2017

NYC Buildings

Cranes, Hoists and Elevators Codes & Regulations

Course Number SW0117

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BUILD SAFE / LIVE SAFE
CONFERENCE

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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 recent requirements including energy code compliance for elevator and escalator installations under the NYC Building Code.

Learning Objectives

At the end of the this course, participants will be able to:

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 escalators and elevators including energy code requirements.

CRANES:
Codes & Regulations

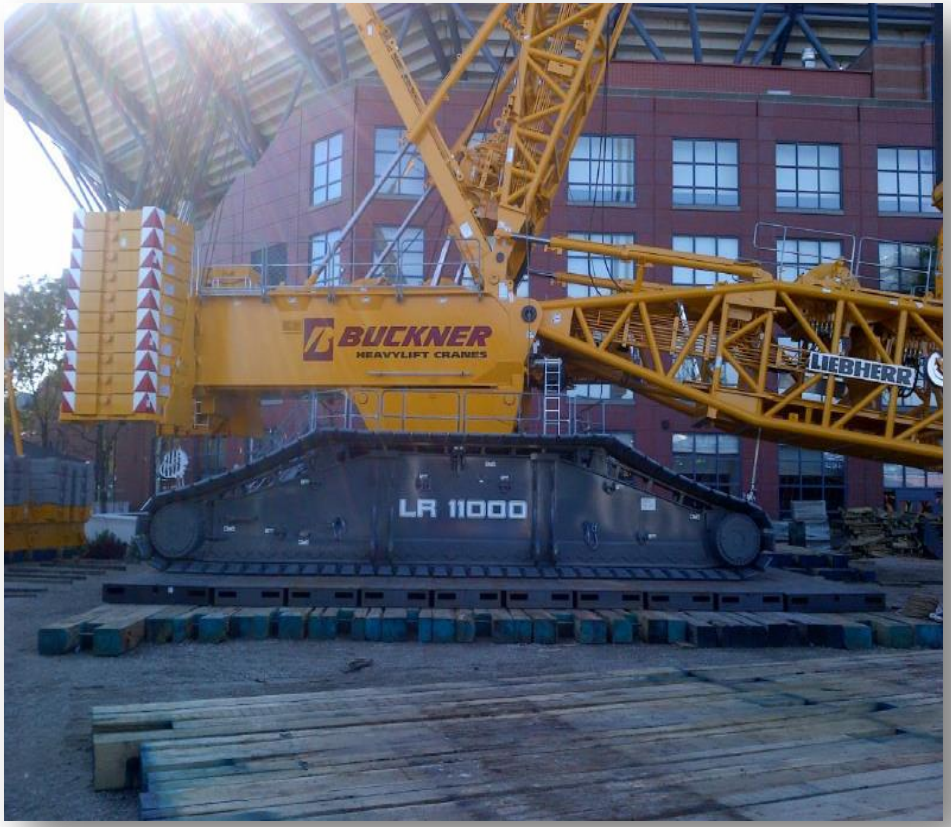
NYC Buildings 2017 BUILD SAFE / LIVE SAFE CONFERENCE

