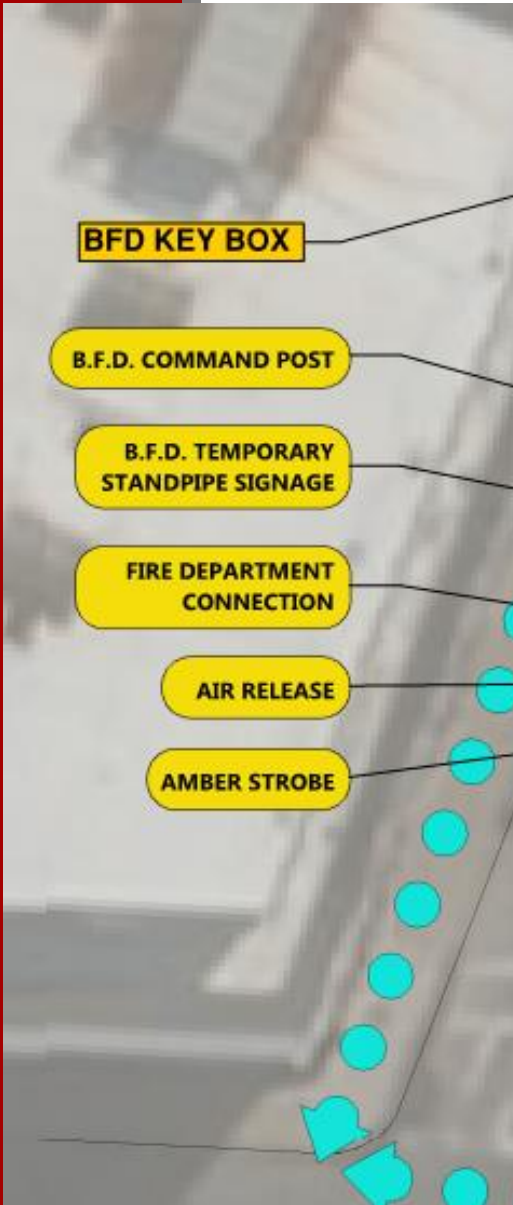
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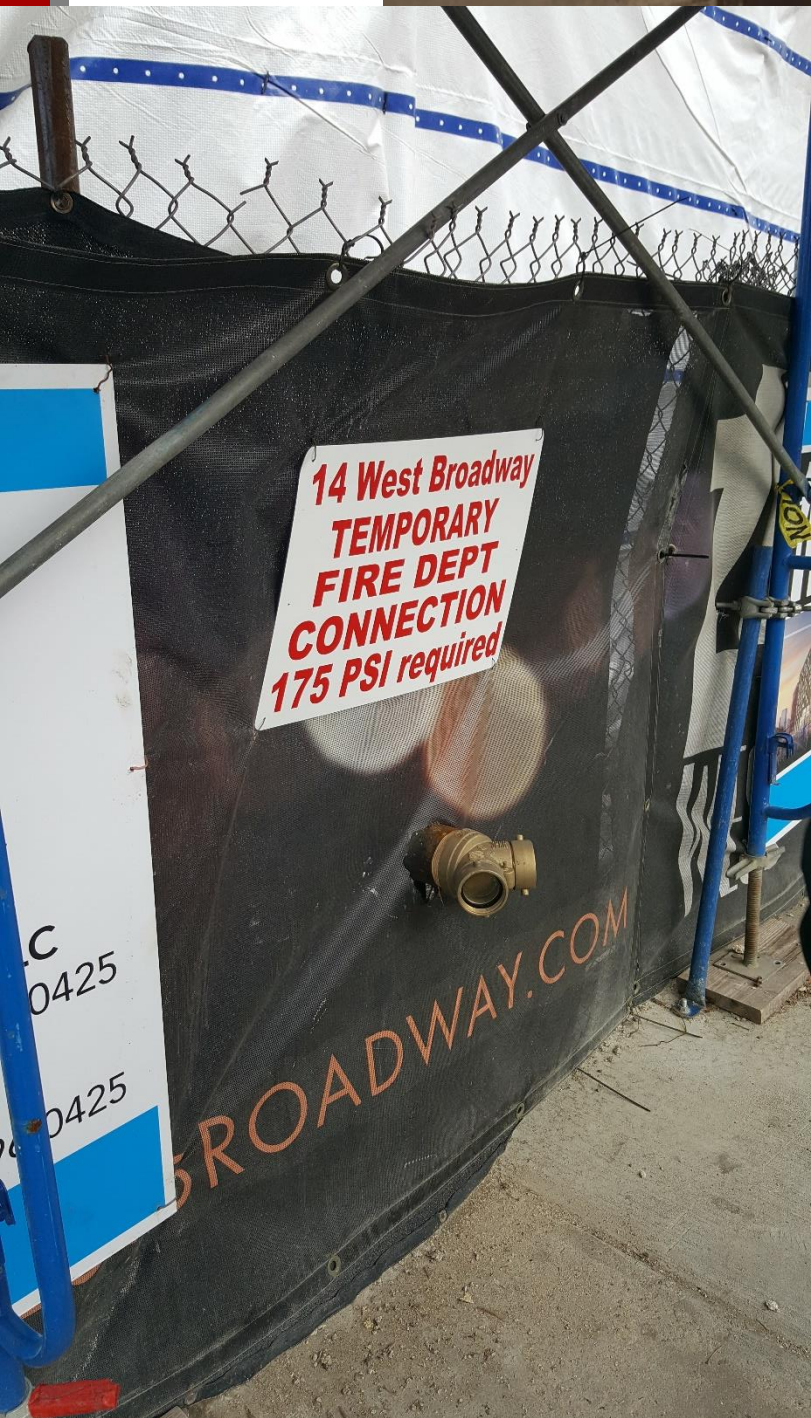
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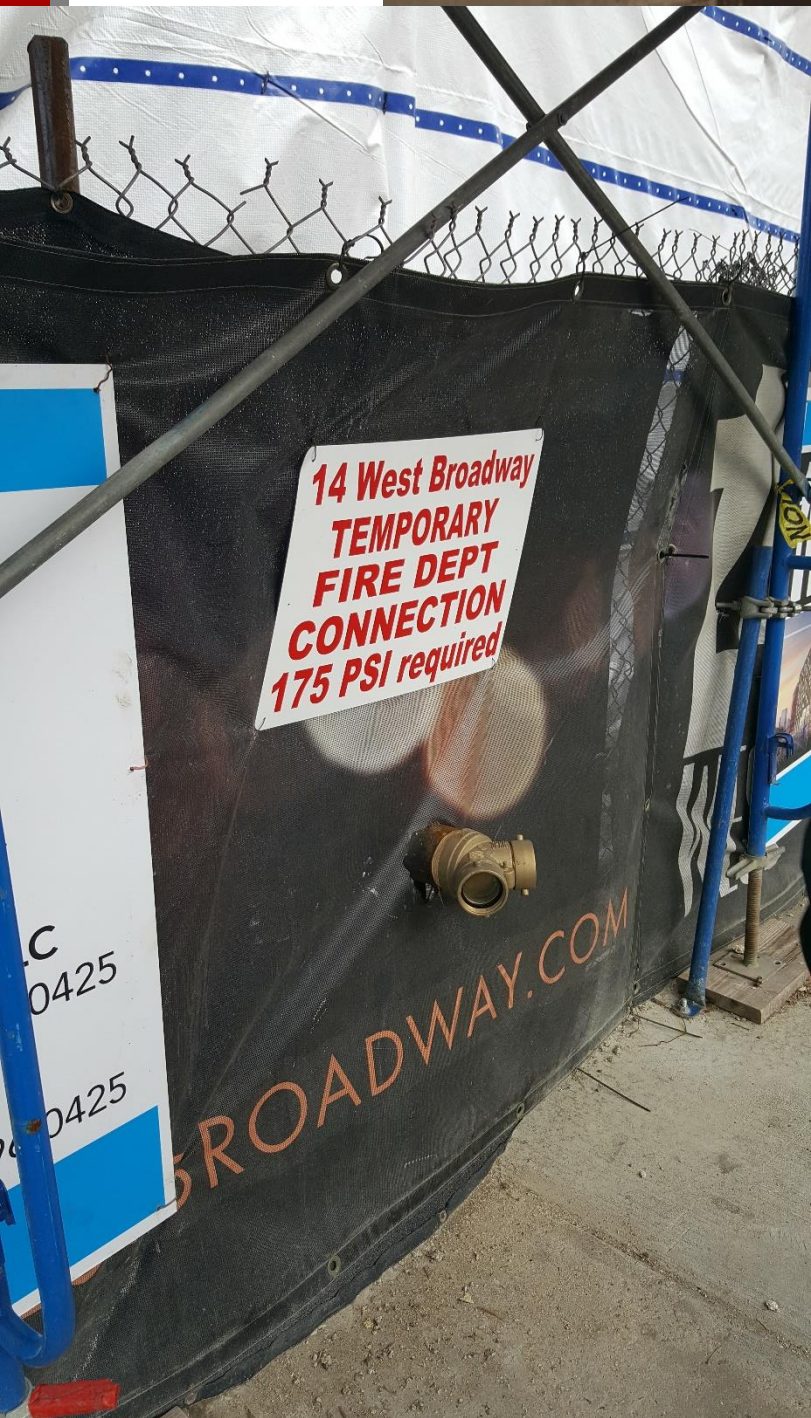
**STAND PIPE
PRESSURIZATION SYSTEM**

