

# Keys to Successful Use of Access Equipment for High Rise Repair Projects



INTERNATIONAL  
CONCRETE REPAIR  
INSTITUTE

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MILLENNIUM BROADWAY HOTEL

## An Education Program Presented by

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  - ICRI, SWRI, ASTM, APTI

# **PULLMAN**



**Restoration, Preservation,  
and Repositioning**

# Agenda

- The Keys to High rise work
- “Drop” theory
- Forms of access Pros and Cons
- Protecting People and Property
- Capture and Control



# Load Bearing Mass Walls

- Monadnock Building (mə-nad-nok)
- One of the first high-rise buildings
- Chicago 1889–91
- Load-bearing brick structure
- 16 stories tall with the brick walls 6 feet thick at the base, tapering to 12 inches at the top story.



# Transition to High Rise Structures

## Steel frame construction



## Safety Elevators



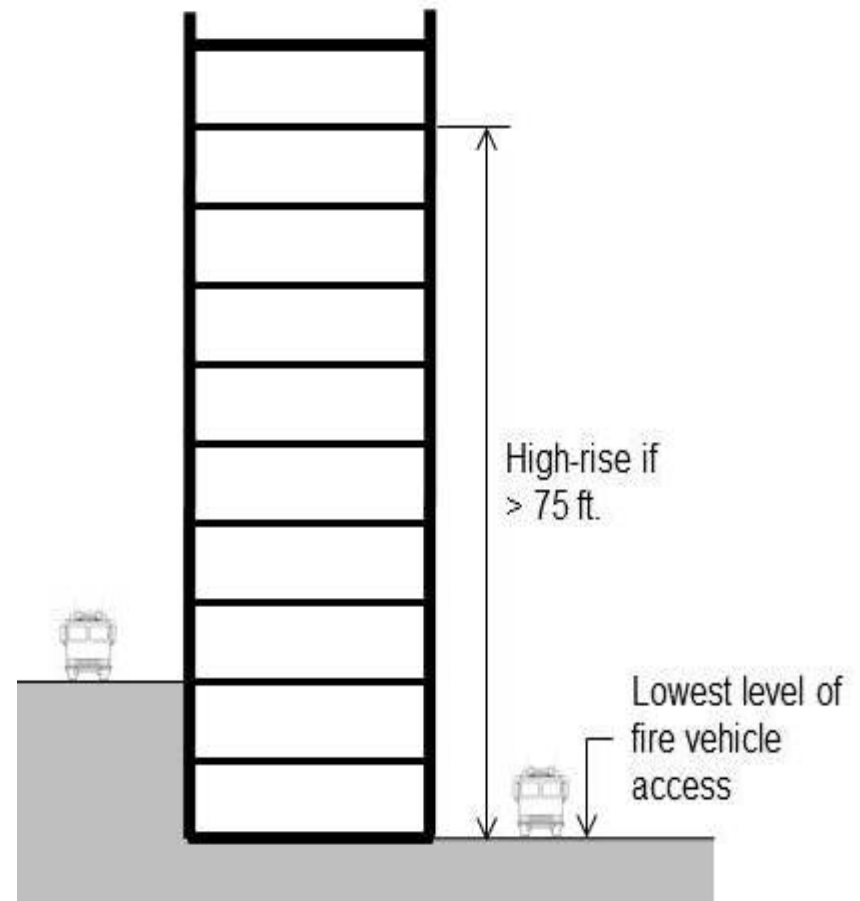
Maximize building area in the smallest lot area.

# High-Rise Buildings

- A building with an occupied floor located more than 75 feet above the lowest level of fire department vehicle access.

*Chapter 2 Definitions*

*International Building Code*



# Keys to Successful Use of Access Equipment for High Rise Repair Projects

- Complete the project safely, at a high level of quality, on time and on budget.



