

# American Institute of Architects Continuing Education System

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.





### **Course Description**

During this course participants will learn about various types of Cranes, how they are designed, set up, inspected and utilized on the job site.

Additionally, attendees will learn safety requirements for installing, using, operating and removing Cranes to avoid potential safety hazards.

Furthermore, attendees will learn about safety and code issues arising from Hoist and elevator installation under the NYC building code.



### **Learning Objectives**

At the end of the this course:

- 1. Participants will be familiarized with the different types of cranes, and will be able to describe their distinctive functions.
- 2. Participants will examine the requirements for cranes, and apply these provisions to design installations and inspections.
- 3. Participants will review examples of cranes safety hazards to identify potential safety issues, strategies for prevention and will review rules for cranes in order to mitigate risk.
- 4. Participants will review and be able to describe new rules and regulations for hoists and elevators.

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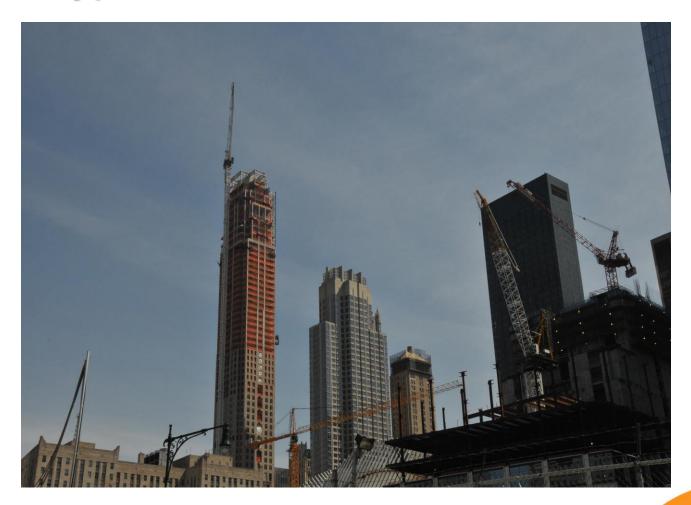
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### **Types of Cranes: Tower Cranes**





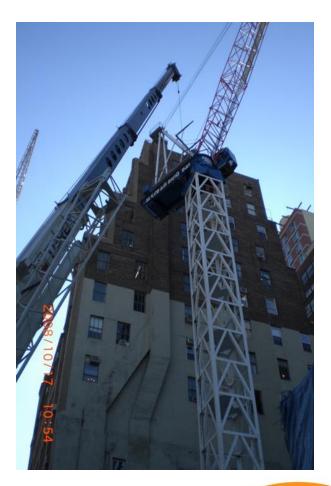
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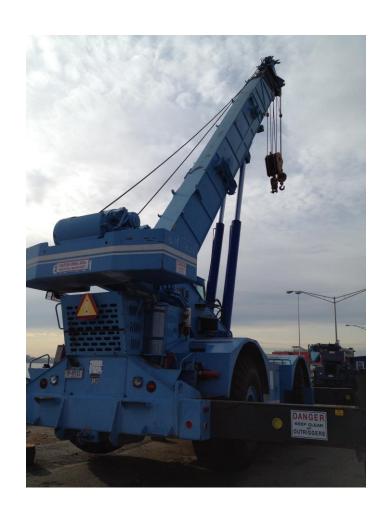


### **Types of Cranes: Crawler Cranes**



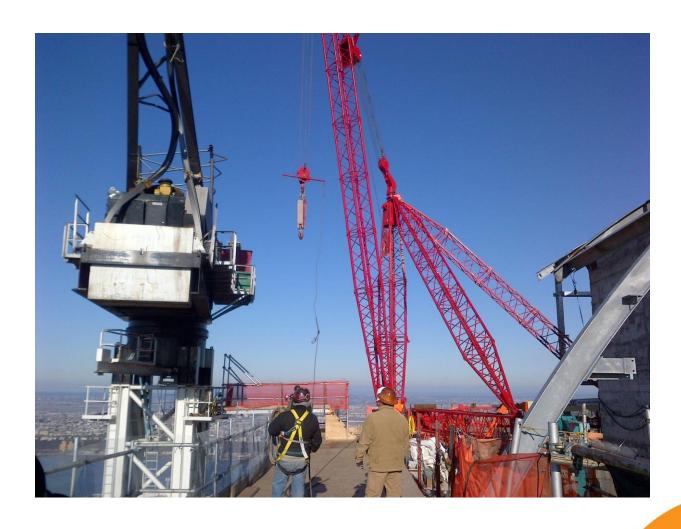


### **Types of Cranes: Mobile Cranes**





### **Derrick**





### **Pile Driver**





- Manuals
- Brochures
- Load Rating Charts
- Maintenance Checklists
- Inspection Checklists
- List of Components
- Counterweight Tables
- Tables of Allowable Installation and Use
- Manufacturer Contact Info
- ISO Certificate



# CD1: Crane/Derrick/Pile Driver Prototype Application

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# CD1-OA: Crane/Derrick/Pile Driver Owner's Prototype Amendment Application

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#### Prototype amendment can be filed by

- A. The manufacturer.
- B. On behalf of the equipment owner by NYS PE provided:
  - The manufacturer is no longer in business; or
  - The equipment owner has submitted to the manufacturer a detailed description of the proposed amendment, and has asked the manufacturer to request the amendment, but:
    - 1. The manufacturer has not rejected the request. A rejection must be in the form of a written explanation from the manufacturer that rejects the request and explains the reasons for the rejection; and
    - 2. The manufacturer declines to review the request; or
    - 3. The manufacturer, within 30 days of the request, fails to acknowledge the request or initiate a review of the request; or
    - 4. The manufacturer acknowledges the request or begins a review of the request, but, within 120 days of the request, fails to submit an amendment to the department.

Manufacturer supplements to the certificate of approval.

- Manual updates
- Updates to inspection and maintenance checklists
- Contact information updates
- Jobsite specific wind analysis for tower cranes
- Safety bulletins and recall notices
- ISO certification

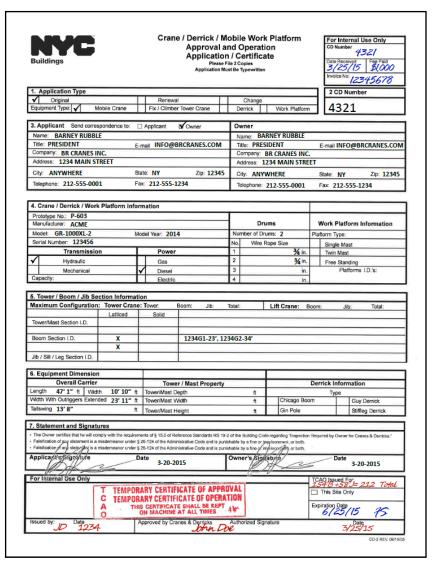


- Current certificate of approval holders: Any crane or derrick that conforms with a previously issued, currently valid certificate of approval need not apply for a new certificate of approval.
- **De-Rating:** Load rating charts and amendments to load rating charts submitted on or after January 1, 2016 may not be de-rated to circumvent licensing provisions or to meet exemptions contained within 3319-01 or within the New York City Construction Codes.
- Suspension or revocation of a certificate of approval: The department may suspend or revoke a certificate of approval in accordance with Section 28-105.10 of the New York City Administrative Code.