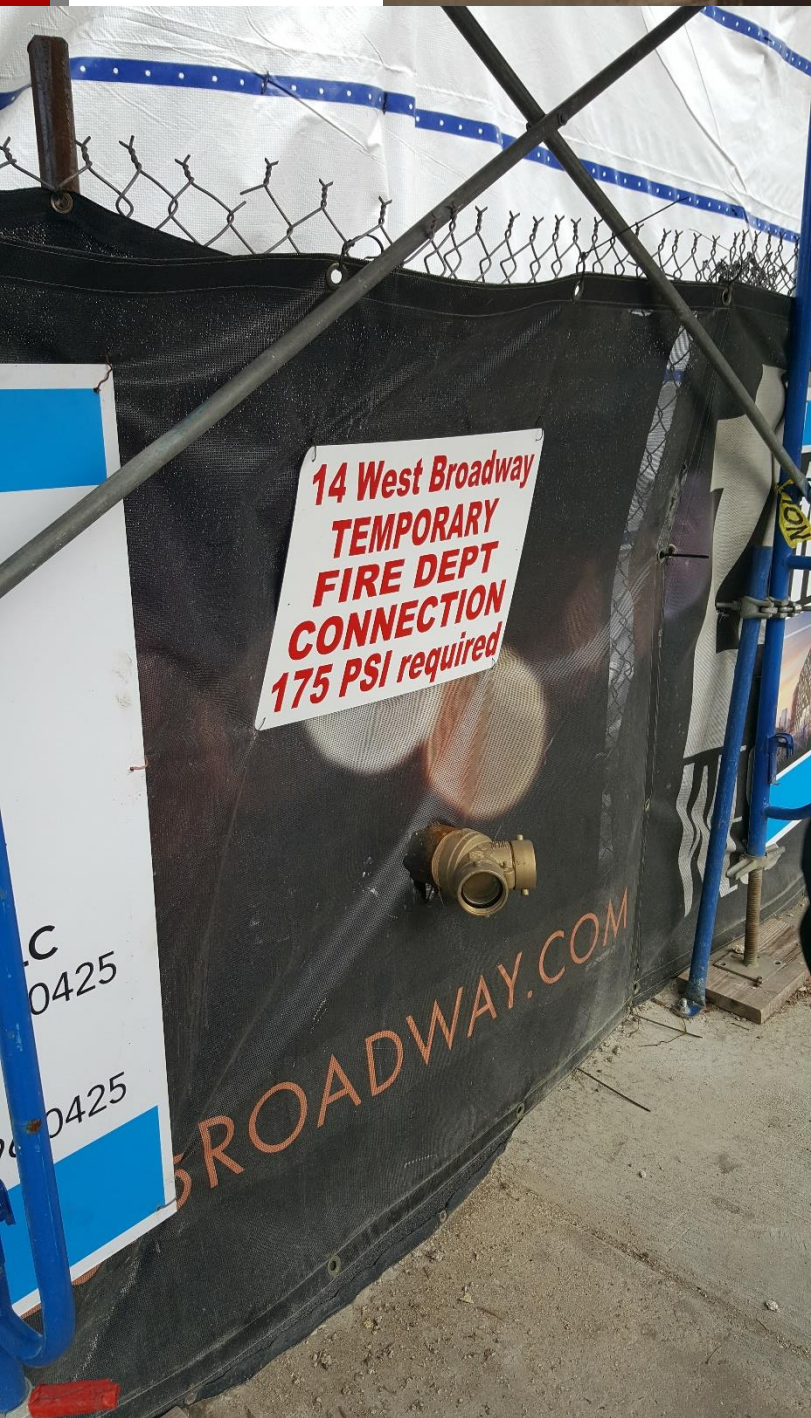
**TEMPORARY STANDPIPE
@ EACH FLOOR**











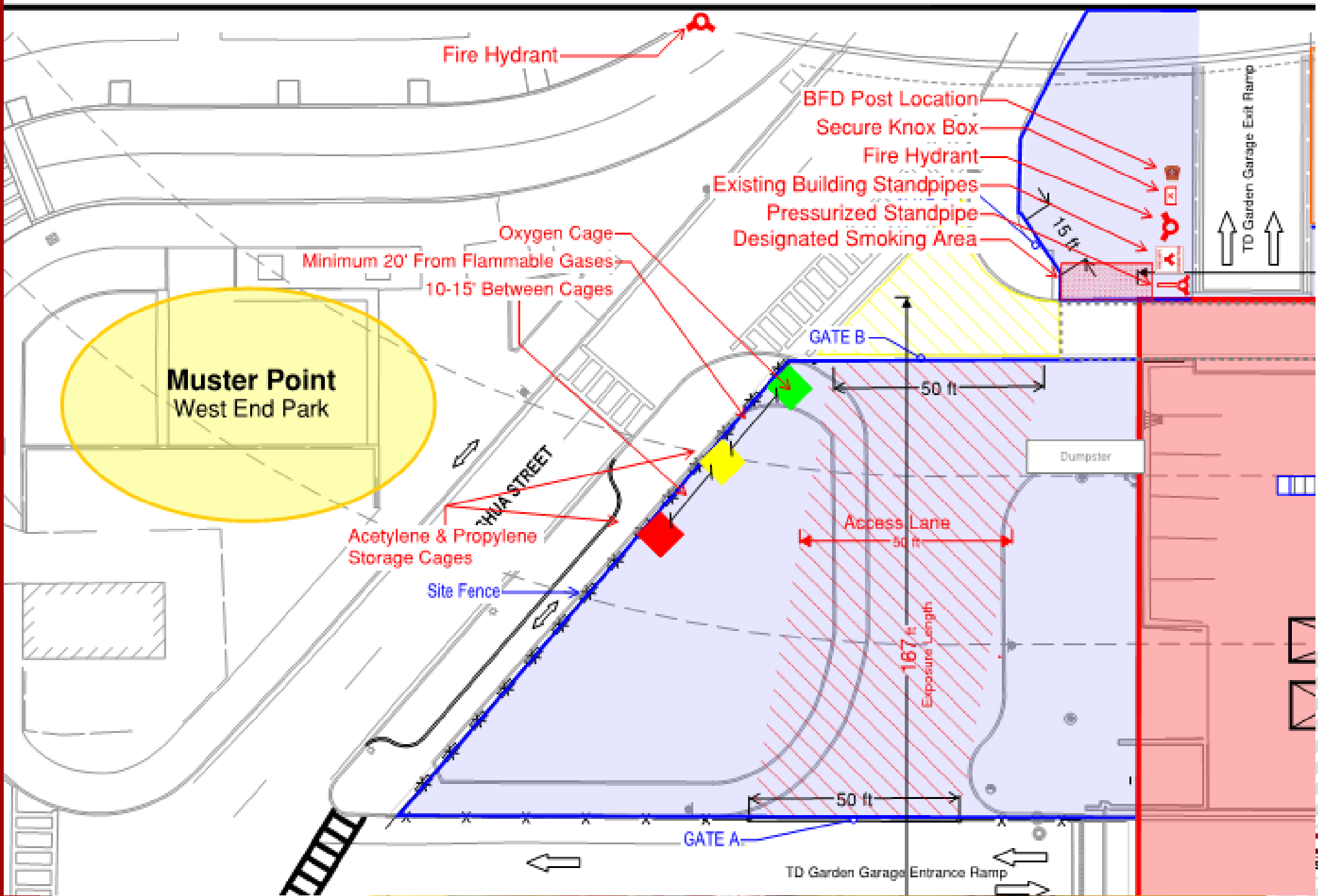
241 Implementation- Construction Operations