# Safety

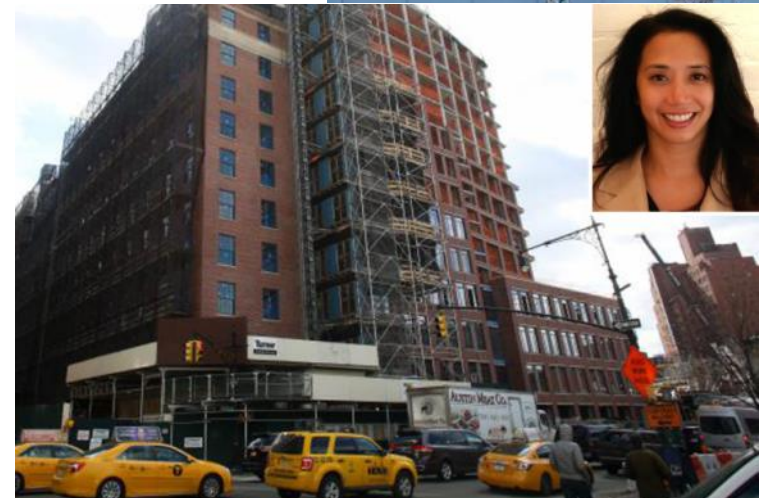
- Comfortable working heights/ locations on access
- Daily Job Safety Audits (JSA's) (Daily Huddle)
  - Change Conditions
- Design professionals access inspection
- Protecting People and Property
- Capture and Control
- Stay off the news





# Getting In the News

- Three construction workers were killed and another seriously injured when a mast climber tore from the side of an office building under construction in downtown Raleigh.
- Half-inch-thick plywood sailed across W. 12th St. and slammed a pedestrians head into a parking garage wall as she was talking on her phone.



# Quality Key

- Mock ups
- Quality Plan and audits
- Understanding the complexity of the scope
- Integration of scope layers on access
- Punch list/ remob. costs
- Crafts Training



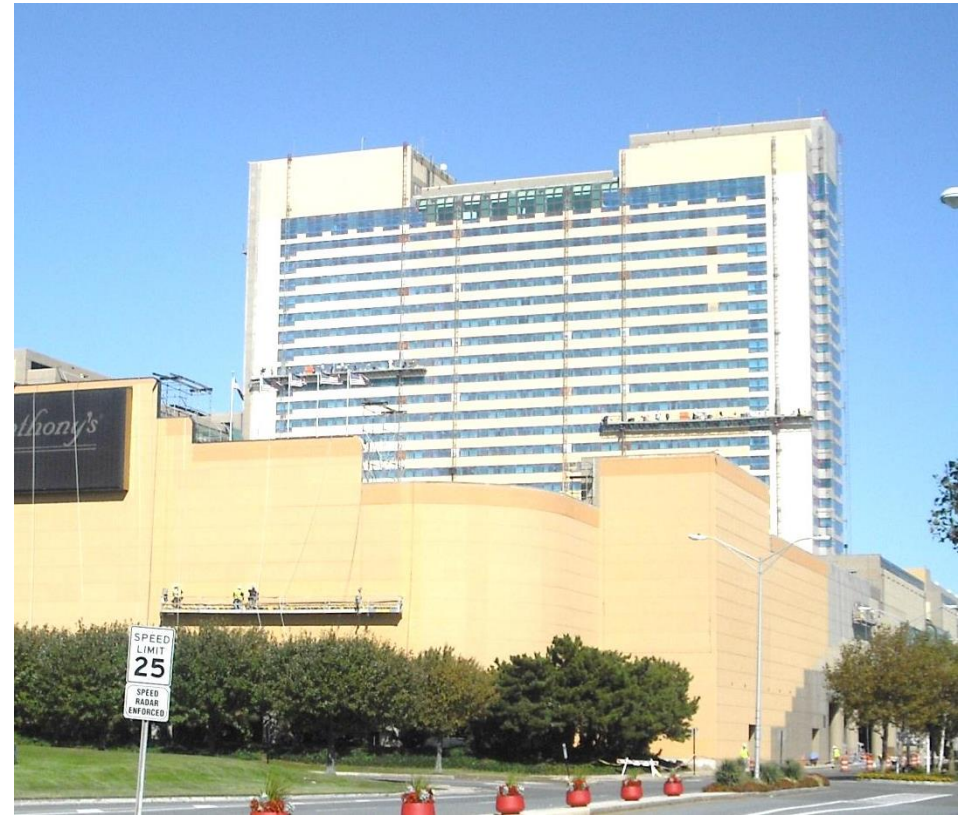
# On Time and Budget

- Solid investigation, and intelligent budget (Access)
- Quantified bid docs and sound Estimate
- Preplanning
- Understand “Drop theory” working vertical
- Sequence of multiple forms of access
- Product limitations



# On Time and Budget

- Production tacking
- Innovative equipment/tools
- Material coverage rates
- Weather/ seasonal impact
- Windows/ Roofing sequence & access use
- Integrating asbestos, lead or other hazardous material scope