Types of Cranes: Tower Cranes

Luffing Jib

Hammer Head

Types of Cranes: Mobile Cranes



Crawler Crane

Hydraulic Crane

Types of Cranes: Derricks & Pile Driver

Derrick

Pile Driver

CRANES: Safety Hazards

Damaged Wire Rope

Torn Rope & Sling

IMPROPER RIGGING

IMPROPER SETUP

IMPROPER SETUP

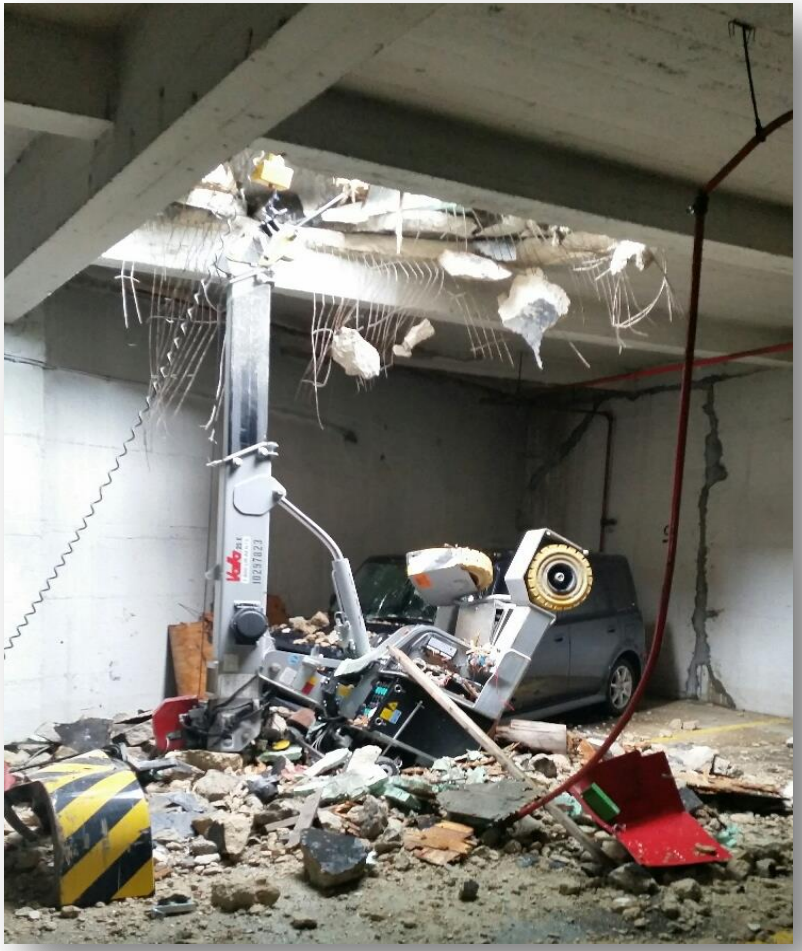
UNSAFE OPERATION

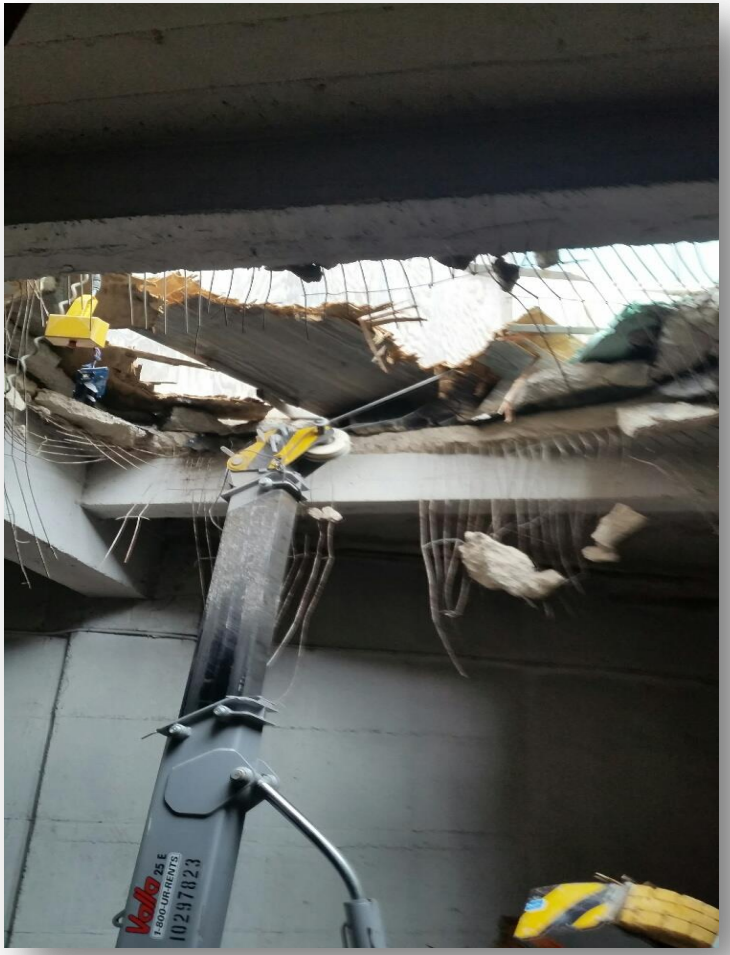
Loose Bolt

Bent Boom Lacing

INSUFFICIENT CLEARANCE

IMPROPER TIEBACK





CRANES: Risk Mitigation

CRANES & LIFT DIRECTOR RULES

1RCNY 3319-01

- **Phase 1**: Prototype – went into effect on **January 1, 2016**
- **Phase 2**: Onsite Inspection – will be in effect **5/24/2017**
- **Phase 3**: CD Inspection and Crane Operations – **Ongoing**

1RCNY 3319-02: Lift Director Rule

- Goes into effect **5/24/2017** for Tower Cranes and Derricks
- Will be in effect on for all other Mobile Cranes approved on/after **7/1/2017**

CRANES: Prototype

PROTOTYPE: CD1 – CERTIFICATE OF APPROVAL

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

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)
- **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

CRANES:
On-Site Inspection/CN

CERTIFICATE OF ON-SITE INSPECTION

New Rules 3319-01 Effective 5/24/2017

Application for Certificate of On-site Inspection

1. Cranes and derricks notice plan
2. Assembly/disassembly plan
3. Pre-operational test procedures
4. Load imposed
5. Wind action plan
6. Certifications
7. Calculations

CRANE NOTICE APPLICATION

Cranes and derricks notice plan (filed by a licensed NYS Professional Engineer) with the following information:

- Ground and Subsurface Elements
- Site Condition
- Location and Configuration
- Foundation, Tie-ins, and Supporting Elements
- Bolted Connections
- Anchors
- Welded Connections
- Structural Steel
- Counterweights
- Aviation Hazards
- Electrical Information
- Special Inspection
- Range of Tolerance

CRANE NOTICE APPLICATION

A. **Ground and subsurface elements**
   - Elevations and sections with ground and subsurface elements
   - Slopes, bearing values
   - Load imposed and surcharge

B. **Site Conditions**

   Elevations and sections including but not limited to:
   - Surrounding structures
   - Temporary structures
   - Pedestrian and traffic control
   - Other cranes
   - Above ground utilities

C. **Location and configuration**
   - Elevations and sections for location and configuration
   - Outriggers location and configuration
   - Maximum and minimum swing radius

CRANE NOTICE APPLICATION

D. **Footing, foundation, tie-ins and supporting elements**
- Elevations and sections of footing or founding of the crane or derrick
- Ties-in or other structures supporting the crane or derrick
- Bearing values
- Load imposed
- Concrete strength to be obtained prior to installation
- Bearing values

E. **Bolted Connections**

For a bolted connection utilized in a platform or dunnage that supports a crane or derrick, or utilized in the footing, foundation, tie-ins, or supporting elements of a derrick or a tower crane:
- Bolts sizes
- Grades and specifications
- Torque values
- Re-torqueing schedule and procedures
- Plates, rods and pre-tensioning information
- Dowels, clamping forces, and grout specifications

CRANE NOTICE APPLICATION

F. **Anchors**

Elevations and sections detailing anchored connections to a structure, including, as applicable:

- Type and size of anchors
- Epoxy or grout specifications
- Installation instructions, and pull testing criteria

G. **Welded Connections**

For a welded connection:

- Material information
- Welding specifications
- Welding procedures

H. **Structural Steel**

- Shape, size, and grade of the steel must be specified on the plans

CRANE NOTICE APPLICATION

I. **Counterweight**
- Weight
- Acceptable material
- Dimensions
- As per manufacturer requirements

J. **Aviation Hazards**
- Aircraft warning lights

K. **Electrical Information**
- Electrical requirements of Cranes **must** be indicated on the plans, such as voltage, amperage, phasing, grounding, and other electrical information specific to tower crane Voltage, amperage, phasing, grounding, and any other electrical information specific to the tower crane

CRANE NOTICE APPLICATION

L. **Special Inspection**
   - Special Inspection **must** be identified on the plans as per of 3319-01

M. **Range of Tolerances**
   - Specific values indicating the numerical range of tolerance must be indicated

LOAD IMPOSED

Where the crane or derrick imparts a load on a building or structure, the application **must** be accompanied by either:

A. Sealed and stamped **reviewed for load** imposed by EOR of the project.

B. Signed and sealed letter from the EOR attesting to the adequacy of the building structure to support loads imposed.

C. For a project for which there is no EOR, as signed and sealed letter from the crane EOR attesting the adequacy of the building structure to support imposed loads.

WIND ACTION PLAN

The application **must** be accompanied by a Wind Action Plan:

A. Content
   1. Load reductions, if any, due to wind.
   2. The maximum in-service wind threshold.
   3. Wind thresholds, configurations, and procedures, including angles and sequencing, for parking and securing the crane in each applicable out-of-service position (e.g. retracted, parked, jackknifed, laid down, and/or other special protective measures for wind)
   4. The communication protocol for safeguarding the crane in the event of changes of forecasts over weekends or longer stoppage periods.