### **Prototype Design Standards**

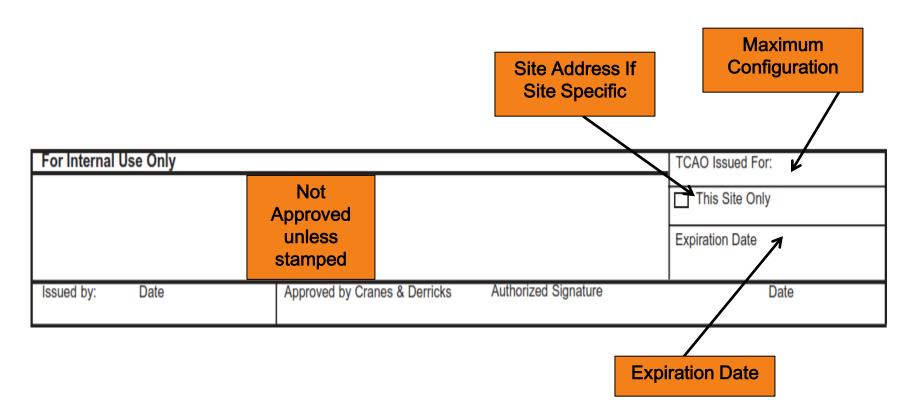
- Mobile cranes: ASME B30.5 (2004, 2007, 2011, or 2014 editions), or EN 13000 (2004, 2010, or 2014 editions).
- **Tower cranes:** ASME B30.3 (2004, 2009, or 2012 editions), or EN 14439 (2006 or 2009 editions).
- Derricks: ASME B30.6 (2003 or 2010 editions).
- Articulating boom crane: ASME B30.22 (2005 or 2010 editions).
- Self-erecting tower crane: ASME B30.29 (2012 edition), or EN 14439 (2009 edition).
- Dedicated pile drivers: EN 996 (2009 or 2014 editions).
- Equivalent standards: For any type of crane or derrick, such other standard as the commissioner deems equivalent to the ASME or EN standards listed above.

# Certificate of Operation aka CD-2, CD, TCAO





# Certificate of Operation aka CD-2, CD, TCAO





### Certificate of Operation: CD-3

Buildings	3	Appli For truck cranes wi over 50 feet and n	ication / Ce th telescopic, hyd	fraulic or folding booms, feet with a maximum less. ples	Date 3/	Internal Use Only Number 4321 PRESENTED FROM PAID PRESENTED FROM P	2
1. Application Type						2 CD Number	
Original Boom / Jib Type: V	Telescopic Ren	ewal Laced	Chan	ge Folding	-	4321	
3. Applicant Sens		/	To.				
Name: BARNEY		M Applicant □ Owner	Ow				
Title: PRESIDE			_	Name: BARNEY RUBB Title: PRESIDENT	ILE		
	ANES INC.		Con	ipany: BR CRANES	INC		
A 444	MAIN STREET			fress: 1234 MAIN 5			
City: ANYWH		State: NY Zip: 12		City: ANYWHERE			
		141 12					345
Telephone: 212-555	-0001	Fax: 212-555-1234	Teleg	phone: 212-555-0001	F	ax: 212-555-1234	
4 Conne Informati					_		
4. Crane Information  Manufacturer: INTE			-		-		
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Max. Capacity: 5900		Diesel Electric	4	in.		DASTAL 5200	
Boom Section I.D.  Jib Section I.D.	ation: Boom: 85	ft Jib: 0 ft Tota	l: 85 ft		~	Cable extension Hydraulic piston Manually extended & pi	ned
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### Certificate of Operation: CD-3

 Mobile cranes, including jibs and any other extensions, exceeding 50 feet but not exceeding 135 feet in length, and with a manufacturer's rated capacity of 3 tons or less.

Familiata ann al III a a Omba			
For Internal Use Only			
			TCO Issued For:
			Expiration Date
	Not Approved		Issued by: Date
	unless stamped		
Approved by Cranes & Derricks		Authorized Signature	Date



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2 Loc	cation Informatio	on .					_	
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Addi	ess 180 LIVIN	GSTON STREET				Job Number	421151	656
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2 3	5678	F078-9123 F042-2693	9/16/15	3	N/A	221	72 72	293
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3A	Crai	ne / Derrick / Ma	st Climber / Pile Dr	iver Information
		CD Number	Serial Number	Expiration Date
	1			
	2			
	3			
	4			
	5			
	6			

Internal Use Only						
Date Received	Invoice/Receipt Number		Fee Paid			
Examiner's Name (please print)		Inspector's Name (please print)				
Signature	(Issuance) Date	Signature	Date			
Expiration date		Badge Number				



#### **CD-8 Form**

¹ ▼	F''' 04-4			CN Number:	#0012/3	4
ш	Filing Status	nsibilities	of Completed Inspections /	Tasts Mithdrawal of F	Pennonsibility Directive	14 Inspection Request
_			on picted inspections	TOSAS CONTRACTOR OF T	teaponalous Directive	14 mapecator request
2	Location Informati					
	House No(s) 180		IVINGSTON STREE			151050
	Borough BRC	OOKLYN Block	350 Lot 56	BIN 5038192	Job Number 421	151656
3	Applicant Informat	ion				
	Last Name NC	OONAN	First Nan	ne WILLIAM		M.I. C.
		TY ENGINEERS, P.O.		PE Licens	e# 000000	
		333 BUILDING DRIVE			07750	
	DI	OUR CITY	State NY		Zip 07759	
. 1		2-555-4444	212-33	0-0000	BSAFE@cityen	gineers.com
4	Crane Information CD Number	This application can only Manufacturer	be used for ONE crane Model	Boom Length	Jib Length	Total
	1234	WAIST-KING	F012-3456	221	72	293
	5678	WAIST-KING	F078-9123	221	72	293
	(5023)	WAIST-KING	F042-2693	221	72	293
_	Applicant's Statem					
	unlawful to give to a city the job or in exchange the hearing to have knowin certificate, form, signed	ement is a misdemeanor of pemployee, or for a city e for special consideration. gly or negligently made a statement, application, re may be barred from filing to the to f Responsibility	mployee to accept, any bi violation is punishable by false statement or to havi port or certification of the turther applications or doc (10F)	enefit, monetary or other imprisonment or fine or a knowingly or negligent correction of a violation numents with the Departr iB Applicant's Staten As a licensed Profes	wise, either as a gratuity both. I understand that if y falsified or allowed to b required under the provis nent. nent of Crane Foundati sional Engineer.represen	for properly performing I am found after e falsified any ions of this code or of on Inspection (10E) ting the owner or
	Applicant's Statem As a licensed Profession contractor, I hereby state above crane(s) and will and support before the	onal Engineer-representing the that I designed the found to the found to the found the found to the found that the	ndation for the said equipment All inspection and	inspection on	wines (see note). Section of the scope of th	ound that it conforms bund no hazardous innation.
	Applicant's Statem As a licensed Professic contractor, I hereby sta above orane(s) and will and support before the test reports will be sign promptly.	ite that I designed the four Il be on-site to inspect the commencement of work.	ndation for the said equipment All inspection and	contractor, I hereby sinspection on with all approved dia condition existed with CD# used	wings (see note), also with second	ound no hazardous imation.