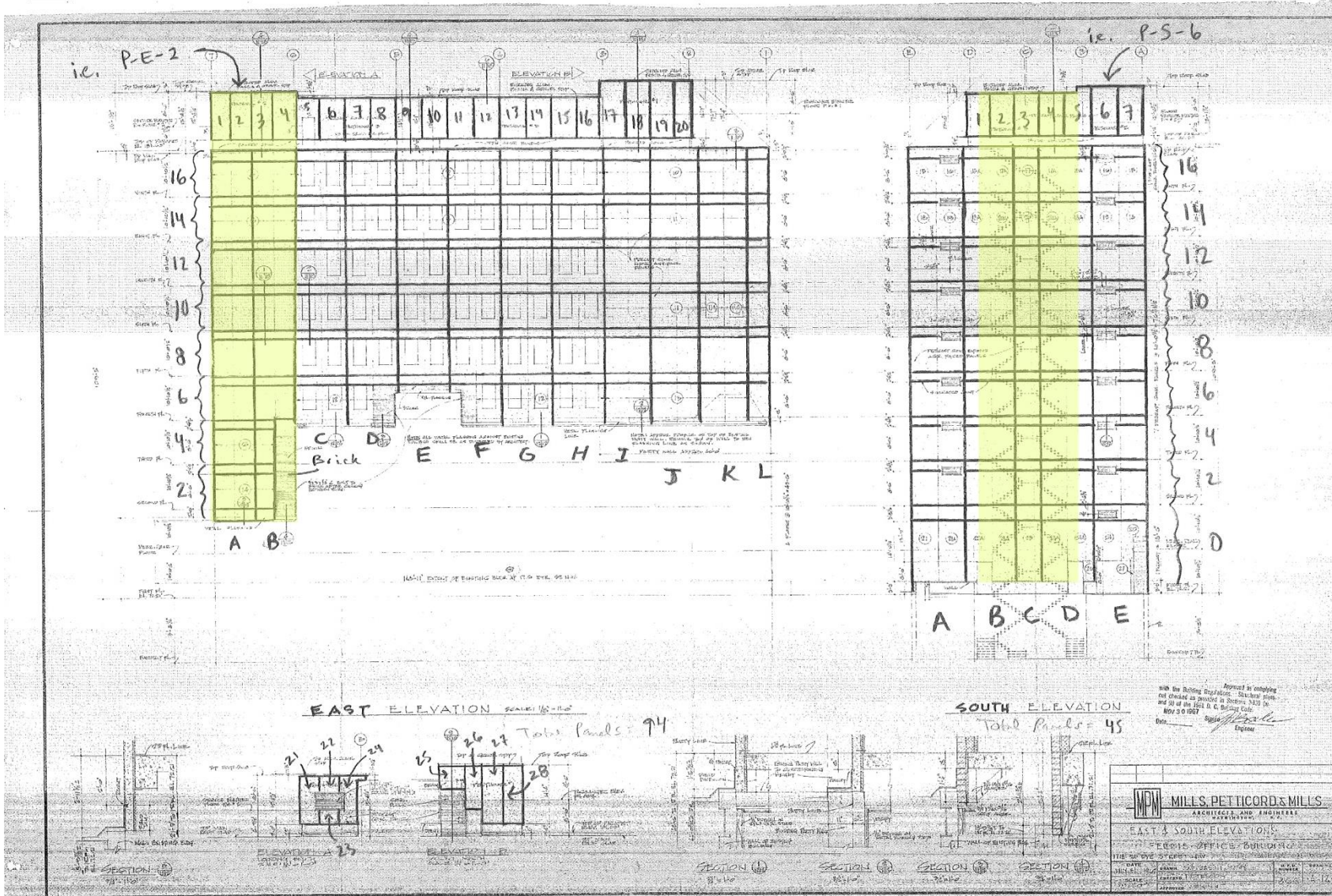
# “Drop” Theory

- Building Drop plans
  - Elevations
  - Roof
- Phasing scope based on form of access
- Scheduling
- Access’s impact on cost Estimating