WIND ACTION PLAN

(continued)

B. Self-contained document

C. Maximum in-service threshold (30 mph or per manufacturer whichever more stringent)

D. Specific to configuration

E. Able to be implemented based upon site conditions

F. Emergency action plan

WIND ACTION PLAN: IN-SERVICE/DURING OPERATION

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

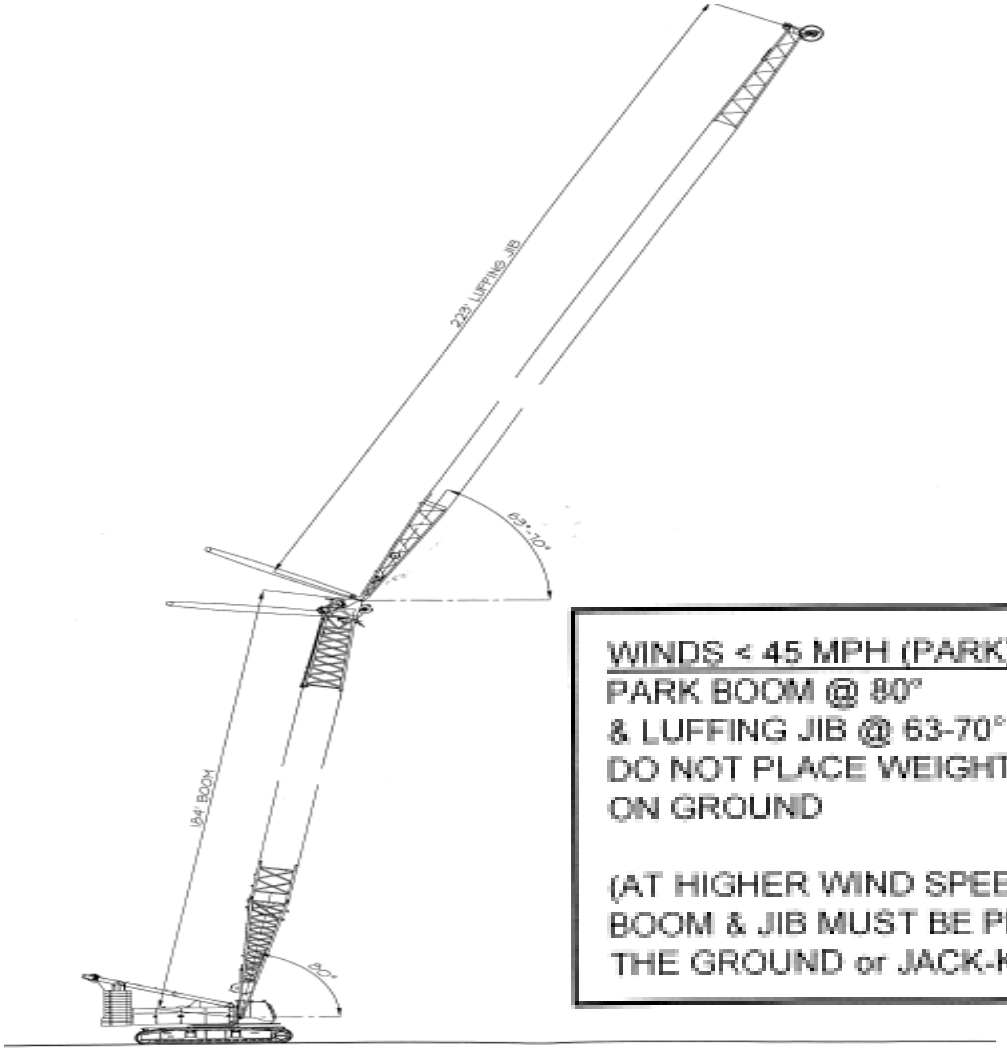
LR1300 - 203' LUFFER

- 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.

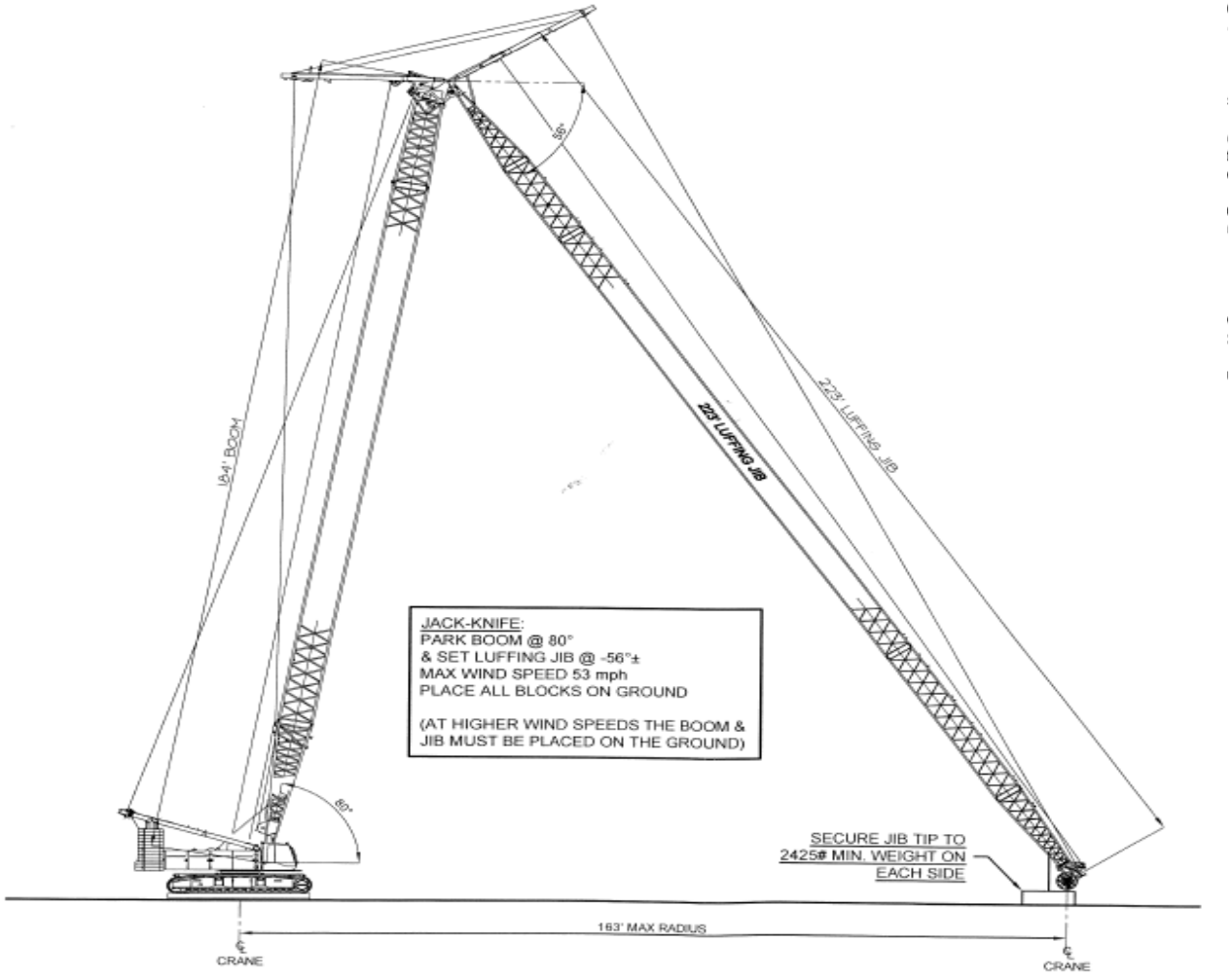
CRAWLER CRANE O.S. PARKED POSITION



WINDS < 45 MPH (PARK):
PARK BOOM @ 80°
& LUFFING JIB @ 63-70°
DO NOT PLACE WEIGHT BALLS
ON GROUND

(AT HIGHER WIND SPEEDS THE
BOOM & JIB MUST BE PLACED ON
THE GROUND or JACK-KNIFE)