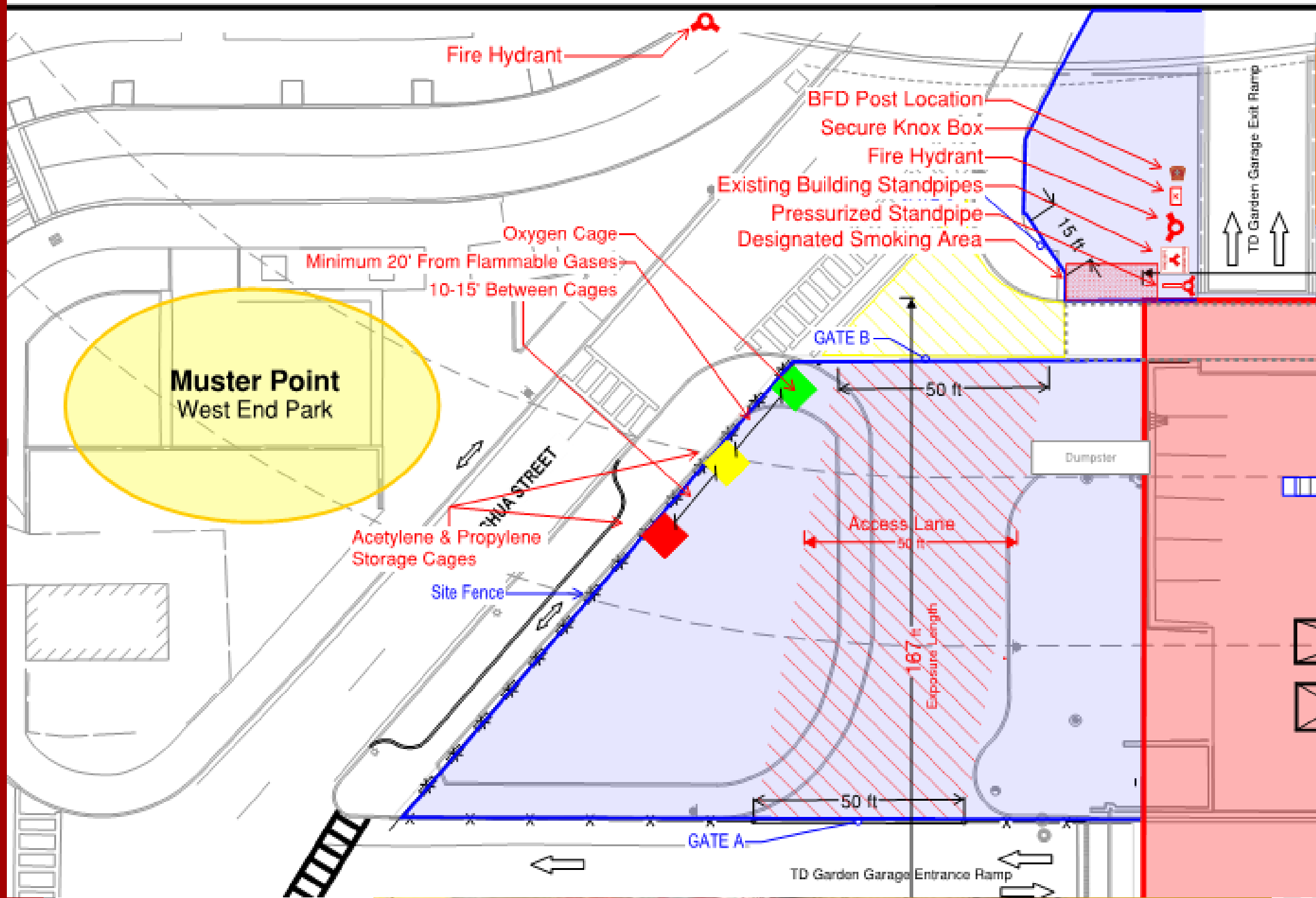
- Waste Removal
 - Dumpster permit/Trash Chute
 - Combustible materials removed from site daily, should not be more than 1 days worth of debris at any point
 - FPPM and staff monitors regularly, daily review of egress paths
- Dumpster location required to be outside the building unless you get special permission



General Storage for Fuel

- Flammable Gas Storage
 - Need for Fuel Storage Permit – check with AHJ
 - Include material such as:
 - O2, Acetylene, gas/diesel, propane
 - Fuel for temp heat
 - Fuel for equipment stored inside the building
 - Preincident site plan with accurate primary/secondary location
 - 1-hour stalls or inside storage requires special permission and letter from an FPE





241 Implementation- Documenting Hot Work



241 Implementation- Documenting Hot Work

- White board / logs updated daily prior to work
- Records to be kept on site
 - FPPM reviews and files the paperwork
 - Can be in 241 binder at approved location or in a separate binder in the field office if outlined in 241 plan
 - Person performing hot work submits paperwork to FPPM at the end of the shift
- Dedicated fire watch must remain present at hotwork site for 30 min after completion (even at lunch/break; provide relief as necessary).
- If sparks impact adjacent buildings, FD detail likely required to protect that property owner. District chief should be made aware of hazard for review.

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THE POINT PROJECT
CONSTRUCTION FIRE SAFETY PROGRAM
HOT WORK LOG

DATE	FORN-CASE PERMIT #	HOT WORK PERMIT #	CONTRACTOR	TYPE OF HOT WORK	LOCATION(S)	NAME OF FIRE WATCH (PRINT)	FIRE WATCH SIGNATURE (SIGN AT COMPLETION OF 30-MINUTE PERIOD)	COMMENTS
9/3	COJ551010	17758	JTC	welding	level B-2	M. Murphy		

241 Implementation- Sample Fire Watch and Hot Work Logs

Hot Work Log

Date	Time	Subcontractor	Type(s) of Hot Work	Locations(s)	Name of Fire Watch (Print)	Hot Work Certificate Number

Hot Work Permit Issue Log

Name	Date	Company	Start Time	Finish Time	Fire Watch Sign-off Time	Location of Hot Work	Permit Returned

Sample Inspection Form

Sample Inspection Form

Inspection Details			
Inspection Type:	NFPA 241	Inspection Date:	
Project:		Inspected By:	
		Reviewed With:	
Personnel Shacks	Compliant (Y/N)	If No - Company Responsible	Corrective Action Needed
Smoke Detector Provided Portable and Spot Fire Extinguishers No Smoking Sign No storage and good housekeeping			
Hot Work	Compliant (Y/N)	If No - Company Responsible	Corrective Action Needed
Permit(s) in hand; details as nec Fire Watch provided Extinguisher at operation No combustibles present Hot work and Watch Logs Complete			
Flammable Liquids/Gases	Compliant (Y/N)	If No - Company Responsible	Corrective Action Needed
Permit(s) Removed From Building if not in use Cages/Cabinets per permits Separation/Barrier present Canisters Labeled Per Sub Contr			
Standpipes/Hydrants	Compliant (Y/N)	If No - Company Responsible	Corrective Action Needed
Pressurized/Capped Clear/Marked/PSI Signage at FDC Connections Unobstructed Impairment Log Site Hydrants Free and Clear			
Housekeeping	Compliant (Y/N)	If No - Company Responsible	Corrective Action Needed
NO SMOKING on site Stairs/Walkways Clear <1 day of combustible debris in central location per floor Dumpster in permitted location <1 day of combustible materials in central location per floor			