# Vertical "Select Drops" Plan for Investigation

= drop location

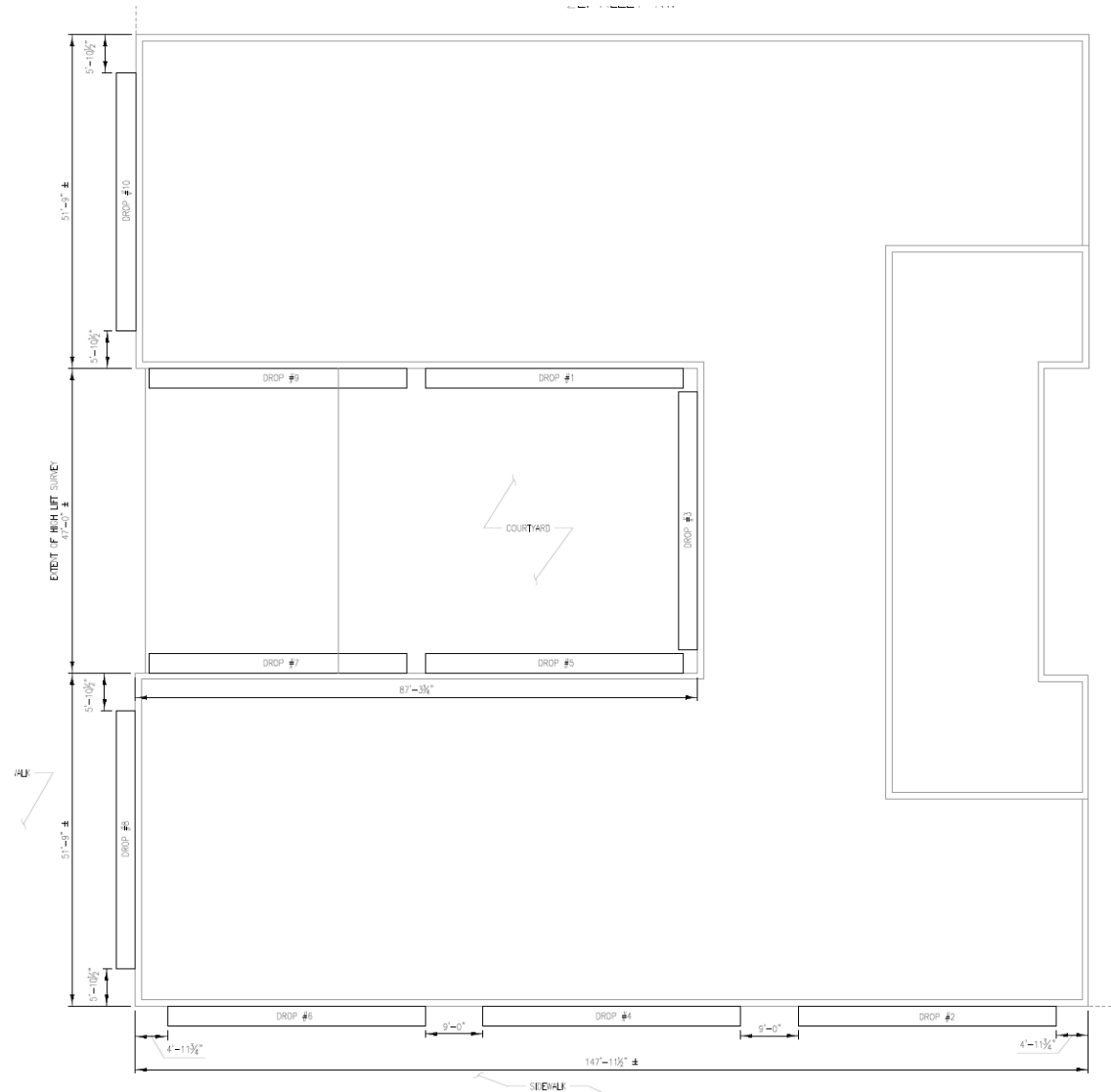


# Vertical Drop Plan for a Project



# Simple Drop Roof Plan layout

DROP PLAN	
DROP #	DATE
1	10/10/12
2	10/11/12
3	10/11/12
4	10/12/12
5	10/12/12
6	10/15/12
7	10/15/12
8	10/16/12
9	10/16/12
10	10/17/12
HIGH LIFT	10/18/12