4	Crane Information	This application can only	be used for ONE crane			
	CD Number	Manufacturer	Model	Boom Length	Jib Length	Total
5	Applicant's Statem	ent				
5A	the job or in exchange for hearing to have knowing certificate, form, signed a rule of any agency, I n Applicant's Stateme	or special consideration. ally or negligently made a statement, application, re nay be barred from filing t ent of Responsibility	Violation is punishable b false statement or to have port or certification of th further applications or do (10F)	y imprisonment or fine o we knowingly or negligen e correction of a violation ocuments with the Depar 5B Applicant's State	ment of Crane Founda	if I am found after be falsified any isions of this code or of tion Inspection (10E)
	contractor, I hereby state above crane(s) and will and support before the	nal Engineer representin te that I designed the fou be on-site to inspect the commencement of work: ed by me and filed with th	ndation for the said equipment All inspection and	contractor, I hereby inspection on with all approved di condition existed w	ssional Engineer represe state that I have complet awings (see note). I also thin the scope of this exa tted? Yes No	ted the foundation Infound that it conforms found no hazardous
			/			_/
	Signature		Date	Signature		Date
	Seal (apply seal, then	sign and date over seal)		Seal (apply seal, t	hen sign and date over se	eal)

Note: 1) If the field condition or actual setup differs from approved plans and the structural integrity of the foundation cannot be readily proven in the field, applicant may not sign off 10E until amendment on the alternate founding design is first submitted to and approved by Cranes & Derricks Divison.

For other minor deviations to approved plans, applicants may amend founding design in the field and leave 10E on site. The amended setup
must be submitted with 10E to the Cranes and Derricks Division



- DOB Inspection
  - Tower cranes
  - Derricks
  - Mobile cranes over 250 feet

- Engineer Inspection
  - Mobile cranes up to 250 feet



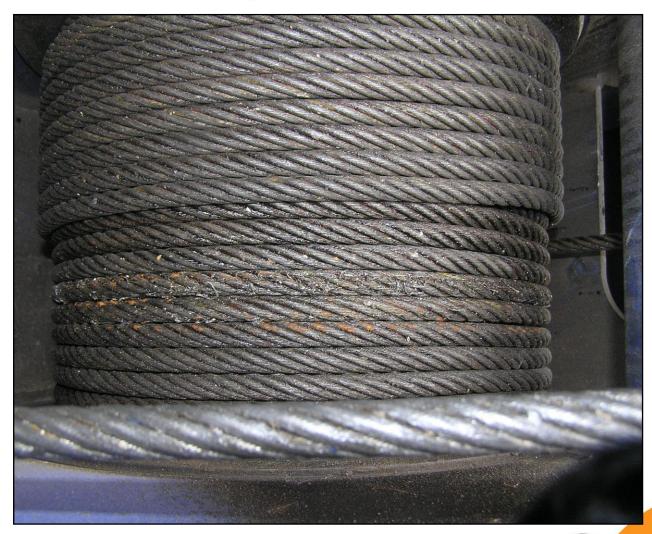
7. Statement and Signatures	
<ul> <li>The Owner certifies that he will comply with the requirements of § 15.0 of Reference Standards RS 19-2 of the Building Code regarding "Ins</li> <li>Falsification of any statement is a misdemeanor under § 26-124 of the Administrative Code and is punishable by a fine or imprisonment, or</li> <li>Falsification of any statement is a misdemeanor under § 26-124 of the Administrative Code and is punishable by a fine or imprisonment, or</li> </ul>	both.
Applicant's Signature  Date  1/29/13  Owner's Signature  Colored  Date	eadre 1.29.13
T TEMPORARY CERTIFICATE OF APPROVAL C TEMPORARY CERTIFICATE OF OPERATION THIS CERTIFICATE SHALL BE KEPT ON MACHINE AT ALL TIMES ON MACHINE AT ALL TIMES	This Site Only  Expiration Date
Issued by: Date Approved by Cranes & Derricks Authorized Signature	Date //29/13



### Cranes Safety Hazards



### **Damaged Wire Rope**





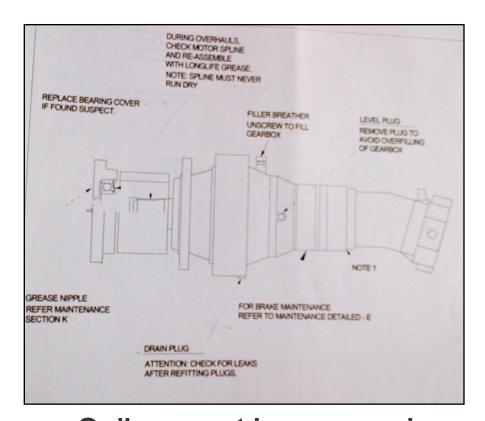
### **Failed Pinion Spline**







### **Pinion Spline Manual**



Spline must be greased Spline is never allowed to run dry



### **Insufficient Clearance**





### **Cranes Safety Hazards**





### **Loose Bolt**





# **Improper Set-up**





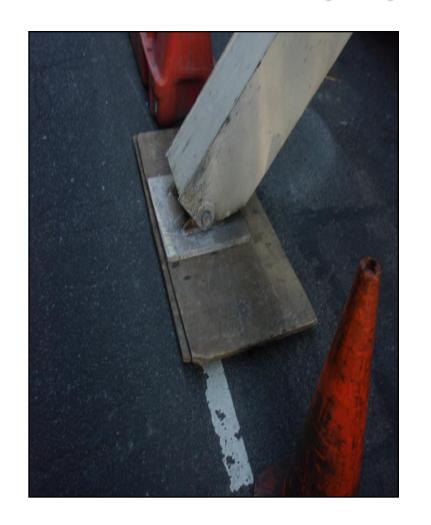


# **Improper Set-up**





# **Improper Set-up**









#### Certificate of On-site Inspection - CN- CD-4

A plan examiner reviews the plans submitted by the applicant for compliance with Code.

#### Technical checks

- Scope of work
- Transit Authority structures
- Utility vaults reflected on drawings
- Any existing sheeting or retaining walls
- Allowable bearing pressure on a road, sidewalk or soils

#### Drawings additionally checked for:

- Signed and sealed
- Site plan gives outline of building, cellars and setbacks
- Location/width of streets, sidewalks, traffic lanes, sidewalk
   bridges, designated DOT barriers and flagmen

#### Certificate of On-site Inspection - CN- CD-4 (continued)

- Adjacent buildings noted
- Location of crane and distance from face of building under construction noted
- Roof protection and swing plan
- Reeving information (number of parts & cable size)

#### Further details include

- Maximum pick (weight of load)
- Maximum radius
- Maximum wind speeds and securing methods
- Maximum configuration of crane
- Boom length and angle
- Jib length and angle
- Outrigger spread



Certificate of On-site Inspection - CN - CD-4 (continued)

#### Plan Review – Tower Cranes

- Technical Review of
  - Location and method of tie-ins
  - Tie-in calculations
    - Concrete slab of particular floor
    - Column or beam
  - Foundation of the crane