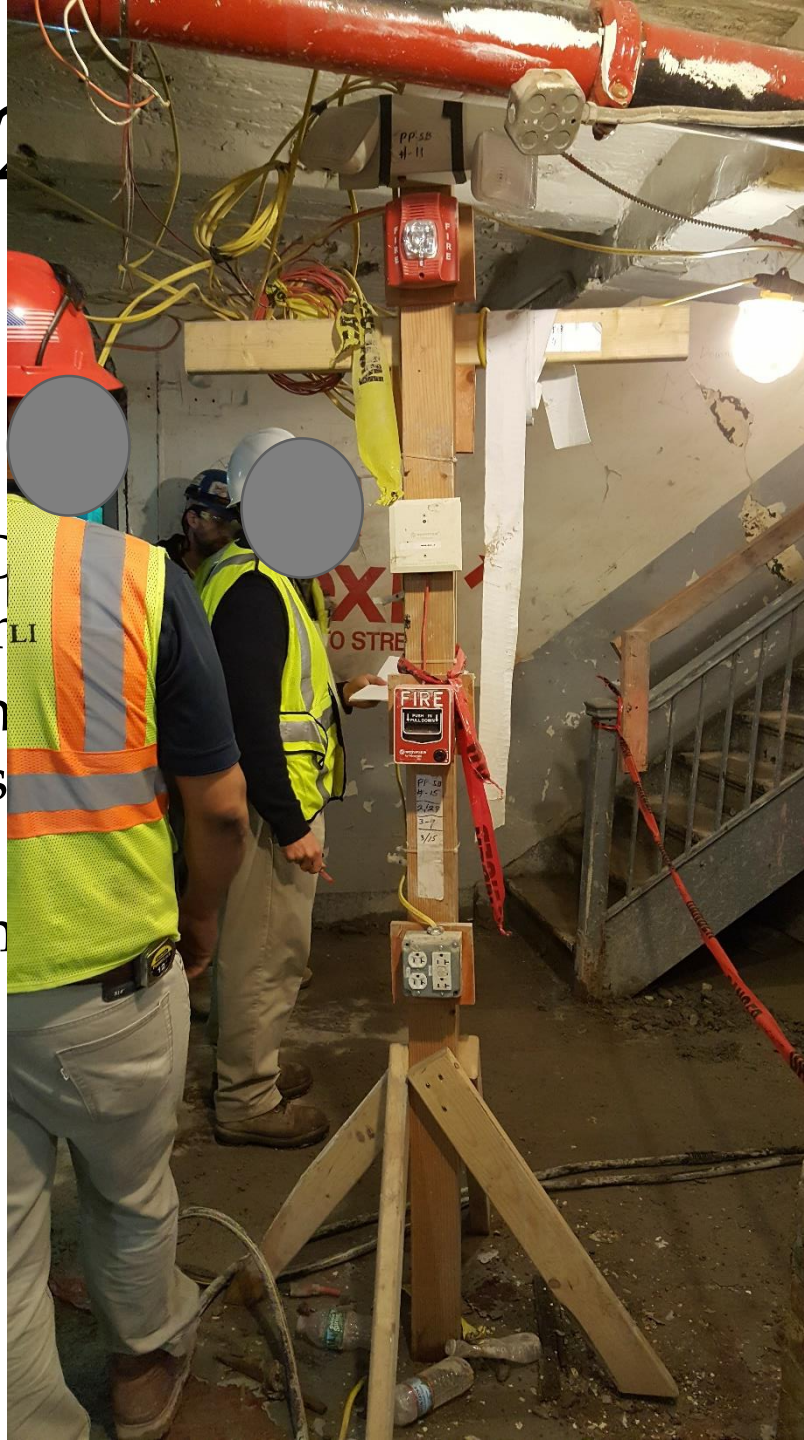


NFPA 241 Lessons Learned over Past 12 Months

- Accepted Fire protection, alarm, smoke control systems
 - Once FD accepts these, they must remain active or an impairment permit must be sought.
 - Disabling/bagging of SD's after FD f/a acceptance requires bagging permit; note number of floors needed prior to occupancy
 - Fire pumps must remain on once accepted.

NFPA 2

- Accepted systems
 - Once FD impairment
 - Disabling requires prior to
 - Fire pun



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Smoke control

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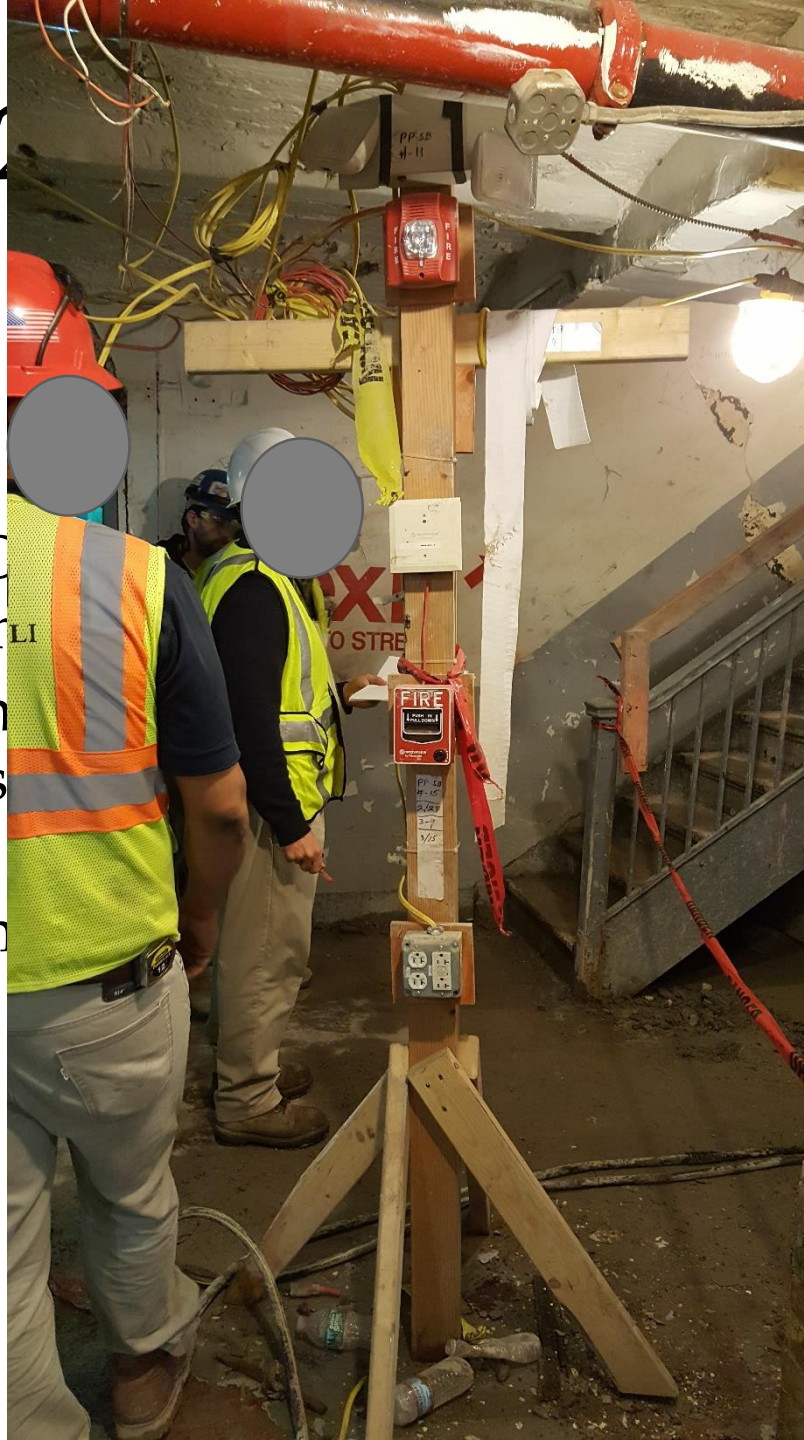
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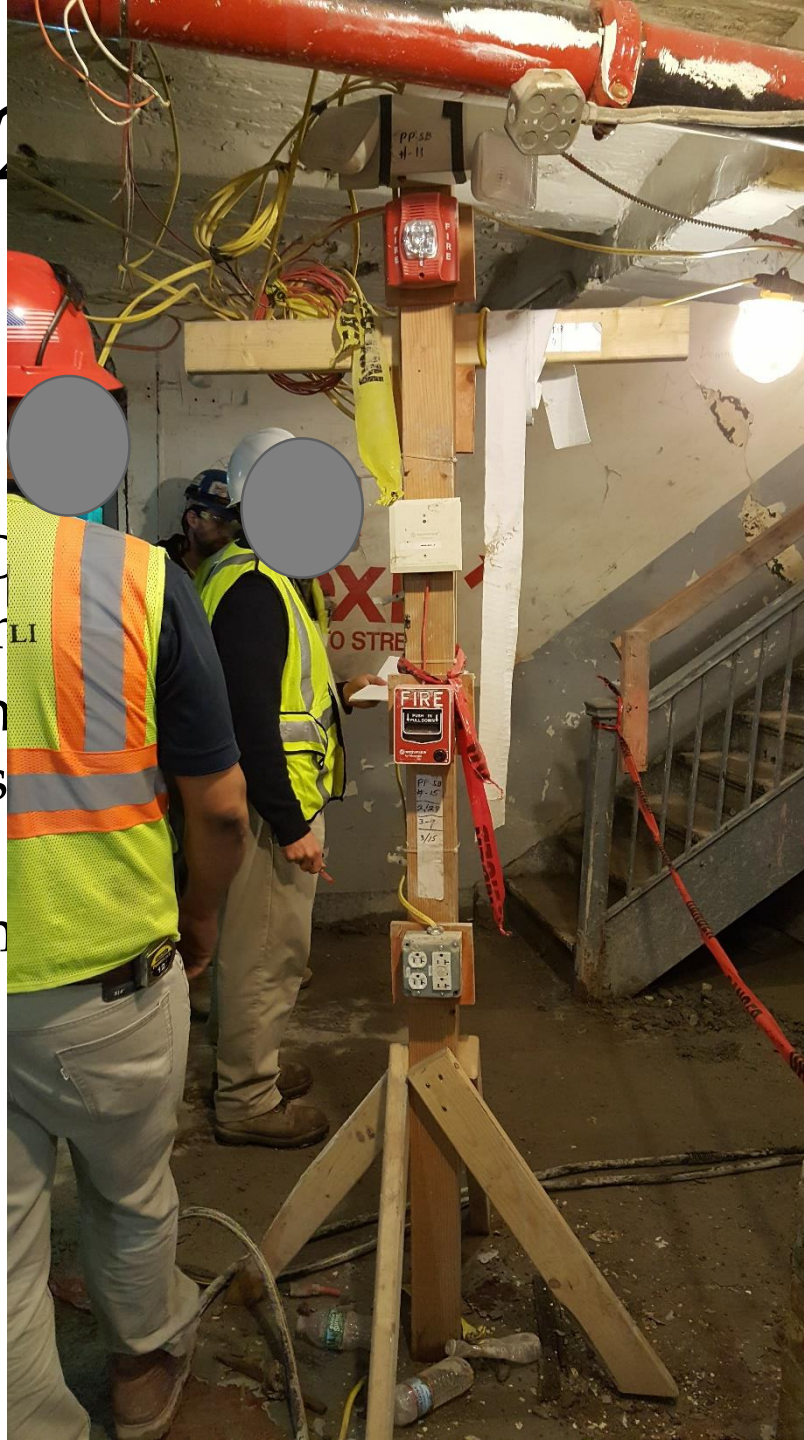
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COMMON CHALLENGES