# Drop Based Schedule



Priority 1 (TT N

- : In Progress
- : In Progress
- : To Be Com

- : To Be Com
- : To Be Com
- : To Be Com

Priority 1 (TT N

- : To Be Cor
- : To Be Cor
- : To Be Cor

- : To Be Co
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- : To Be Co

Priority 2 (T



- : To Be Co
- : In Progr

- : In Prog
- : Compl

COMPLETE

- : 18; 19; 20;
- : 32 (DILLON

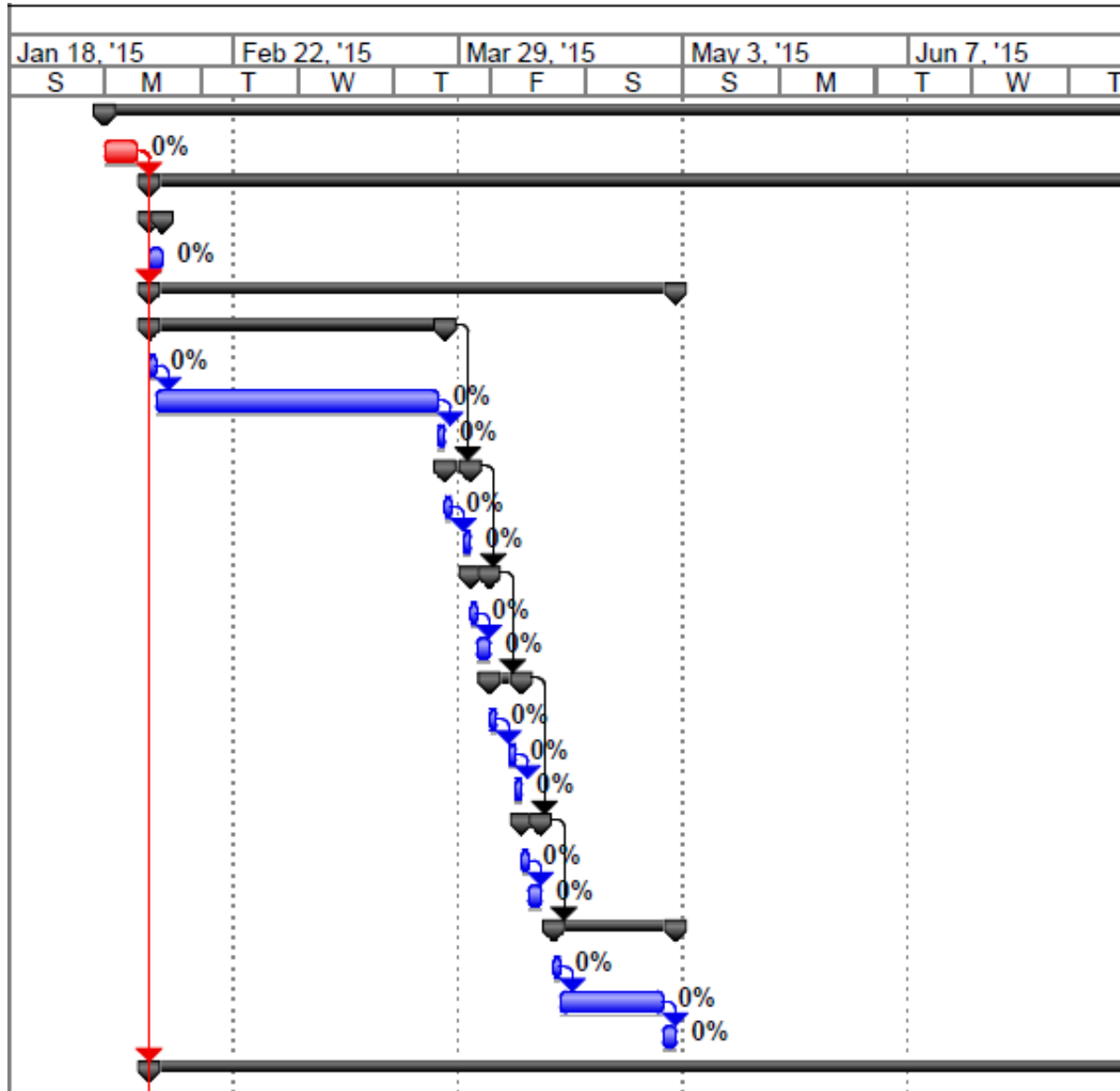
# Identify Drops/Stages

ID		Task Name
		
1		<del>Baker Pulling</del>
2		Mobilization and Switch CD-5's
3		Stage 1 (Current Location)
4		Drop X2 (Split Into (2) Rigs)
5		Shift To P1 and Z2
6		Stage 1A (Goes To P)
7		Drop P1
8		Initial Setup
9		Work
10		Shift To Drop P2
11		Drop P2
12		Work (Inspection Only)
13		Shift To Drop P3
14		Drop P3
15		Work (Inspection Only)
16		Shift To Drop R1
17		Drop R1
18		Initial Setup
19		Work (Inspection Only)
20		Shift To Drop R2
21		Drop R2