CRAWLER CRANE O.S. JACKKNIFING



CRAWLER CRANE O.S. JACKKNIFING

LIEBHERR LR1200 JACK-KNIFE POSITION
Crane: LR 1200 - SN# 135.023

Crane Configuration:

main boom 2320:	184ft
luffing boom 1916 (w/Midfall):	223ft
counter weight:	m = 178600lbs = 81t
carbody weight:	m = 79400lbs =36t

JACK-KNIFE:
PARK BOOM @ 80°
& SET LUFFING JIB @ -56°±
MAX WIND SPEED 53 mph
PLACE ALL BLOCKS ON GROUND

(AT HIGHER WIND SPEEDS THE BOOM & JIB MUST BE PLACED ON THE GROUND)

NOTE/ATTENTION:
The following jackknife parked position is only allowed exceptionally for this configuration and NOT for regular use!!
Maximum permissible wind speed for the jackknife parked position = **53 miles/hour,** which means maximum possible 3-second-gust-wind speed at maximum elevated height. If higher wind speeds are expected, the boom has to be laid flat on the ground.

Turn crane so that the wind comes from behind, if it is possible; then follow the manual's assembly/erection/dismantling procedures to place the crane in the following final jackknife parked position:

Main boom at **80°**
Luffing jib at approximately **-56°**
Tip of luffing jib should be approximately 1m (3.5ft) above ground
Luffing jib tip needs to be suspended with an allowed force of 2.0t (2425 lbs) to each side

NOTE: The hook of luffing jib must remain on the ground for final jackknife parked position.

CRAWLER CRANE SEQUENCE OF LAYING DOWN

Laying the 1916 fly jib head down on the ground

- Lower the jib until the wheels on the 1916 fly jib head reach the ground (Figure 344) or the lowering movement of the fly jib adjusting winch is stopped by the "Fly jib lower limit switch".

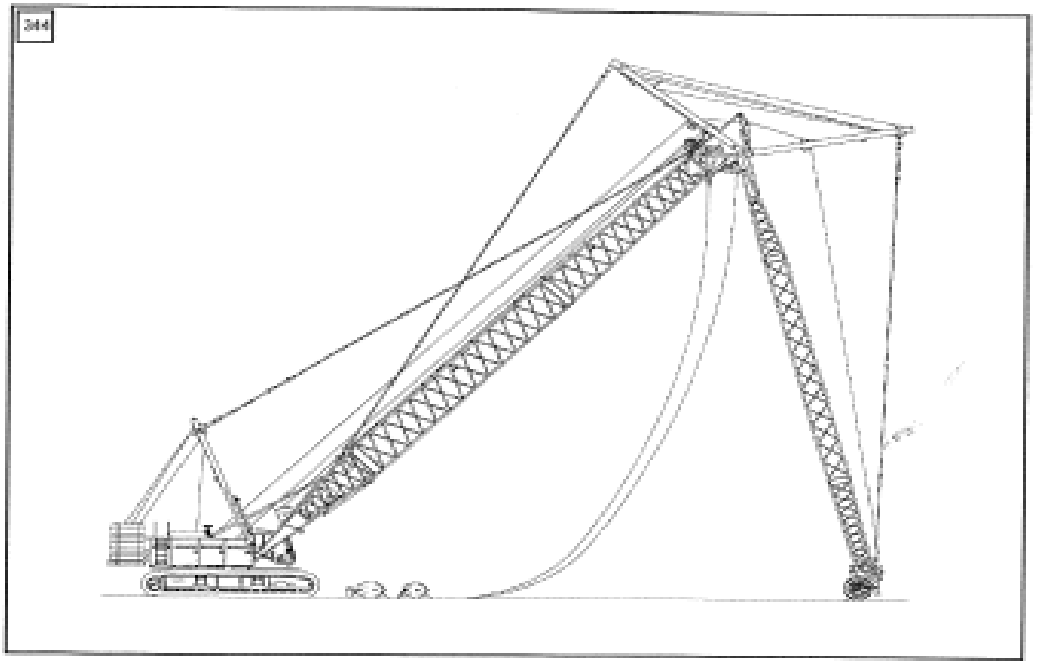
The touch-down point of the 1916 fly jib head depends on the boom combination:

In the case of long fly jibs , the 1916 fly jib head will already be on the ground before the limit switch trips.

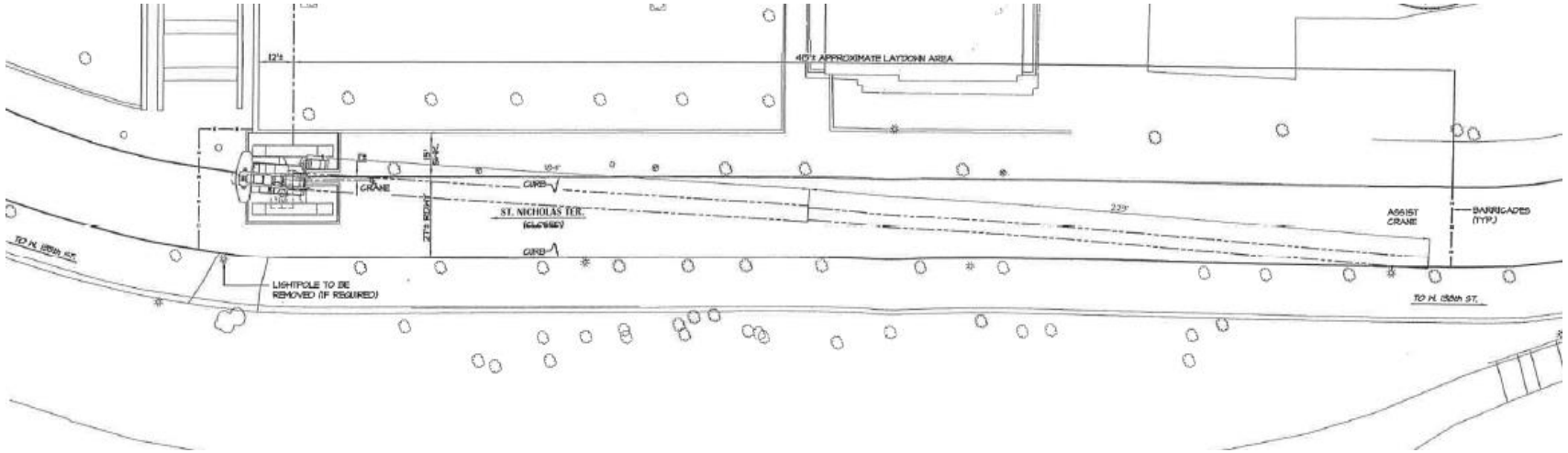
With short fly jibs, after the limit switch trips, the boom must be slowly lowered using the main boom adjusting winch until the 1916 fly jib head touches the ground.