- REMOVAL OF CEILINGS W/OUT SPRINKLER IMPAIRMENT
- BAGGING OF ELEV LOBBY OR STAIR SMOKE DETECTORS
- FIRE EXTINGUISHERS ON STANDS
- IMPEDIMENTS TO EGRESS PATHWAYS
- PEGGING OF DOORS
- HOT WORKS OCCURING WITHOUT FIRE WATCH
- MAINTANING STANDPIPE UNOBSTRUCTED WITH SIGNAGE AND IN GOOD CONDITION
- HOUSEKEEPING

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241 Implementation- Fire Protection During Construction

- Sprinklers
 - Impairment permit needed
 - New impairment submittals coordinated with 241 plan via letter of joint acknowledgment
 - Upturned heads or tiles replaced at the end of the shift
 - Impairments longer than 8 hours need heat detection in space that is impaired
 - Temp heat detection requires alteration permit
 - Prolonged impairments without sprinkler or fire alarm separated from occupied building with 1 hour separation



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plan via letter of joint

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fire alarm separated

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REMOVAL OF CEILINGS WITHOUT SPRINKLER IMPAIRMENT



Existing Condition



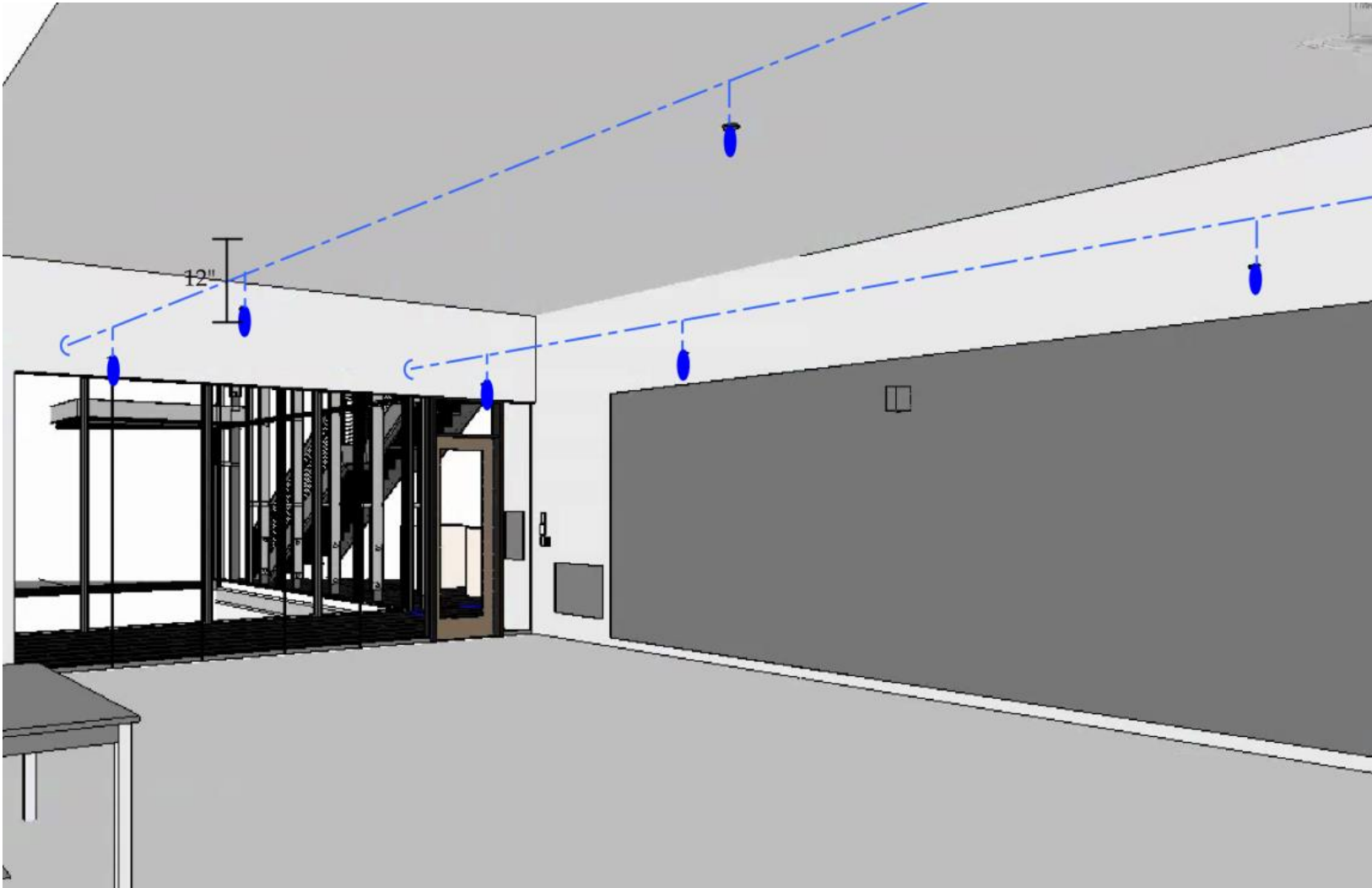
Code compliant in
reflected ceiling

REMOVAL OF CEILINGS WITHOUT SPRINKLER IMPAIRMENT

Ceilings removed during construction



Code compliant without reflected ceiling (within 12" in pendant position)