### Certificate of On-Site Inspection

#### **Load Tests**

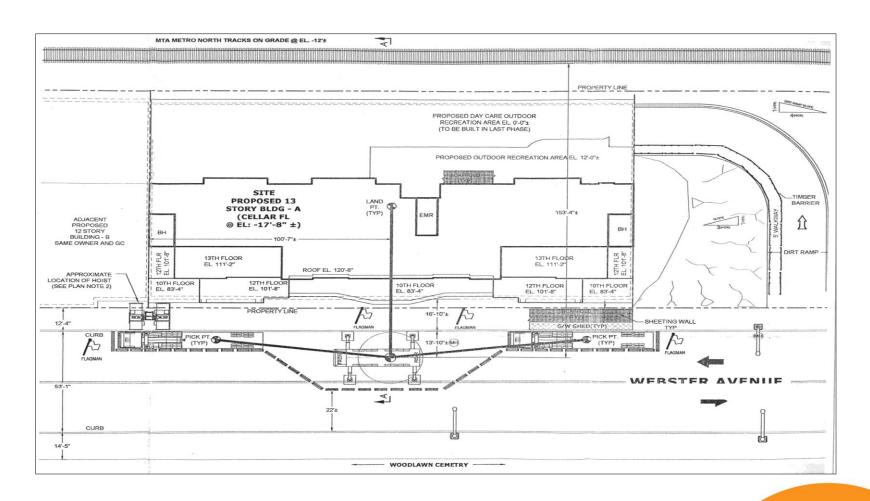
- For a tower crane and for a derrick, the application must be accompanied by procedures for the load test.
- The pick zones for the load test must also be indicated.
- Procedures must be in accordance with the manufacturer's specifications
  - For a tower crane: ASME B30.3 (2012 edition)
     Section 3-1.7.
  - For a self-erecting tower crane, ASME B30.29 (2012 edition) Section 29-1.1.3.
  - For a derrick, ASME B30.6 (2015 edition) Section 6-2.2.2.

## Certificate of On-Site Inspection

#### **Tower Crane Anchor Stool and First Mast Section**

The anchor stool and first mast section of a tower crane, may be installed when foundation application is accepted, provided:

- The anchor stool and first mast section are indicated on the foundation plans filed and accepted.
- An unassembled inspection report for the anchor stool and first mast section is accepted by the department prior to their installation.
- A survey report, attesting that the anchor stool and first mast section, as installed, is plumb, is submitted as part of the crane notice application.





LIEBHERR LTM 1080/1 (W/ FULL O/R SPREAD)

CONFIG: \*\* W / 35.5 KIP OF CTWT

MAX COMBO DETAILS

CONFIG: 157' main boom w/ 34' jib @ 0 to 40 deg Offset

TYP. LOAD: 4500 lbs

TYP. RADIUS: 85' (T1=100%, T2=100%, T3=100%, T4=100%, T5=100%)

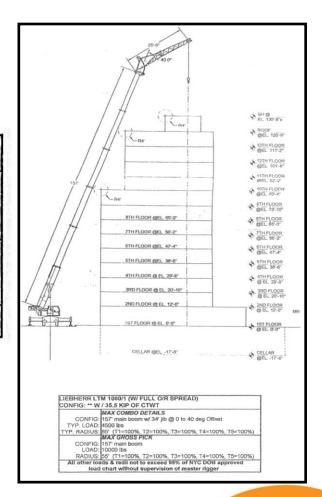
MAX GROSS PICK

CONFIG: 157' main boom

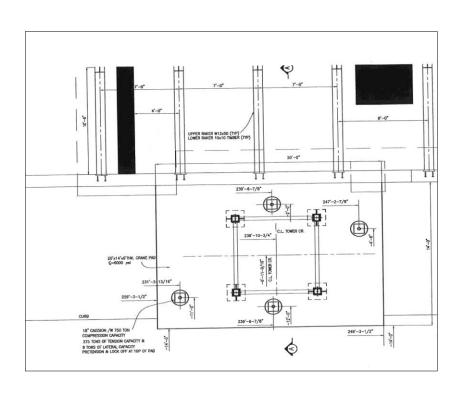
LOAD: 10000 lbs

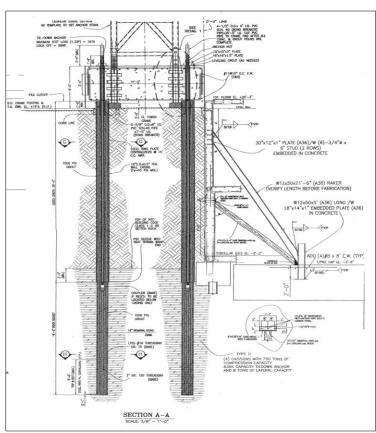
RADIUS: 55' (T1=100%, T2=100%, T3=100%, T4=100%, T5=100%)

All other loads & radii not to exceed 95% of NYC DOB approved load chart without supervision of master rigger