# Assign Durations to each drop

Access Method	Floor To Floor	PSST ACCESS MDs	Duration	Start	Finish
			305 days	Mon 2/2/15	Fri 4/1/16
		20	5 days	Mon 2/2/15	Fri 2/6/15
<b>SLIDING</b>			209 days	Mon 2/9/15	Thu 11/26/15
	MR to KR		2 days	Mon 2/9/15	Tue 2/10/15
		8	2 days	Mon 2/9/15	Tue 2/10/15
			60 days	Mon 2/9/15	Fri 5/1/15
	MR to 19th		34 days	Mon 2/9/15	Thu 3/26/15
		2	1 day	Mon 2/9/15	Mon 2/9/15
		2	32 days	Tue 2/10/15	Wed 3/25/15
		4	1 day	Thu 3/26/15	Thu 3/26/15
	MR to 19th		2 days	Fri 3/27/15	Mon 3/30/15
		2	1 day	Fri 3/27/15	Fri 3/27/15
		4	1 day	Mon 3/30/15	Mon 3/30/15
	MR to 19th		3 days	Tue 3/31/15	Thu 4/2/15
		2	1 day	Tue 3/31/15	Tue 3/31/15
		6	2 days	Wed 4/1/15	Thu 4/2/15
	19th to 12		3 days	Fri 4/3/15	Tue 4/7/15
		2	1 day	Fri 4/3/15	Fri 4/3/15
		2	1 day	Mon 4/6/15	Mon 4/6/15

# Sequence





# High Rise Access Alternatives

- Boatswains Chair
- Industrial Rope access
- Solo Basket
- Suspended swing State
- Mast Climber
- Mini Mast climber
- Scaffolding
- House Rigs
- Hoists



# Boatswains Chair & Industrial Rope Access (IRA)

- Inspections and condition assessments
- Minor work



Check with local code enforcement for restrictions of use

# Solo Basket Access

- Capacity on rig
- Roof and parapet wall loading
- Roof top options
- Tie backs
- Difficult access
- Wind
- Debris





# Suspended Swing Stage

- Capacity on rig
- Roof and parapet wall loading (PE)
- Roof top options
- Tie backs
- Overhangs
- Corner rigs
- Lengths of work platform
- Wind
- Debris
- PE Stamp for rig
- 100% Tie off
- Height and rig travel time



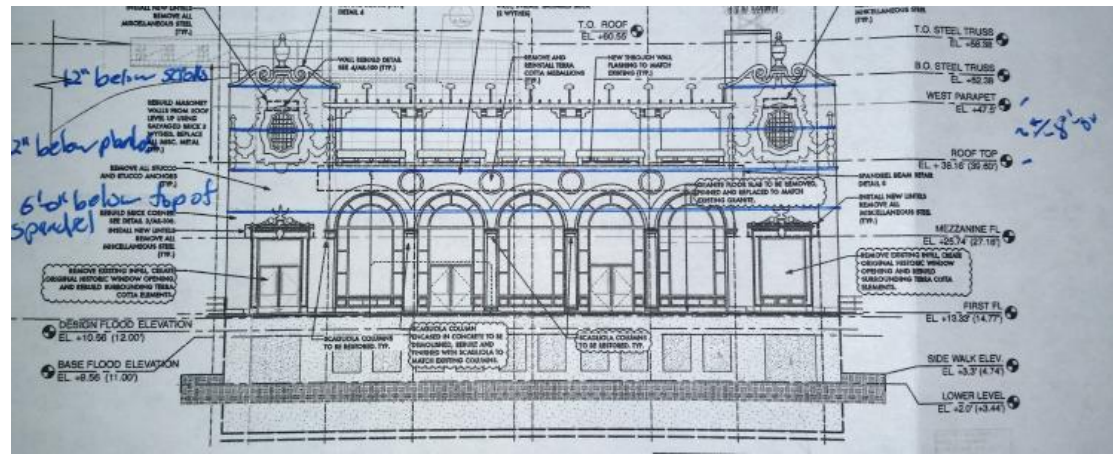
# Mast Climbers

- Capacity
  - Workers, materials/equip.
- Work platform space
- Connection is invasive
- Waterproofing connections
- PE Stamp
- Travel time
- Subway and vault shoring
- Mini masts
- Safety
- Weather