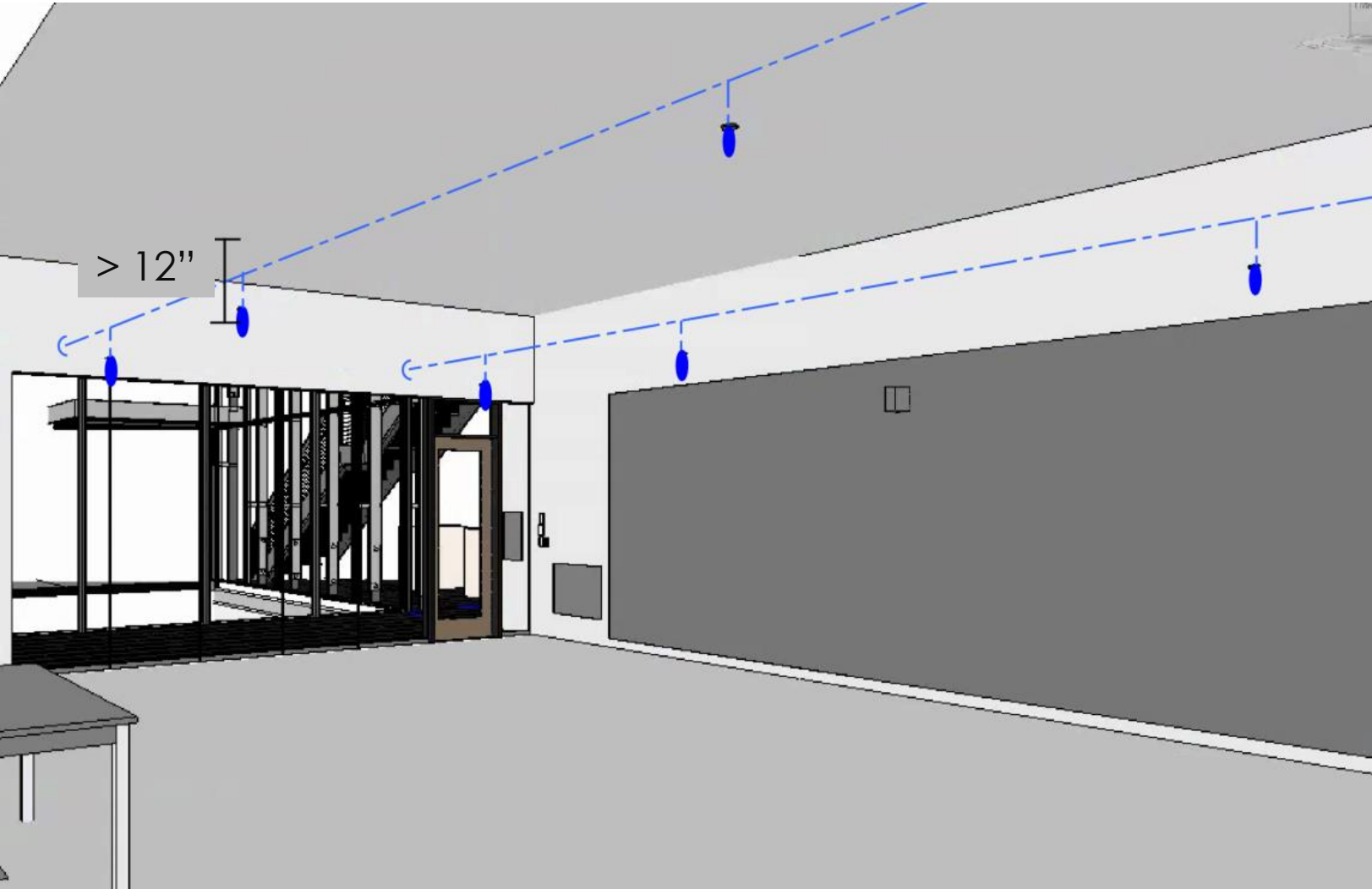


REMOVAL OF CEILINGS WITHOUT SPRINKLER IMPAIRMENT

Ceilings removed during construction



Non-code compliant (not within 12" of ceiling). Compliant alternative required

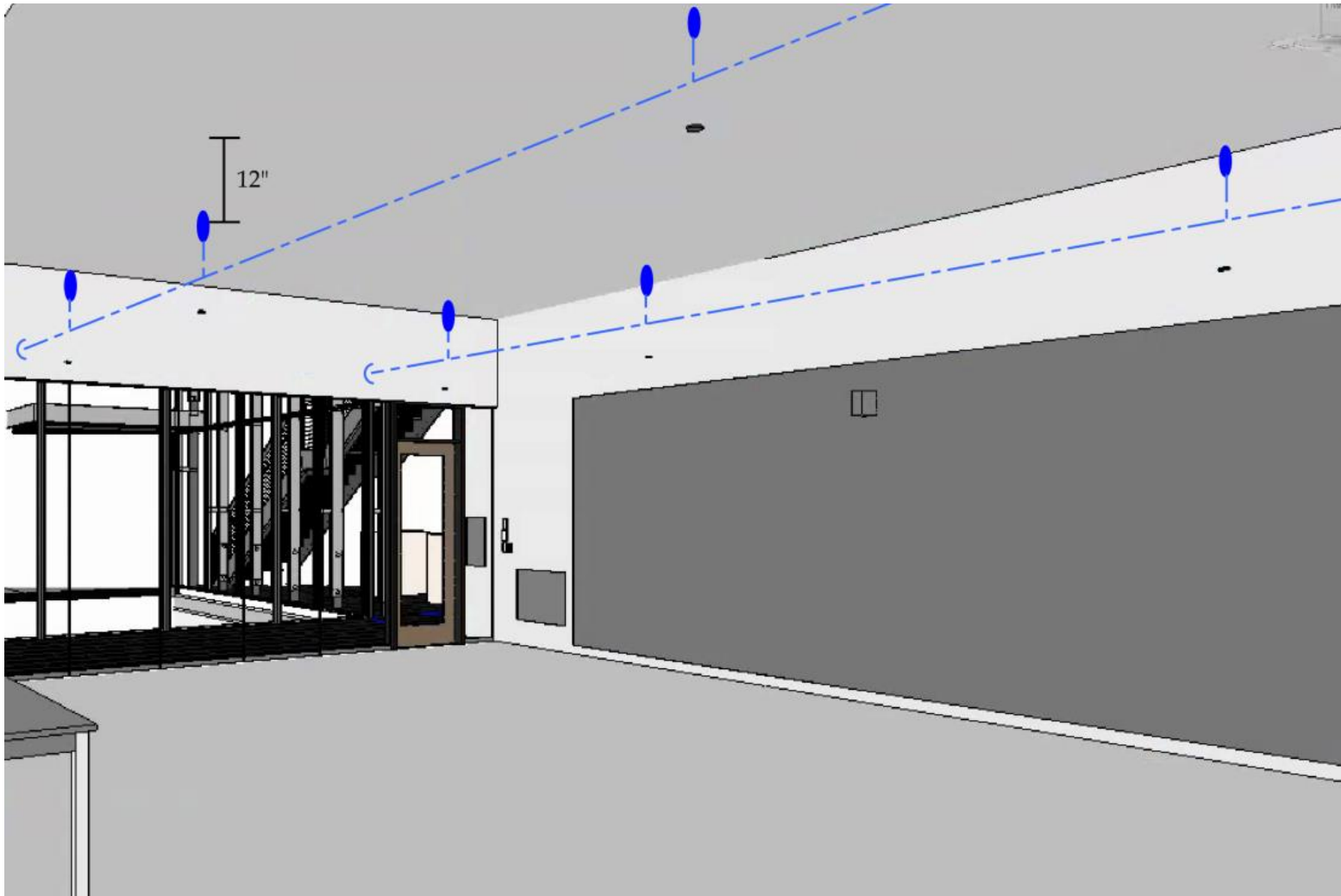


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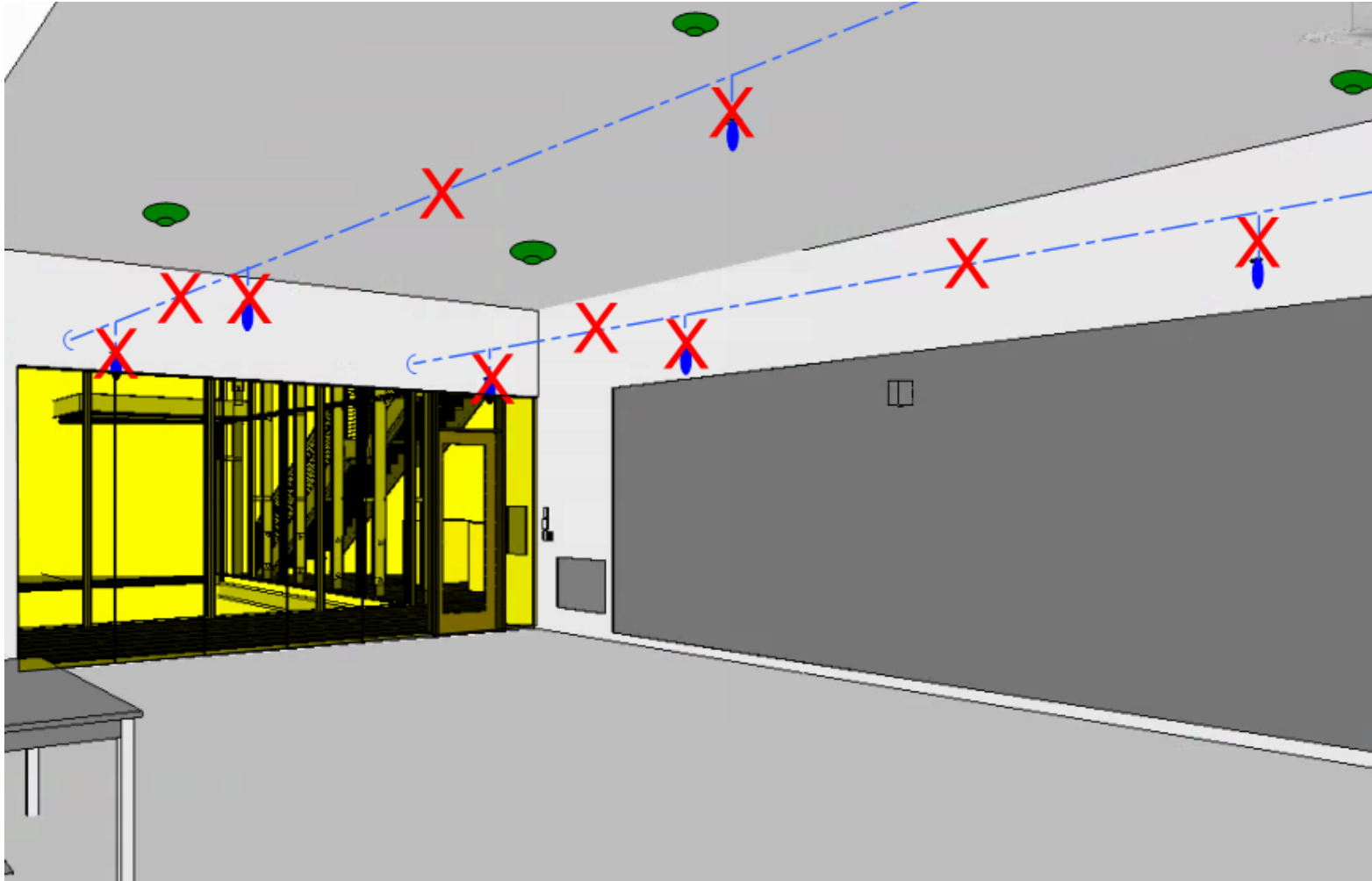
Ceilings removed during construction



Code compliant without reflected ceiling (within 12" in upright position)



REMOVAL OF CEILINGS WITHOUT SPRINKLER IMPAIRMENT



Ceilings removed during construction



Sprinkler system removed with temporary heat detection and 1-hour wall installed

REMOVAL OF CEILING WITHOUT SPRINKLER IMPAIRMENT

Ceilings installed for finished condition



Code compliant without reflected ceiling (within 12" in upright position)