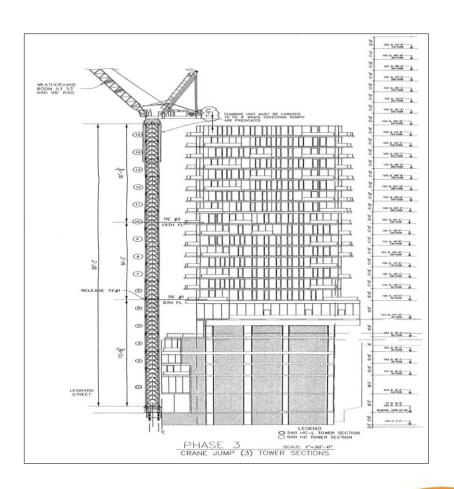




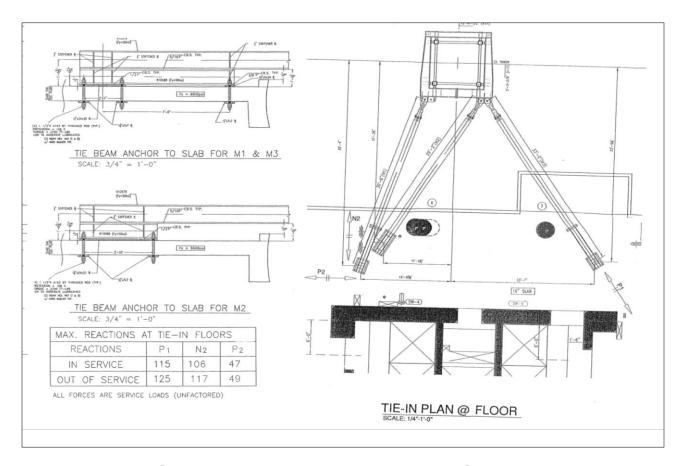




- Tower Crane Design
- Tie-in Phases



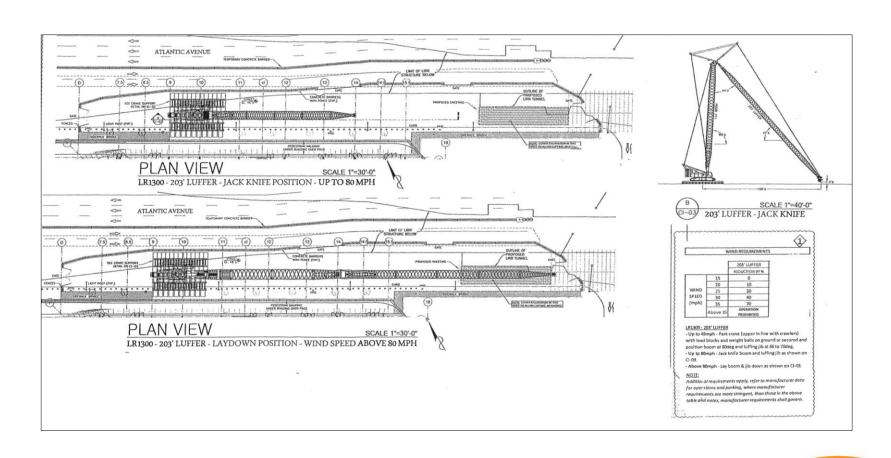




**Tower Crane Design-Tie-in Connections** 











		203' LUFFER
	100	REDUCTION BY %
WIND SPEED (mph)	15	0
	20	10
	25	20
	30	40
	35	70
	Above 35	PROHIBITED

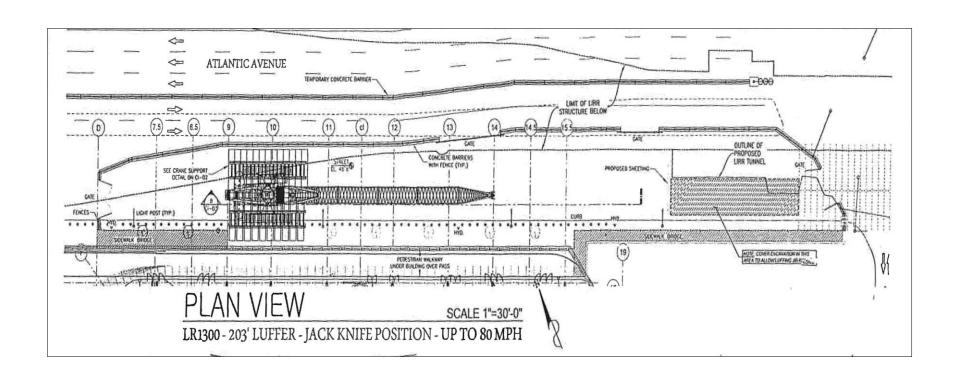
#### LR1300 - 203' LUFFER

- Up to 49mph Park crane (upper In line with crawlers) with load blocks and weight balls on ground or secured and position boom at 80deg and luffing jib at 66 to 70deg.
- Up tp 80mph Jack knife boom and luffing jib as shown on CI-03.
- Above 80mph Lay boom & jib down as shown on CI-03.

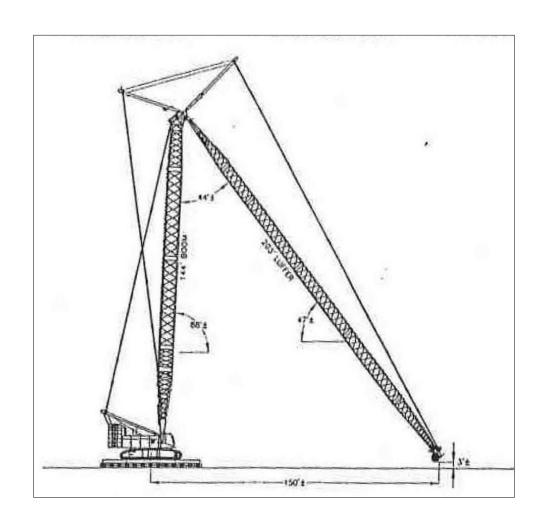
#### NOTE:

Additional requirements apply, refer to manufacturer data for operations and parking, where manufacturer requirements are more stringent, than those in the above table and notes, manufacturer requirements shall govern.