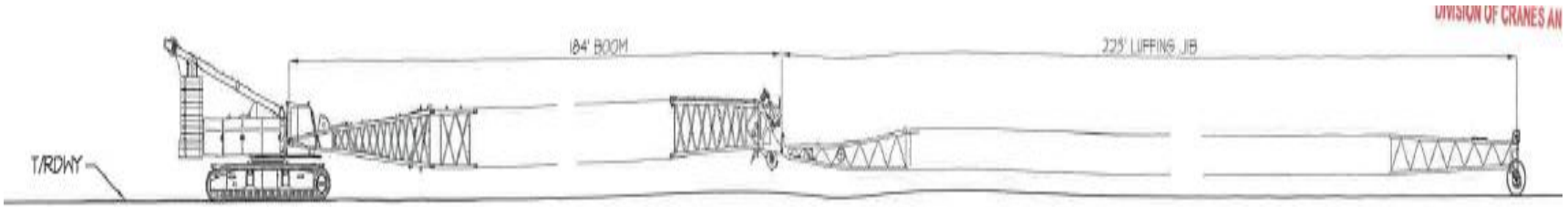
IMPORTANT!

In the case of a tip boom", employ an assistant to ensure that the tip boom" folds forwards towards the 1916 fly jib head after making contact with the ground. Then set the running wheels of the 1916 fly jib head down on the ground.



CRAWLER CRANE O.S. LAYDOWN





BUILDING CODE: SITE-SPECIFIC WIND ANALYSIS FOR TOWER CRANES

NYC Building Code 1618 (Loads on Temporary Installations)

Installations governed by this code shall be defined as temporary when such installations are intended to be taken apart or removed after a limited period following their installation including but not limited to CRANES.

Loads on Temporary Structures:

1. Shall be designed and constructed to resist loads as per NYC BC Chapter 16.
2. All temporary installations reducing the design environmental loads shall include Action Plan. Wind (basic wind speed can be reduced by applying a factor of 0.8 with an action plan.
3. Action Plan shall be reliably implemented in one day's notice or less.

Site-specific Wind Analysis for Tower Cranes

1RCNY 3319-01

A. Cover each configuration for which approval is sought.

B. Crane EOR to provide the manufacturer the following:
   1. Project address
   2. Crane make and model
   3. Maximum lifting capacity
   4. Distance of crane from building

Site-specific Wind Analysis for Tower Cranes

1RCNY 3319-01 (continued)

5. Proposed tie-in spacing
6. Elevations and sections
7. Action plan in case reduction factor is applied
8. Wind load conditions, exposure category, wind distribution:
   - In-service of at least 45 mph
   - Out-of-service in accordance with NYC BC Chapter 16

SITE-SPECIFIC WIND ANALYSIS FOR TOWER CRANES

1RCNY 3319-01 (continued)

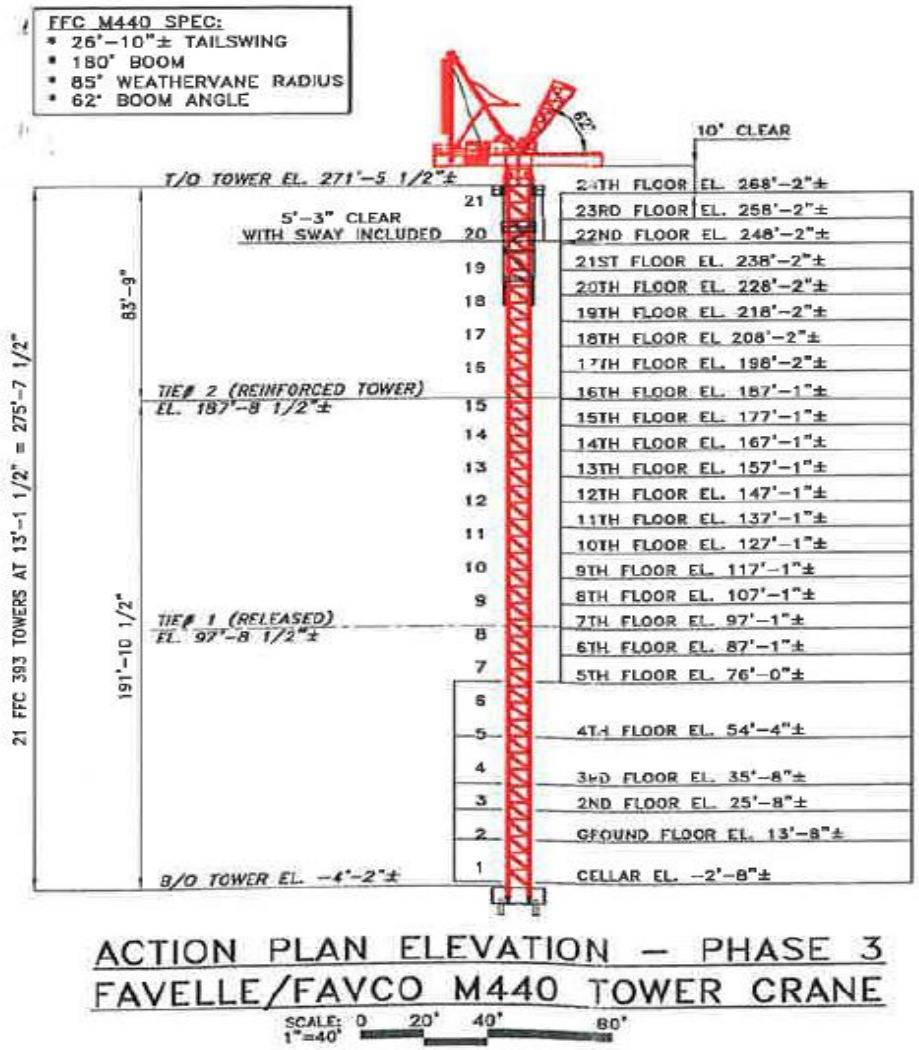
C. Required information from Manufacturer:
   - Maximum moment
   - Slewing moment
   - Corresponding vertical loads on foundation

D. Certification from the manufacturer that analysis is based on information provided by the crane EOR

E. Certification from the manufacturer all components can sustain wind load as specified above

F. Note any special condition in which the crane may not be used or installed

TOWER CRANE ACTION PLAN



ACTION PLAN ELEVATION – PHASE 3
FAVELLE/FAVCO M440 TOWER CRANE

SCALE: 1"=40' 0 20' 40' 80'