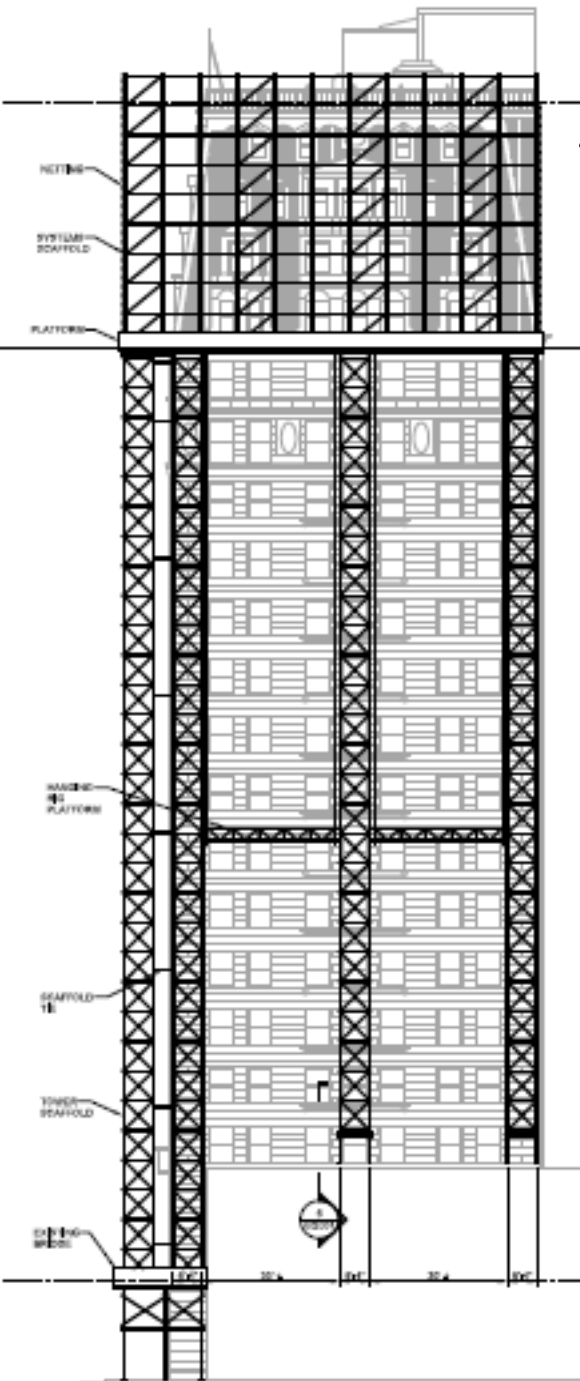


# Scaffolding

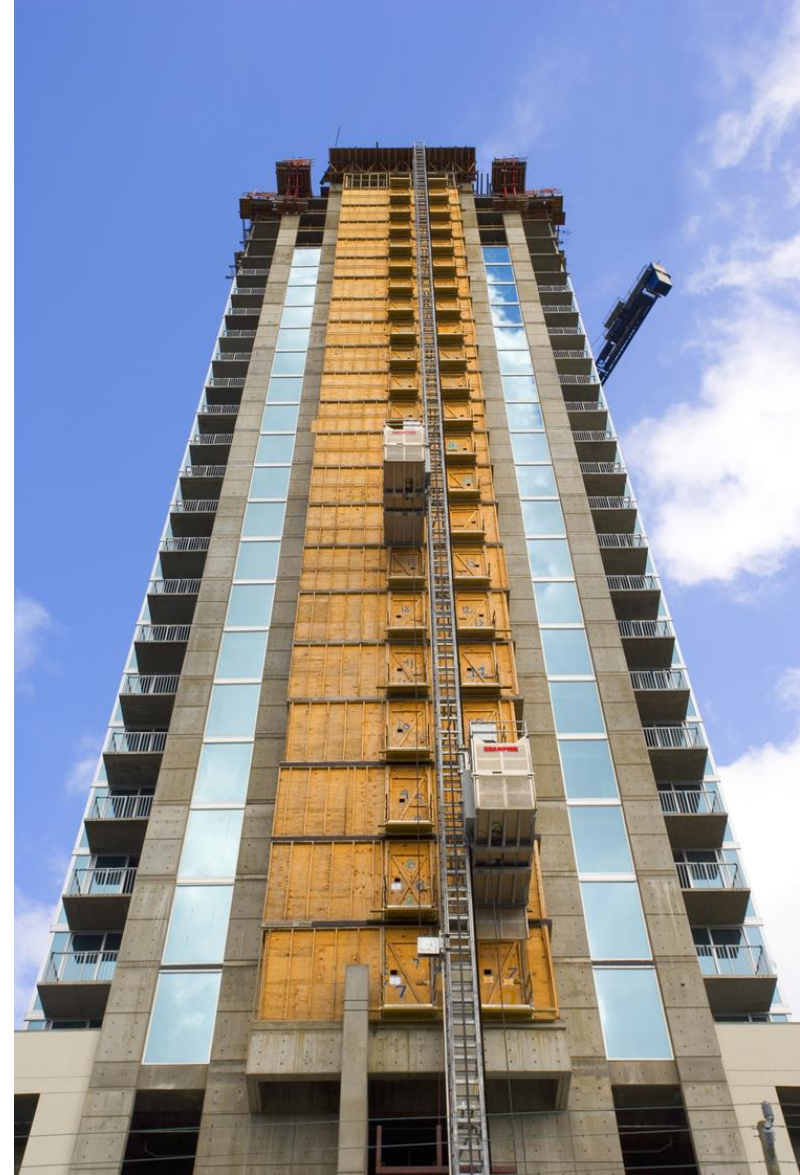
- Input on scaffolding plans
  - Working heights
  - Debris shoots
  - Which and where  
Ladders vs. Steps
- Proximity to the wall and work
  - Scaffold brackets
- Tie in/ pressure ties
  - Historic fabric
- Safety
- Weather



# Access outside the box



# Hoists



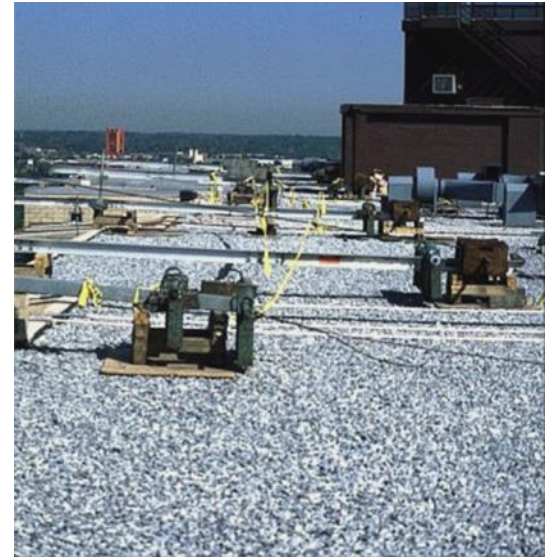
# Protecting People and Property

- Sidewalk Canopies
- Local code or regulations