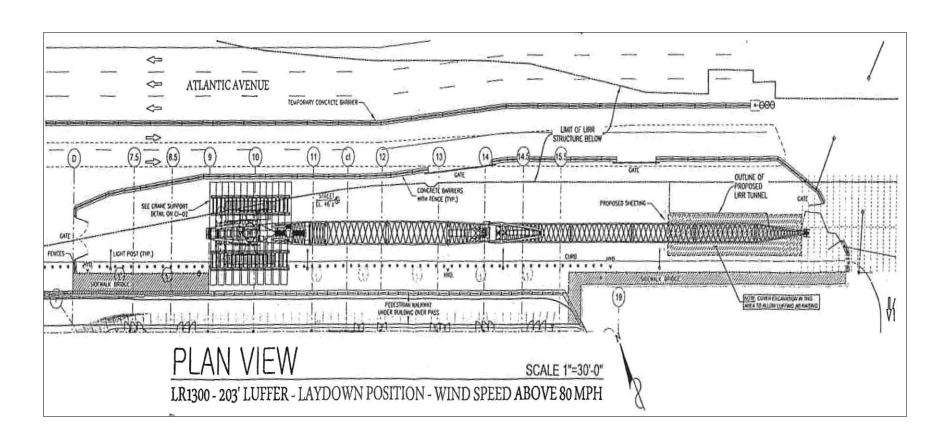




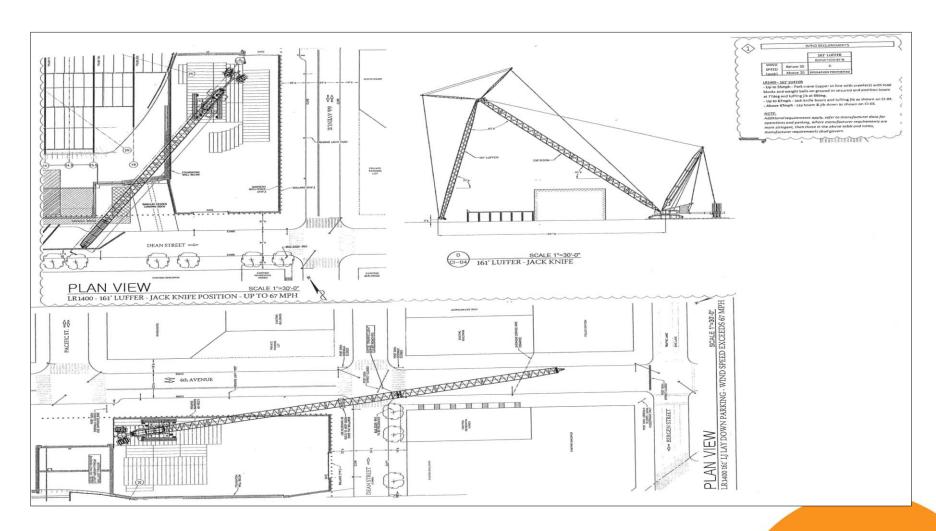




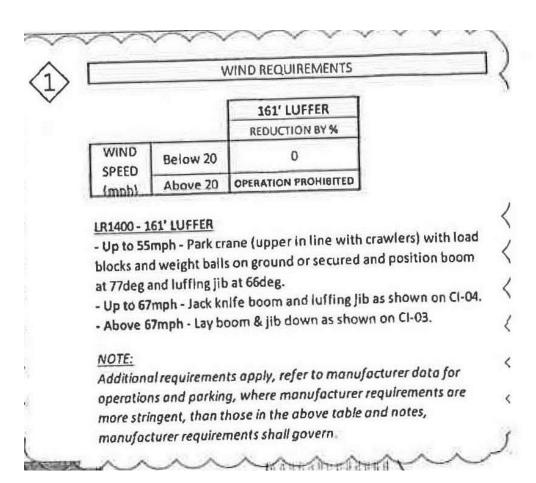




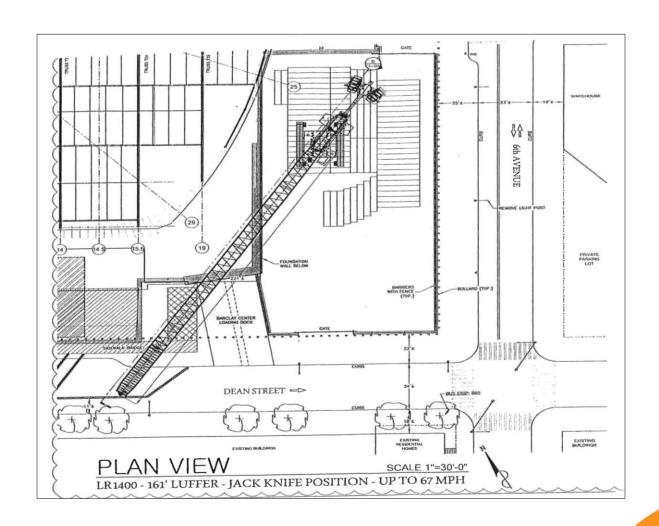




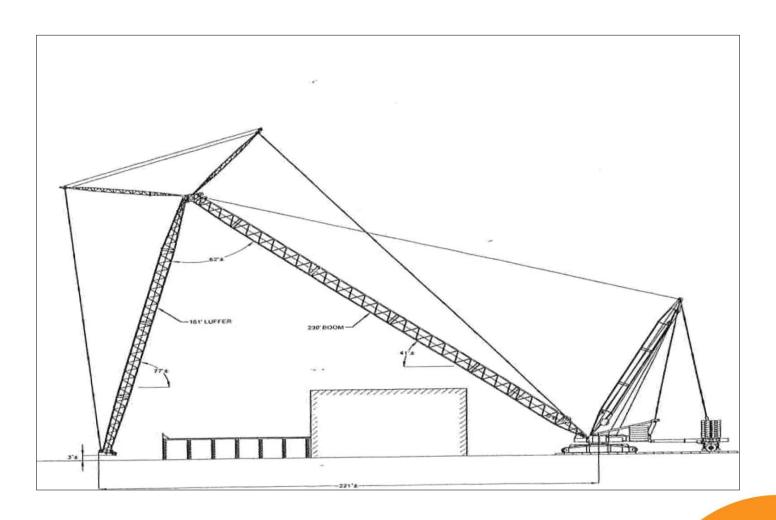




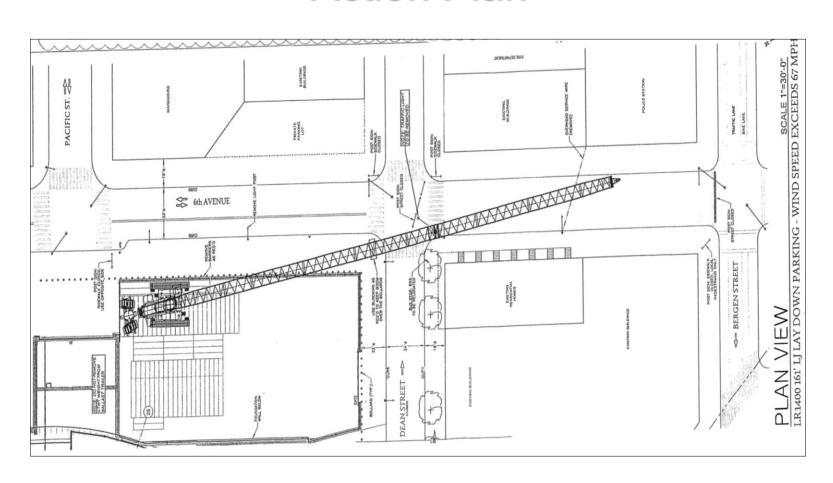














#### Rope Inspection

- Frequent Inspection
  - All ropes in continuous service shall be visually inspected once every working day
- Periodic Inspection
  - The inspection frequency shall be determined by a qualified person



## **Articulating Boom Crane**

#### Permitting and Licensing Requirements

Prior approval of the Department of Buildings is not required as per New York City Building Code 3319.3 to use an articulating boom crane at a jobsite, provided all of the followings are met:

- The articulating boom crane is used exclusively to load or unload a truck or trailer;
- The length of the boom does not exceed 135 feet; and
- The material is not raised vertically more than 100 feet during the unloading process.

## **Articulating Boom Crane**

#### Permitting and Licensing Requirements

A prototype, CN, CD and HMO licensee are required If an articulating boom crane is used for any other type of work at a jobsite including but not limited to:

- Deliveries at a jobsite beyond the maximums specified in 3319.3.
- Holding steel, HVAC equipment, hoist towers, scaffolding, sidewalk shed components, or any other loads in place while they are bolted or otherwise affixed.
- Assisting in the demolition of a building.



#### **Mission: Elevator Unit**

The Elevator Unit supports operational safety, reliable service and lawful use of elevators, escalators, amusement rides and other related devices throughout the City of New York by performing inspections and testing.

The unit advances compliant development and safety awareness through the Department's various outreach programs. The unit supports development by permitting new technologies under pilot programs.

#### **Elevator Reference Codes**

Code	Description		
IBC 2009 as modified by NYC Building Code 2014 - Elevators and Conveying Systems Chapter 30			
ICC/ANSI A117.1 – 2009	Accessible and usable buildings and facilities		
ASME A17.1/2000 with supplements A17.1a – 02 and A17.1b – 03	Safety code for Elevators and Escalators as modified by NYC Building Code Appendix K; Chapter K1		
ASME A17.1s – 2005	Supplement to Safety Code for Elevator and Escalator for Machine Room Less (MRL) elevators as modified by Appendix K; Chapter K4		
ASME A17.2 - 2002	Guide for Inspection of Elevators, Escalators and Moving Walk		
ASME A17.3 - 2002	Safety Code For Existing Elevators and Escalators as modified by Appendix K; Chapter K3		
ASME A17.5 – 2004	Elevator and Escalator Electrical Equipment		
ASME A17.6 – 2010	Standard for Elevator Suspension, Compensation, and Governor Systems as modified by Appendix K; Chapter K4		
ANSI A10.4 - 1981	Personnel Hoists and Employee Elevators on Construction and Demolition Sites		
ANSI A10.4 - 2007*	*Device Operator requirements only		



### Purpose of Codes and Standards

- Standards are communication vehicle for manufacturers and users.
- They serve as common language defining quality and establishing safety criteria.
- Developed to protect the health and welfare of the public.
- Costs are lower if procedures are standardized.
- Training is simplified.





### Purpose of Codes and Standards

- Allow new development and technical advances.
- Consumers accept products more readily when the products can be judged on merit of codes and standards.
- Harmonization of standards enhance industry innovation, improve safety, reduce costs and can be used in all markets.
- The Code is a standard that has been adopted by governmental bodies or regulators and has the force of law.





#### **Code Committees**

- The NYC Elevator Code Committee consist of elevator stakeholder groups, organizations, associations and government agencies.
- The committee reviews each section of the Code and Standards and makes decisions to enhance the safe and reliable service for our riders.
- The committee uses consensus-based process.