REMOVAL OF CEILINGS WITHOUT SPRINKLER IMPAIRMENT

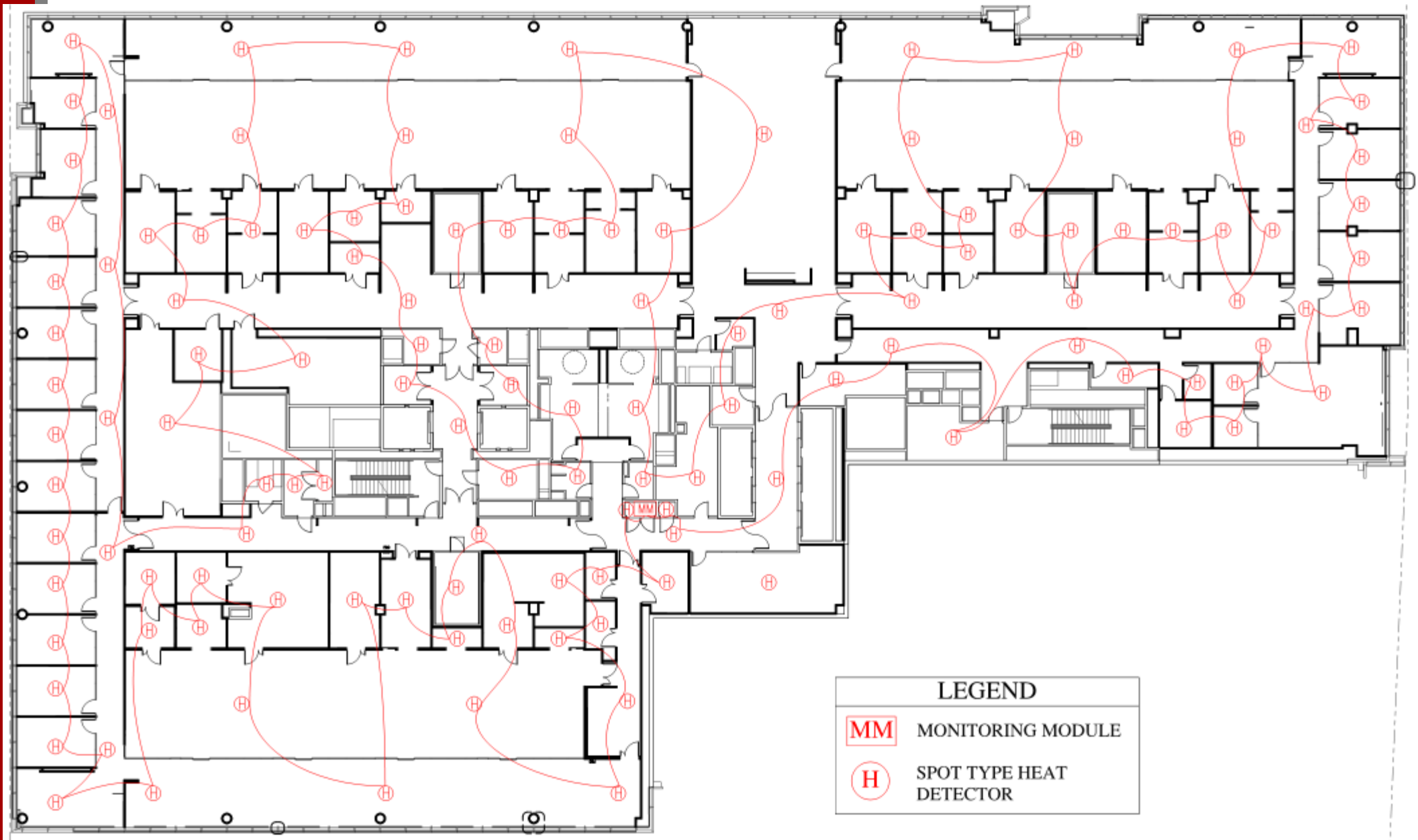
Ceilings installed for finished condition



Sprinklers downturned into reflected ceiling (>12") with temporary heat detection installed

Temporary Heat Detection

- Required for FP Impairments > 8 hours
- Need to determine early on if temporary detection is required
 - Work with institution to potentially award this work early under separate F/A permit.
 - Also consider including any a/v or sd devices that want to be demo'd during construction.



LEGEND

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MONITORING MODULE

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SPOT TYPE HEAT
DETECTOR

COMMON CHALLENGES

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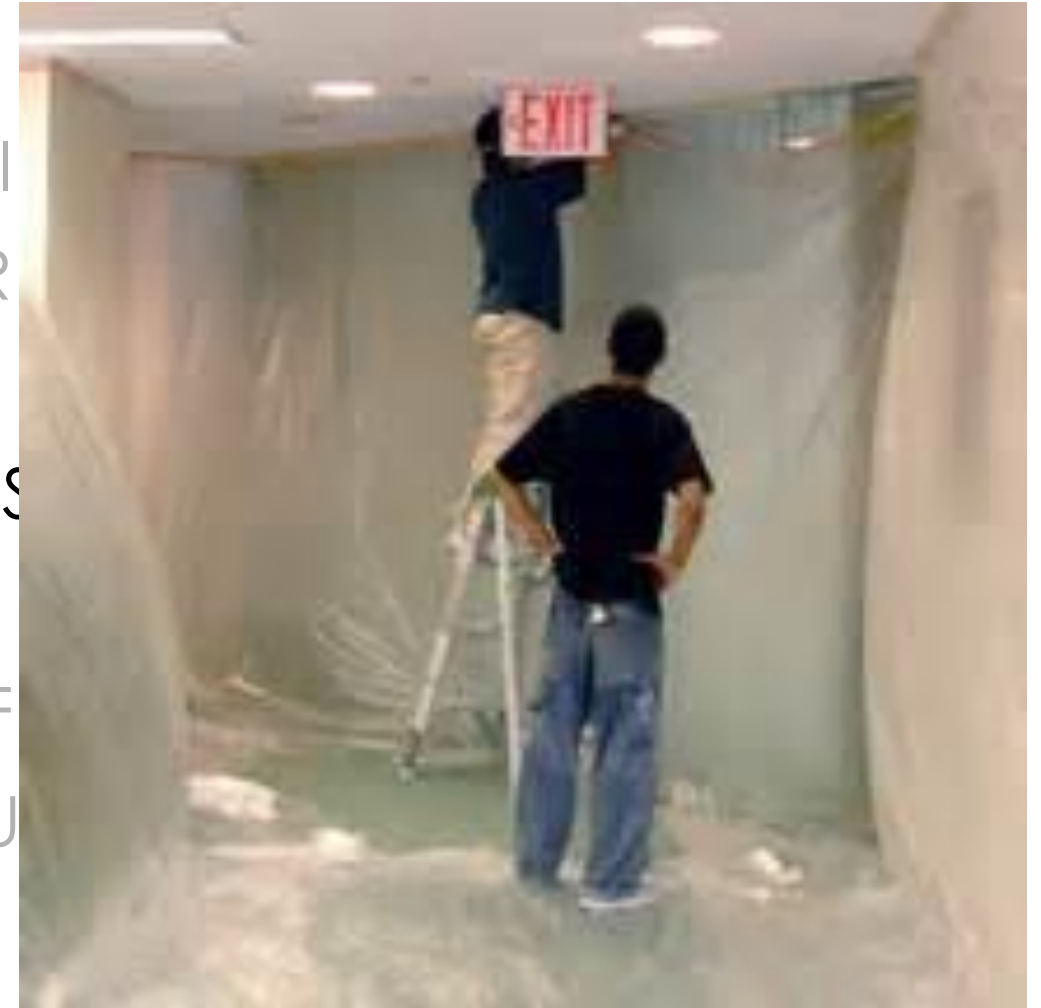