- Are you landing access or building access on it



# Protecting People and Property

- Roofing and parapet protection
- Mechanical units



# Protecting People and Property

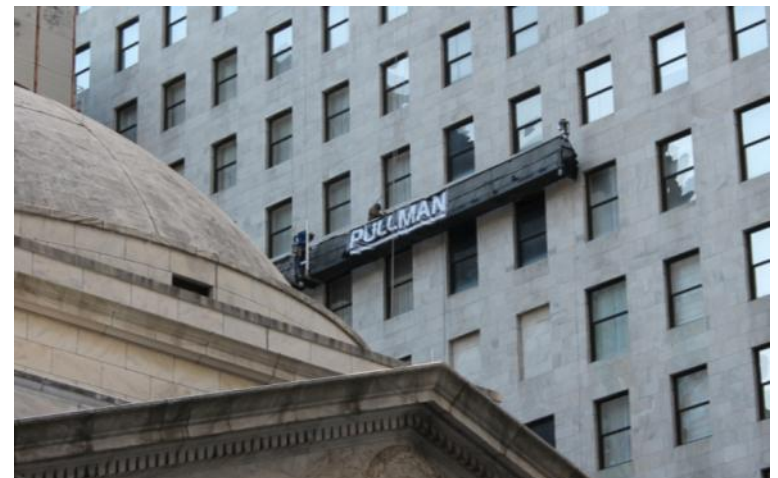
- Windows, Doors and railings
- Vehicles
- Landscaping





# Capture and Control

- Dust/ debris control



# Capture and Control

- Effluent control and disposal
  - Water misting
  - Chemical



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