#### AFFILIATION/REPRESENTATION

**NEII -** National Elevator Industry, Inc.

NYCHA – New York City Housing Authority

**REBNY** - Real Estate Board of New York

**ECNY** – Elevator Conference of NY

Port Authority of NY & NJ

**EMANY** – Elevator Manufacturers Association of NY

**FDNY** - New York City Fire Department

**ASME** - Code Committee Member

**BOMA** – Buildings Owners and Managers Association of NY

Local Union – 1, 3

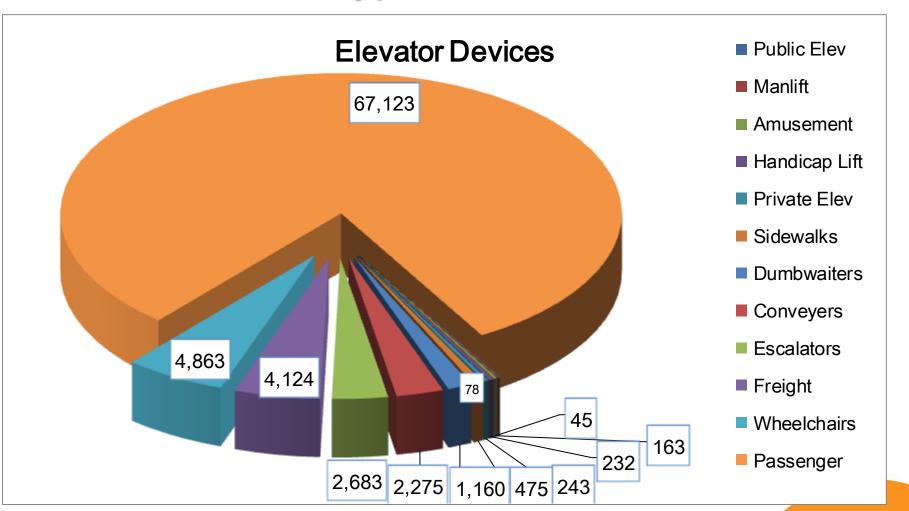
NYC - DOB - New York City Department of Buildings

**NAEC** - National Association of Elevator Contractors

**DCAS** - Department of Citywide Administrative Services



## **Type of Devices**





#### What's New

- Two new types for elevators for emergencies
  - Fire Service Access Elevator (FSAE)
  - Occupant Evacuation Elevator (OEE)
- Multi compartment elevator
- Brake maintenance requirement
- Local Law 101-15 (Intro 462A)
- Door monitoring system
- Single plunger brakes
- Stretcher size requirements
- Revised ELV1 Form





#### Fire Service Access Elevator

Fire Service Access Elevator - FSAE (BC 403.6.1 and BC 3007)





#### Fire Service Access Elevator

#### When required

At least one FSAE must be provided in new buildings with occupied floors above 120 feet.

#### Effective Date

Projects filed on or after December 31, 2014.



#### Fire Service Access Elevator

- Every floor of the building shall be served by FSAE.
- Automatic sprinklers shall not be installed in elevator machine room, machinery spaces, control room, control spaces and elevator hoistways of FSAE.
- Sprinkler system shall be monitored by the building's fire alarm system.
- An approved method to prevent water from infiltrating into the hoistway enclosure shall be provided.
- When fire fighting emergency is active, the entire height of the hoistway shall be illuminated not less than 1 foot-candle.

#### Fire Service Access Elevator

- A pictorial symbol of standardized design for Fire Service Access Elevator shall be installed on each side of the hoist way door frame.
- Fire Service Access Elevator lobby shall be not less than 120 square feet with 6 feet minimum dimension in an area.
- Fire Service Access Elevator shall be required normal and standby power.
- Protection of wiring or cables requires fire resisting rating of not less than two (2) hours.



Occupant Evacuation Elevators (BC 403.5.2 and BC 3008)

In buildings more than 420 feet in height, designated elevators permitted to be used in case of fire. These special occupant self evacuation elevators must comply with sections 3008.1 through 3008.11.





- Self Evacuation of occupants using elevators is possible provided the elevators meet strict design requirements.
- Design requirements create suitable environment for occupant self evacuation using elevators.
- Building still has to meet the means of egress requirements however OEE may be used as an alternative to the additional stairway requirement in high rise buildings.



## ELEVATORS AVAILABLE FOR OCCUPANT EVACUATION

#### When required

Not required - option in lieu of providing an additional exit stair for new, non-residential buildings taller than 420 feet per BC 403.5.2.

#### Effective

Projects filed on or after July 01, 2015.



#### **Design Requirements**

- Building shall be protected by an electrically supervised automatic sprinkler system.
- Automatic sprinkler shall not be installed in elevator machine rooms, machinery spaces, control rooms, control spaces and elevator hoistways of OEE.
- Hoistway enclosure shall be protected from water infiltration.



#### **Design Requirements**

- Signage requirements for each floor
- 2 way communication system
- Elevator system monitoring
- Power requirements
- Lobby requirements
  - Size
  - Smoke barrier
  - Vision panels
  - Automatic door closing



After input from committees & FDNY, the following rules were developed and approved:

- Rules for OEE operation (ASME A17/2013) 1 RCNY 3610-03
  - Effective date: August 24, 2015
- Modifies emergency operation and signaling devices for occupant evacuation elevators.



- Rules for Fire Alarm interface requirements for OEEs (NFPA 72/2013) - 1 RCNY 3616-04.
  - Effective date: October 08, 2015
- Modifies Appendix Q of the NYC Building Code.



#### **Operation Requirements**

- Sign In Case Of Fire-Elevators Are Out Of Service shall not be installed.
- Variable message sign must be installed.
- Upon activation of an automatic fire alarm, the fire alarm shall provide signal to the elevator system.
- The floors must be contiguous block of floors consisting of at least the floor with an active alarm, one floor above and one floor below.
- If active alarm is on the elevator designated level, automatic initiation of OEE not permitted.

- Real-time signage on all floors to inform building occupants whether or not to use the elevators on a given floor.
- Landing calls outside of evacuation floors cancelled and disabled.
- Signage at the designated landing advising people to use or not to use elevator.
- Real-time voice announcements to elevator lobbies and cars.



- Landing calls within the affected floors will call in elevator.
- Floors with active alarm given priority.
- At other floors, evacuation priority assigned in sequence received.
- Car call disabled except for elevator discharge level.



- Unoccupied cars move to a floor being evacuated and park with doors closed until a landing call is registered.
- Occupied cars proceed directly to elevator discharge level, then proceed directly to a floor being evacuated.
- Cars exceeding capacity load will not leave the floor, doors will open and remain open with voice and visual signal notification.
- New landing calls are registered immediately and assigned to another car.
- New landing calls shall not prevent a loaded car from leaving.

- Initiation by authorized or emergency personnel shall be provided through manual operation of the fire alarm system.
- If activation of an automatic FAID occurs on additional floors at any time while OEO is in effect, evacuation zone is expanded - adding all contiguous floors plus one floor above the highest floor with an active alarm and one floor below the lowest floor with an active alarm.
- OEO terminated by Fire key switch initiation for phase 1 or reset of fire alarm system.
- Fire fighters can manually recall one or more cars and leave other cars on OEO - group fire recall or one car fire recall.

## **Multi-Compartment Elevators**

- New rule for Multi Compartment
   Elevators 1 RCNY 3610-04
- Changes to Section 2.27.3.5 -Emergency Operation and Signaling Devices
- Effective date: October 26, 2015
- Established uniformity and standardized process for fire service emergency operation





## **Multi-Compartment Elevators**

#### Some Highlights of changes to 2.27.3.5

- Fire Recall switch shall be located at the designated level served by the upper compartment.
- The Phase II Emergency In-Car switch shall be located in the upper compartment.
- Visual and audio signals shall be provided in both the upper and lower compartments.



## **Multi-Compartment Elevators**

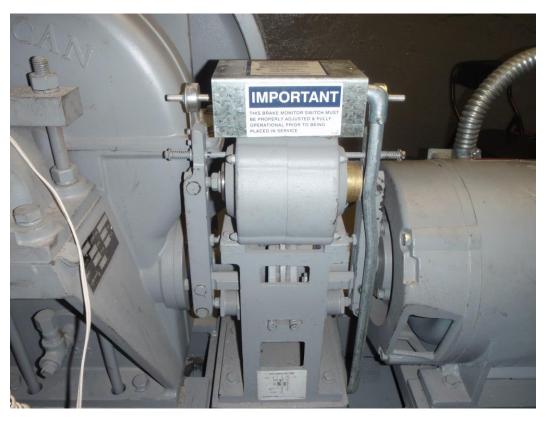
#### Highlights (cont.)