TOWER CRANE ACTION PLAN

ACTION PLAN FOR MAJOR STORM FORECAST
IN ACCORDANCE WITH 2014 NEW YORK CITY BUILDING CODE SECTION 1618.3

1. THE CRANE INSTALLATION DESIGN IS IN ACCORDANCE WITH THE 2014 NEW YORK CITY BUILDING CODE, SECTION 1618.2 WITH A CONSTRUCTION PERIOD DESIGN FACTOR OF 0.85 FOR A 1-2 YEAR CONSTRUCTION PERIOD ON THE BASE WIND SPEED OF 98 MPH, SO THAT THE REDUCED DESIGN WIND SPEED IS 83 MPH. FOR WINDS PREDICTED ABOVE 80 MPH, THE ACTION PLAN MUST BE IMPLEMENTED AS LISTED BELOW AND ALL ACTIONS MUST BE COMPLETED IN LESS THAN ONE DAY'S NOTICE. THE CRANE INSTALLATION DESIGN FOR THE ACTION PLAN IS BASED ON UNREDUCED WIND LOADS, SO THAT THE BASE WIND SPEED OF 98 MPH IS USED FOR THE LOADS. IF WINDS EXCEED 30 MPH, THE CRANE IS TO BE TAKEN OUT OF SERVICE AND ALLOWED TO WEATHERVANE.
2. THE CRANE IS EQUIPPED WITH AN ANEMOMETER THAT ALLOWS THE CRANE OPERATOR TO MONITOR THE WIND SPEED CONSTANTLY WHILE THE CRANE IS IN SERVICE. THE CRANE SAFETY COORDINATOR SHALL MONITOR THE WEATHER FORECASTS AND PREDICTED WIND SPEEDS DAILY.
3. THE CRANE SAFETY COORDINATOR SHALL MONITOR THE WEATHER FORECASTS AND PREDICTED WIND SPEEDS DAILY AND ENSURE THAT THIS ACTION PLAN HAS BEEN IMPLEMENTED IN THE EVENT THAT WINDS ABOVE 80 MPH HAVE BEEN FORECAST.
4. THE CRANE SAFETY COORDINATOR AND SITE SAFETY MANAGER ARE RESPONSIBLE FOR EFFECTUATING THE ACTION PLAN.
5. EVACUATION IS NOT APPLICABLE, AS THE AFFECTED AREA IS TOO LARGE. THE CRANE IS DESIGNED TO WEATHERVANE.
6. SAFETY ZONE, STANDOFF DISTANCE OR STANDOFF PERIMETER IS NOT APPLICABLE, AS THE AFFECTED AREA EXTENDS BEYOND THE PROPERTY LINE. THE CRANE IS DESIGNED TO WEATHERVANE.
7. THE FOLLOWING ACTIVITIES ARE REQUIRED AT LEAST ONE DAY PRIOR TO THE STORM TO IMPLEMENT THE ACTION PLAN FOR WINDS PREDICTED ABOVE 80 MPH.

   SET THE BOOM TO 65' RADIUS (62' BOOM ANGLE) AND ALLOW THE CRANE TO WEATHERVANE. FOLLOW THE MANUFACTURER'S PROCEDURE FOR RELEASING THE SWING BRAKE AND PREPARING THE CRANE FOR STORM CONDITIONS. SECURE ALL HATCHES, DOORS, ACCESS PANELS, STRAPS, ETC. AND STOW ALL LOSE ITEMS. CHECK TOWER BRACE CONNECTIONS, TOWER BOLT CONNECTIONS AND TOWER BASE CONNECTIONS. SEE ACTION PLAN ELEVATIONS FOR TOWER HEIGHTS AND TIES.

   A. FOR THE BUILDING BETWEEN THE 11TH FLOOR AND THE 15TH FLOOR, REDUCE THE TOWER HEIGHT TO 14 TOWERS WITH TIE #1 FULLY ENGAGED AS SHOWN ON ACTION PLAN ELEVATION – PHASE 2.
   B. FOR BUILDING BETWEEN THE 16TH FLOOR AND 24TH FLOOR, REDUCE THE TOWER HEIGHT TO 21 TOWERS WITH TIE#2 FULLY ENGAGED AND TIE#1 RELEASED AS SHOWN ON ACTION PLAN ELEVATION – PHASE 3.
   C. FOR BUILDING BETWEEN THE 25TH FLOOR AND 33RD FLOOR, REDUCE THE TOWER HEIGHT TO 28 TOWERS WITH TIE#3 FULLY ENGAGED, TIE#2 RELEASED AND TIE#1 FULLY ENGAGED AS SHOWN ON ACTION PLAN ELEVATION – PHASE 4.
   D. FOR BUILDING BETWEEN THE 34TH FLOOR AND 42ND FLOOR, REDUCE THE TOWER HEIGHT TO 35 TOWERS WITH TIE#4 FULLY ENGAGED, TIE#3 RELEASED, TIE#2 AND TIE#1 FULLY ENGAGED AS SHOWN ON ACTION PLAN ELEVATION – PHASE 5.
   E. FOR BUILDING BETWEEN THE 43RD FLOOR AND 50TH FLOOR, REDUCE THE TOWER HEIGHT TO 42 TOWERS WITH TIE#5 FULLY ENGAGED, TIE#4 RELEASED, TIE#3, TIE#2 AND TIE#1 FULLY ENGAGED AS SHOWN ON ACTION PLAN ELEVATION – PHASE 6.
   F. FOR BUILDING BETWEEN THE 51ST FLOOR AND 59TH FLOOR, REDUCE THE TOWER HEIGHT TO 49 TOWERS WITH TIE#6 FULLY ENGAGED, TIE#5 RELEASED, TIE#4, TIE#3, TIE#2 AND TIE#1 FULLY ENGAGED AS SHOWN ON ACTION PLAN ELEVATION – PHASE 7.
   G. FOR BUILDING BETWEEN THE 60TH FLOOR AND 68TH FLOOR, REDUCE THE TOWER HEIGHT TO 56 TOWERS WITH TIE#7 FULLY ENGAGED, TIE#6 RELEASED, TIE#5, TIE#4, TIE#3, TIE#2 AND TIE#1 FULLY ENGAGED AS SHOWN ON ACTION PLAN ELEVATION – PHASE 8.
   H. FOR BUILDING BETWEEN THE 69TH FLOOR TO TOP OF BUILDING, REDUCE THE TOWER HEIGHT TO 63 TOWERS WITH TIE#8 FULLY ENGAGED, TIE#7 RELEASED, TIE#6, TIE#5, TIE#4, TIE#3, TIE#2 AND TIE#1 FULLY ENGAGED AS SHOWN ON ACTION PLAN ELEVATION –PHASE 9.