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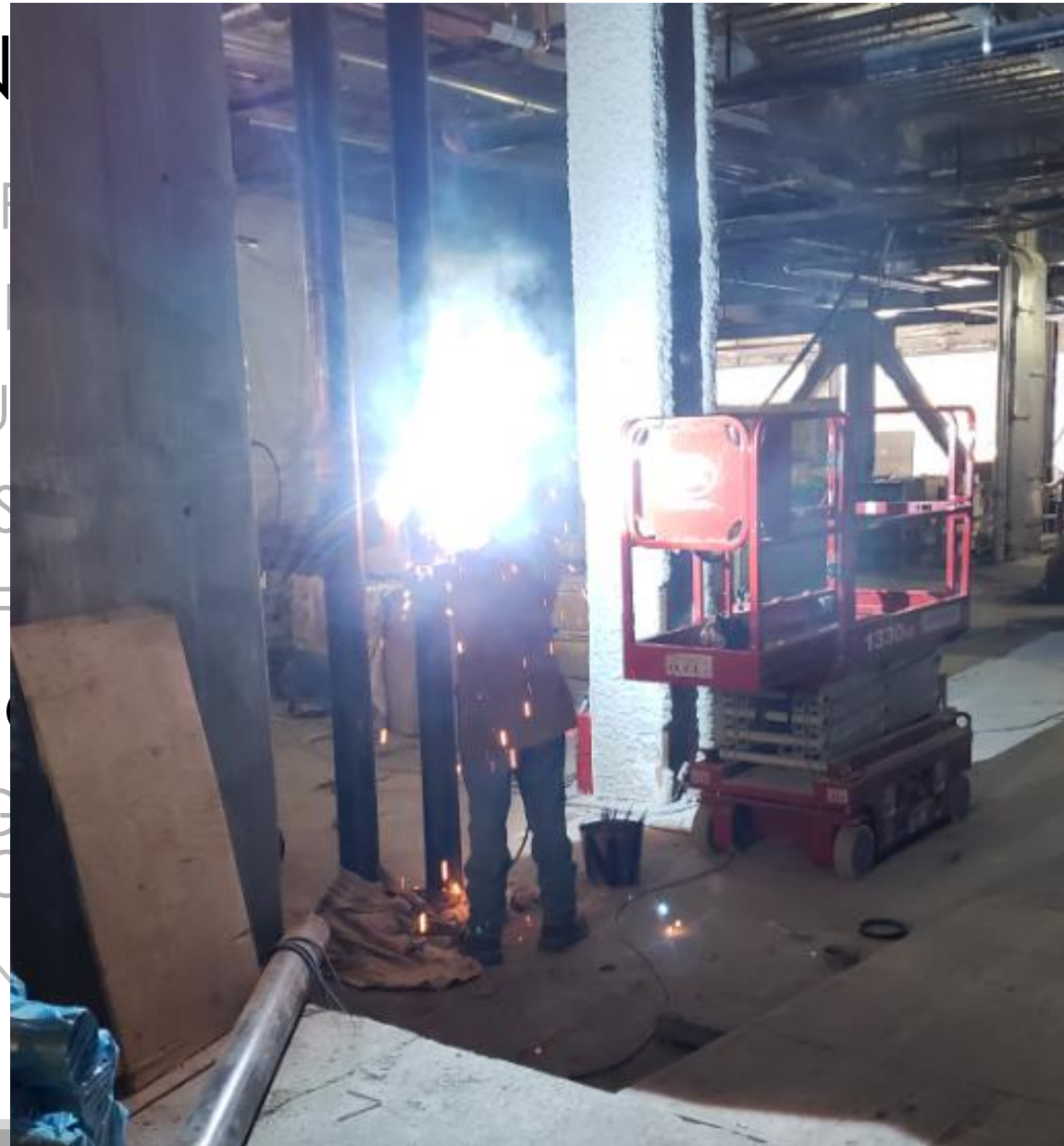


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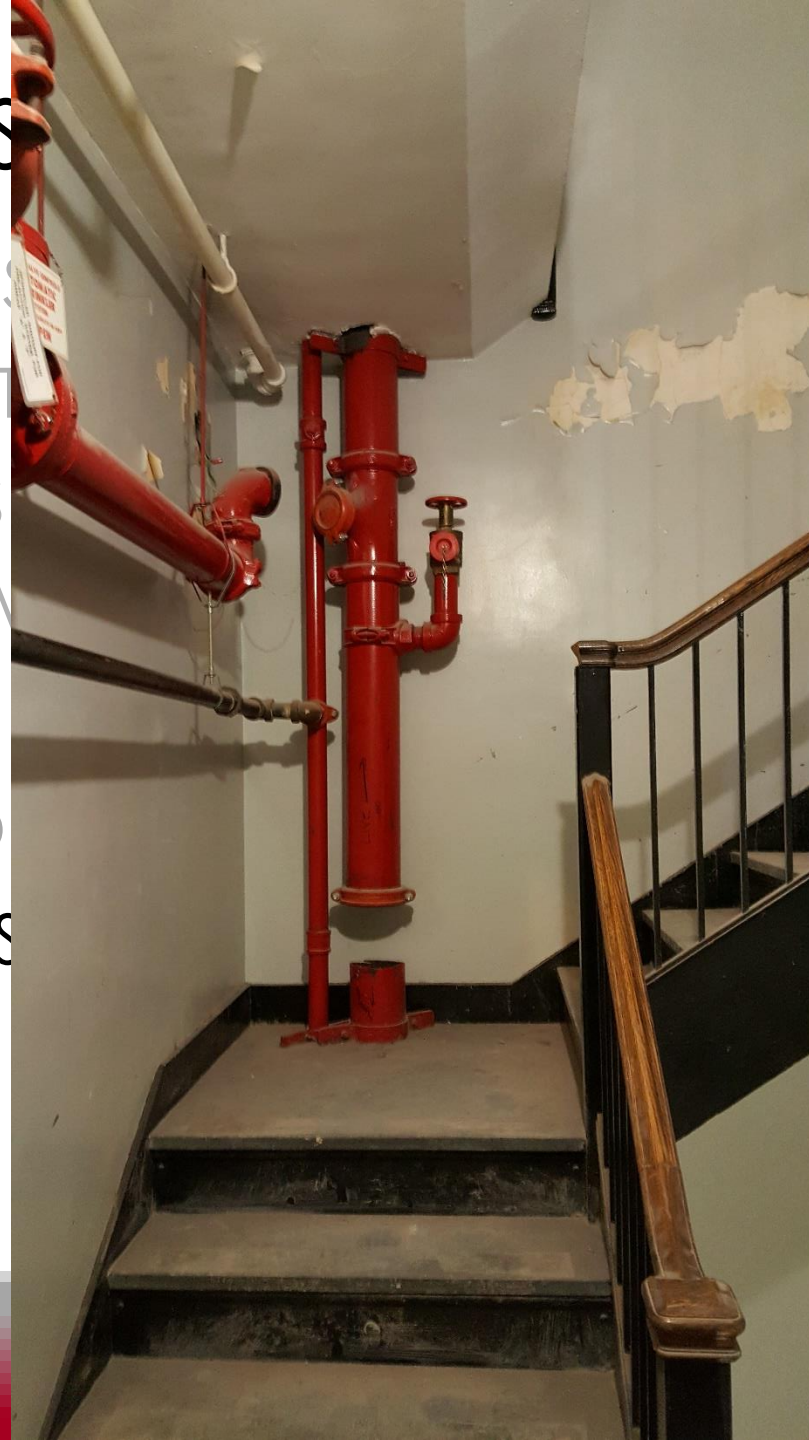
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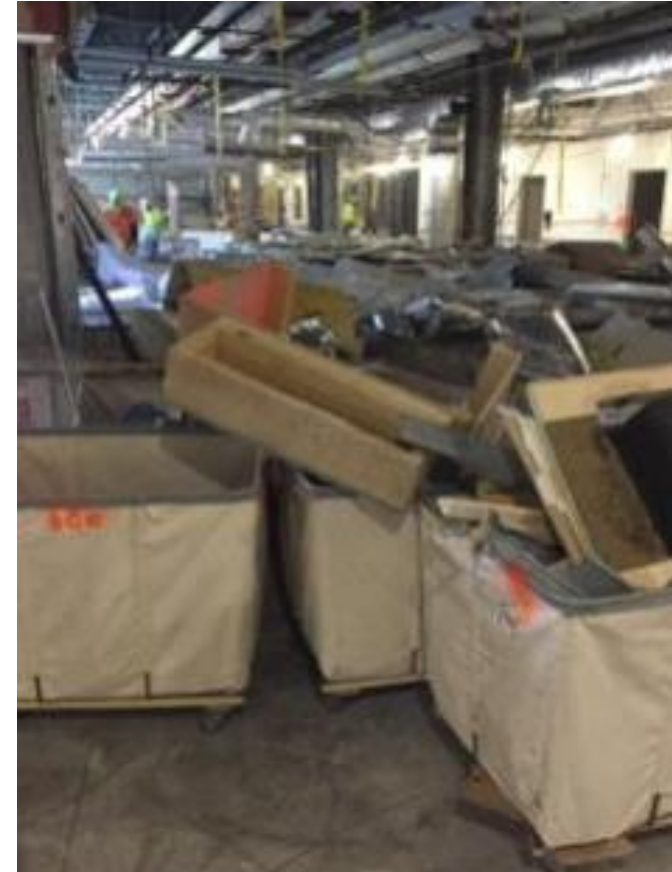
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NFPA 241 LESSONS LEARNED OVER PAST 12 MONTHS

- Flex heads not properly secured
- Debris removal – dedicated manpower and infrastructure access
- Updated 241 plans required
 - Expected at each new sprinkler fire alarm permit application
- Implementation and site audits
- Maintenance of FD access, including roads and adjacent building FDC's

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Questions?

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Code Red Consultants, LLC

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