- Phase II Operation locks out the lower compartment.
- Video and Audio communication to be provided for the lower compartment.
- In case of fire alarm, initiating at designated level or the level below shall cause the elevator to travel to the alternate level.
- In case of fire alarm, initiating at the sky lobby or the level above shall cause the elevator to travel to the sky lobby alternate level.



## **Brake Maintenance**

#### Brake Maintenance Requirement





#### **Brake Maintenance**

- 8.6.4.6: Brakes
- 8.6.4.6.1 The driving-machine brake shall be maintained annually to ensure proper operations, including, but not limited to the following:
  - Residual pads (anti-magnetic pads);
  - Lining and running clearances;
  - Pins and levers;
  - Springs;
  - Sleeves and guide bushings;
  - Discs and drums; and
  - Brake coil and plunger.
- 8.6.4.1.1: Brake maintenance shall be entered in the maintenance records.
- 8.6.4.1.2: A metal tag indicating the elevator maintenance company and date of service shall be attached to the elevator controller.

## **New Legislation**

- Local Law 101-15 (Intro No 462-A).
- Amended by adding new section 28-219.
- 28-219.4 Notice to the HPD for certain elevator related violations.
- Upon re-inspection of hazardous violation for MD buildings, determines owner failed to correct condition, such violation will be referred to HPD within one week of the date of inspection.
- DOB continues its enforcement actions and HPD may proceed to correct violating conditions if progress is not made by the owner to correct hazardous violation condition and restore elevator service.
- Effective date July 1, 2016.

## **Door Monitoring System**

**K3 - 3.10.12** Means shall be provided on all automatic passenger and freight elevators to monitor the position of power operated car doors while the car is in the landing zone to prevent the operation of the car if the door is not closed except under certain conditions.

Compliance deadline: January 1, 2020.



## Single Plunger Brakes

**K3 - 3.8.4.1** All existing traction elevators with single plunger brakes must comply with either of the following:

 Alteration of single plunger assemblies to dual-plunger type

or

 Compliance with Unintended Car Movement Protection as specified by Section 2.19.2 of ASME A17.1.

Compliance deadline: January 1, 2027.



#### Stretchers: Buildings Five Stories or More

- Must have at least one elevator accessible to all floors.
- Must have an elevator that can accommodate a stretcher
  - 24-inch x 84-inch with not less than 5-inch radius corners.
  - Standby power required.
  - Exceptions
    - Private-residence elevators
    - LULA.







ELV1: Elevator Application

Please file three (3) copies Application must be typewritten

Application Number:
Filing Rep. Name:
Filing Rep. Lic.
Filing Rep. Email:

1 Filing Status		2	Location Infor	mation		
New Installation	Alteration / Replacement		Borough:	Block	Lot	
Dismantle	Remove		BIN:			
Permit Renewal	wal Permit Reinstatement		Address			
Permit Withdrawal	Permit Number:		City	State:	Zip	
Building Code	Electrical Num:		Occupancy Group	p		



Is this:	Yes	No
The only elevator in the building?		
Elevator part of Destination Dispatch System?		
An Occupant Evacuation Elevator (OEE)?		
A Fire Service Access Elevator (FSA)?		
Building meets the stretcher car requirement?		



9	Cars and Counterweight			NA	
-	Car Inside Dimensions Car Inside Area:	feet Sq.	in by feet	feet	in
	Multi Compartment Elevator Compartment 1:	Yes	No (if Y	es, comple	te below)
	Care Inside Dimensions:	feet	in by	feet	in
	Car Inside Area:	Sq.	feet		
	Compartment 2: Care Inside Dimensions:	feet	in by	feet	in
	Car Inside Area:	Sq.	feet		



10	Hoist w	vay Opening	n NA		
	Door	Gate	Door Monitoring Circuits: Yes	□No	
1 1/2 Hr Fire Rated Construction Type					



12 Personnel Hoist Information	☐ NA	13 Escalator Information	n NA
Hoist car manufacturer		Escalator manufacturer	
Model#		Model#	
Hoist Mast manufacturer		Speed	Rise
Hoist Safety manufacturer		Step Width	Angle
Hoist car dimensions		Capacity	
Hoist capacity (lbs.) Car Sat	fety	Number of flat steps	
Hoist Safety Expiration Date:			
Hoist Counterweighted Yes	☐ No	Brake Torque	
Speed(FPM) Rise		Flame/Heat/Smoke protecti	on provided?



6	Machine and Machine Room Choos	□ N/A			
Ma	chine Type: 🗌 OH Worm Gear Traction	Basement Worm Gear	Traction Gearless	Drum	
	Oil Hydraulic	Roped Hydraulic	MRL	Other	



#### Reminders

- Machine Room Less(MRL) elevator requirements.
- Material Handling Plan
- Elevator/Escalator Safety



## MRL (Machine Room Less) Elevators

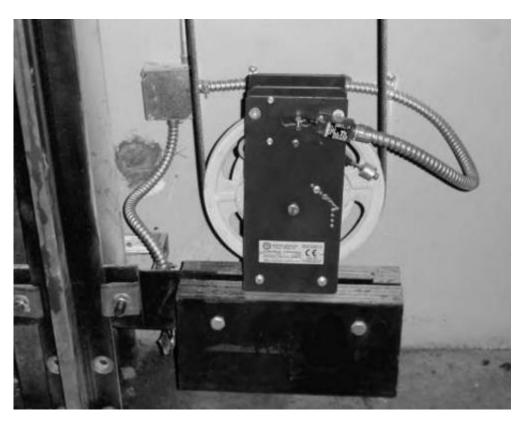
An access door is required when the governor is installed at the top of the hoistway for access to reset switches by elevator personnel.





## MRL (Machine Room Less ) Elevators

If you can not provide an access panel for a governor then the only alternate acceptable solution is a pit mounted governor.





## **Material Handling Plan**

A material handling plan is required to be kept on site and strictly followed.





## **Material Handling Plan**





## **Material Handling Plan**





## **Elevator Safety**



- Look down and make sure the elevator is level with the floor while entering and exiting.
- Press the door open button to hold closing elevator doors.
- Keep clothing items like ties and scarves clear of closing elevator doors.
- Do not exit the elevator if it stops more than 9 inches from the landing.



- Never lean on elevator doors.
- Don't use any part of your body to keep the doors open.
- Don't crowd the elevator. Too many people crowded into elevators can cause it to get stuck.
- Don't jump inside an elevator which can make an elevator uneven with the floor. You can also get stuck.

## In an Emergency

#### If elevator gets stuck:



- Remain calm and wait for help.
- Use the emergency call button.
- Follow the instructions from the building management.



- Never attempt to pry the elevator doors open.
- Never attempt to exit a stalled elevator without the help of the building management or emergency responder (e.g. Police, Fire Rescue).

## **Escalator Safety**



- Step on and off carefully
- Hold the handrail
- Help young children and seniors
- Always face forward
- Make sure your shoelaces are tied



- Don't touch the sides below the handrail
- Never ride with an open stroller



## Thank you!



# This concludes the American Institute of Architects Continuing Education Systems Course.

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