   TO RELEASE A TIE FOLLOW THE MANUFACTURER'S PROCEDURES. VERIFY THAT THE COLLAR IS SECURED TO THE TOWER AS SHOWN ON THE FAVELLE/FAVCO 393 TOWER COLLAR SAFETY WIRE CONNECTION. WITH THE COLLAR SECURED TO THE TOWER, RELEASE THE CHOCKS THAT CHOCK THE COLLAR TO THE TOWER. THE TIE BEAMS DO NOT NEED TO BE REMOVED TO RELEASE A TIE.
8. ALL LOSE ITEMS ARE TO BE STOWED IN CLOSED CABINETS, THE OPERATOR'S CABIN OR REMOVED FROM THE CRANE.
9. THE CRANE INSTALLATION HAS BEEN DESIGNED TO RESIST THE LOADS CAUSED BY A MAJOR STORM. THE CRANE LOCATION AND WEATHERVANE RADIUS HAVE BEEN VERIFIED THAT THEY DO NOT ADVERSELY IMPACT OTHER STRUCTURES.
10. PRIOR TO PUTTING THE CRANE BACK IN SERVICE AFTER A MAJOR STORM, THE CRANE SHALL BE INSPECTED FOR DAMAGE. CHECK TOWER BRACE CONNECTIONS, TOWER BOLT CONNECTIONS AND TOWER BASE CONNECTIONS. FULLY ENGAGE ANY RELEASED TIES, SO THAT ALL TIES ARE FULLY ENGAGED.

LOAD TEST PROTOCOL & APPROVAL

For a tower crane, including a self-erecting tower crane, and a derrick, the application **must** be accompanied by procedures for the pre-operational test:

1. Tower Crane (ASME B30.3 2016)
2. Self Erecting tower crane (ASME B30.29 2012)
3. Derrick (ASME B30.6)

CRANES:
Assembly/Disassembly Plan & Assembly/Disassembly Director

ASSEMBLY/DISASSEMBLY PLAN

The installation or removal of structural component or attachments to a crane or derrick or the installation or removal of elements that connect or attach a crane or derrick to a building or structure.

Exceptions

1. Installation/removal of counterweights
2. Unfolding and pinning of a boom or swing-away jib
3. Self-erecting tower crane provided that no boom or mast section is being installed at the site

ASSEMBLY/DISASSEMBLY PLAN

For a crane or derrick that requires components to be assembled or disassembled at the site, the application must include an assembly/disassembly plan, the plan must include the following:

- Content
- Self contained document
- Maximum assembly/disassembly wind threshold
- Specific to configurations
- Able to be implemented based upon site condition

ASSEMBLY/DISASSEMBLY DIRECTOR

All cranes with certificate of onsite inspection that require assembly/disassembly will require Assembly/Disassembly Director to ensure compliance with assembly/disassembly plans.

- **Must** be designated by equipment user and meet the criteria of both competent and qualified person.
- If assembly/disassembly involves hoisting lowering articles the assembly/disassembly **must** be either:
  1. Licensed Master Rigger
  2. Tower Crane Rigger
  3. Master Rigging Foreman trained or certified as Rigging Supervisor per section 3316.9.2 or completed training requirements per section 3319.10

Exception: *Tower crane erection, jumping, climbing, or dismantling must be supervised by a licensed Master/Tower Crane Rigger*

CRANE OR DERRICK LOG

Equipment user **must** maintain for the duration of the project a crane log containing the following:

1. Equipment user custody of the crane, tasks, relinquish custody over crane or derrick
2. Record of inspection signed and dated by the HMO
3. The meeting log for erection, climbing, jumping, or dismantling of a tower crane
4. Date and time of pre-shift meeting as per 3319-02(j)
5. The Assembly/Disassembly Director for the assembly/disassembly operation

CRANES:
Commissioner's Order for Crawler Cranes

COMMISSIONER'S ORDER: CRAWLER CRANES

Compliance with Code and Manufacturer Specifications

- In accordance with NYC Building Code Section 3301.1.3, all equipment shall be used in accordance with the specifications of the manufacturer, the requirements of the building Code, and department rules and regulations. Where there is a discrepancy, the stricter requirement shall apply.
- When unexpected or exigent circumstances warrant, the equipment user **must** consult with the engineer of record, and may also consult with the crane manufacturer.

COMMISSIONER'S ORDER: CRAWLER CRANES

- Apply to all crawler cranes except
  1. Pile drivers.
  2. Clamshells
  3. Crawler cranes with telescopic boom with no lattice jib
- Anemometer required
- In-service wind threshold
- Parking and securing the crane
- Wind action plan

COMMISSIONER'S ORDER: CRAWLER CRANES

- Lift Director required
- Designation of the Lift Director
- Duties of the Lift Director
- Ordering corrective action and notification to DOB
- Authority to stop operations
- Responsibility for crane and rigging operations
- Pre-shift meeting required
- Familiarization for cranes that require a Class-B HMO

COMMISSIONER'S ORDER: CRAWLER CRANES

- Notification to the Department, prior to certain crawler crane actions
- Prohibition on crawler cranes configurations that require certain action to be taken at 20 mph or less
- Special provisions for crawler crane configurations that require certain actions to be taken above 20mph but at or under 30 mph

CRANES:
Articulating Booms

ARTICULATING BOOM CRANE

Permitting and Licensing Requirements

Prior approval of the Department of Buildings is not required as per NYC 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 job site 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.

CRANES:
Lift Director Rule
(effective 5/24/2017)

Lift Director

- Present at jobsite full time and while crane performing certain tasks
- Lift Director is required when:
  - Crane or derrick is picking a load
  - Crane is traveling at the site
  - Crane or derrick is being placed into parked condition or taken O.S.
  - Crane or derrick boom/jib is being laid down or jackknifed
  - The crane or derrick boom/jib is being raised from laid down or jackknifed
  - Other protective measures for wind are being installed or removed

LIFT DIRECTOR RESPONSIBILITIES

- Confirming that the crane or derrick is located and configured in accordance with the approved notice plans prior to each shift, and if relocating.
- Site conditions match approved notice plans.
- Traffic and pedestrian controls are in place.
- Ensure that HMO, rigging supervisor, rigging crew possess proper licensing, and or training cards.
- HMO and rigging supervisor are present throughout the shift.
- Weather conditions and forecasts are monitored as warranted.

LIFT DIRECTOR RESPONSIBILITIES

- Coordination with HMO, rigging supervisor for the various crane operation, cease of operation, out of service action plan is implemented in accordance with notice plan.
- At the end of the shift or as weather conditions warrant HMO ceased operations.
- HMO has completed a written record prior to leaving the site.
- When warranted during O.S. periods, appropriate personnel return to the site to take further steps to secure the crane of derrick.

LIFT DIRECTOR RESPONSIBILITIES

- When carrying load over an occupied building, the top two floor are vacated prior to start of such operation in accordance with 3319-01(q)(3)(v).
- Prior to a critical pick the Master Rigger or the P.E. has verified with the pick plan in accordance to section 3316.9.1
- Compliance with 3319-01(s)(3) for overhead power lines.
- Required frequent inspections are performed prior to start of the shift.
- Crane operator is informed of the weight of load, moving, and placing locations of these loads.

Lift Director Responsibilities

- Crane operator's verification has been obtained that weight does not exceed crane capacity.
- Constant communication is maintained between the operator, rigging supervisor, and signalpersons.
- Load is properly rigged before it is lifted. .

ELEVATORS, HOISTS:
Codes & Regulations

NYC Buildings 2017 BUILD SAFE / LIVE SAFE CONFERENCE

ELEVATOR UNIT

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
ASME A18.1 – 2005	Safety Standard for Platform Lifts and Stairway Chairlifts
B20.1—2006	Safety Standard for Conveyors and Related Equipment

CODES AND STANDARDS PURPOSE

- Standards are communication vehicles for manufacturers and users
- 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

CODES AND STANDARDS PURPOSE

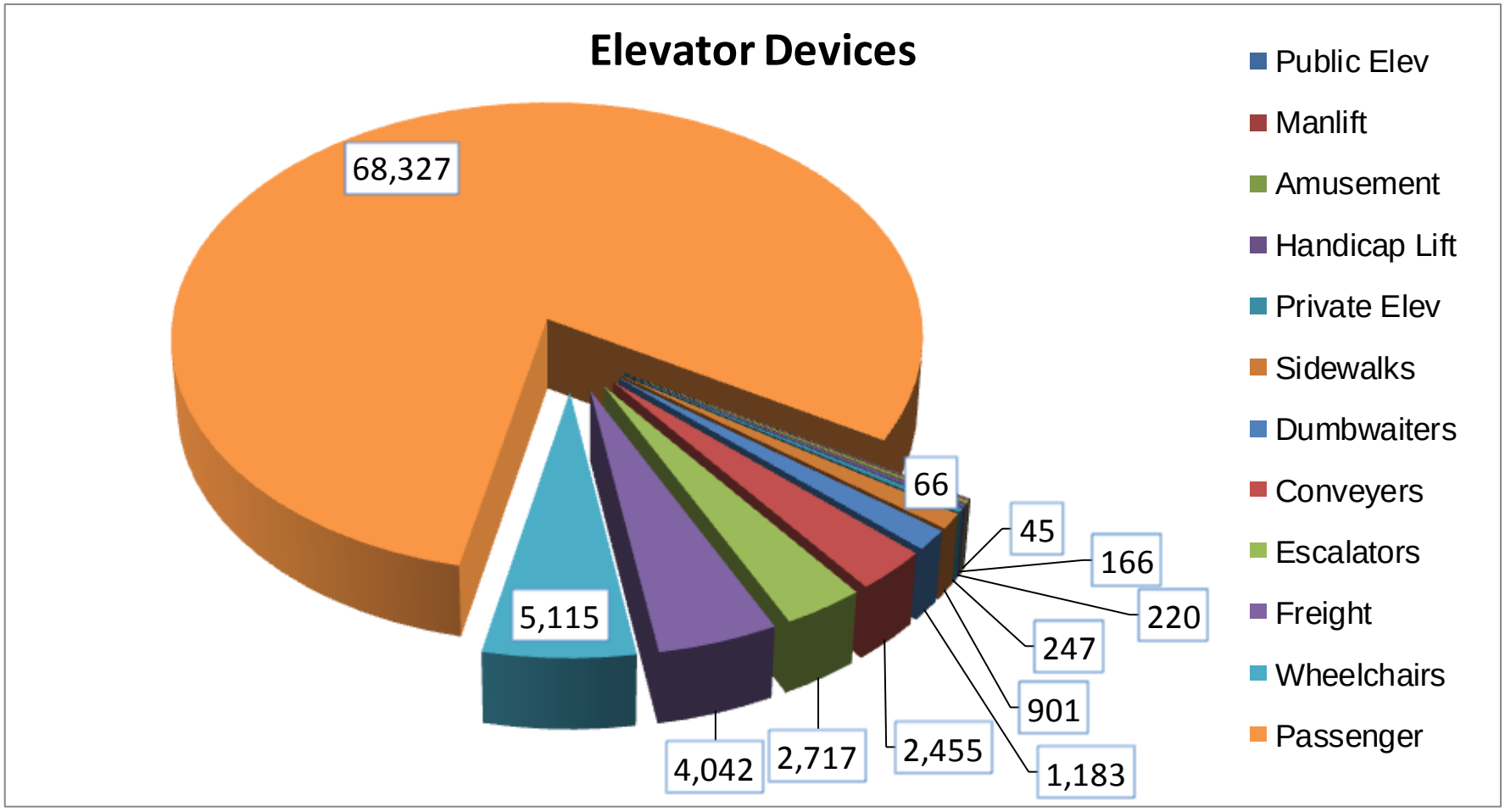
- Allows for new development and technical advances
- Consumers accept products more readily when the products can be judged on merit of codes and standards
- Harmonization of standards enhance industry innovation, improve safety, reduce costs and can be used in all markets
- Code is a standard that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

CODE COMMITTEES

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

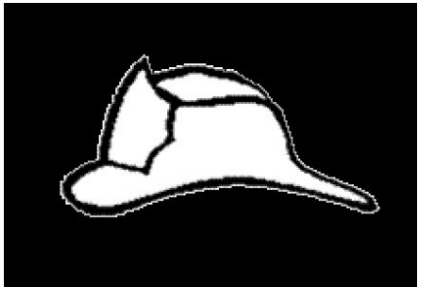
TYPE OF DEVICES



WHAT'S NEW

- Two new types for elevators for emergencies
  - Fire Service Access Elevator (FSAE)
  - Occupant Evacuation Elevator (OEE)
- Multi Compartment Elevator
- Elevator Emergency Repair
- Door monitoring System
- Single plunger brakes
- Stretcher size requirements
- Energy Code requirements
- New ELV1 Form

FIRE SERVICE ACCESS ELEVATOR (FSAE)



BC 403.6.1 and BC 3007

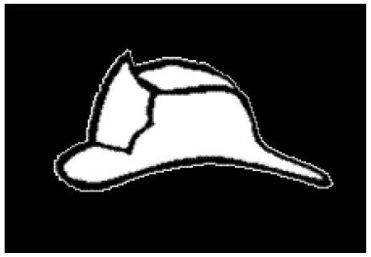
- **When required**: At least one FSAE must be provided in new buildings with occupied floors above 120 feet.

- **Effective Date**: Projects filed on or after December 31, 2014.

FIRE SERVICE ACCESS ELEVATOR (FSAE)

- 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 (FSAE)



- 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 six (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 (OEE)

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.

OCCUPANT EVACUATION ELEVATORS (OEE)

- 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.

OCCUPANT EVACUATION ELEVATORS (OEE)

- **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.

OCCUPANT EVACUATION ELEVATORS (OEE)

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.

OCCUPANT EVACUATION ELEVATORS (OEE)

Design Requirements (continued)

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

OCCUPANT EVACUATION ELEVATORS (OEE)

After input from committees and 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

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

2.27.3.5 Change Highlights

- Fire Recall Switch shall be located at the designated level served by the upper compartment
- 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
- Phase II Operation locks out the lower compartment

MULTI COMPARTMENT ELEVATORS

2.27.3.5 Change Highlights (continued)

- 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

ELEVATOR EMERGENCY REPAIR

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

Buildings Five Stories or More

Stretchers

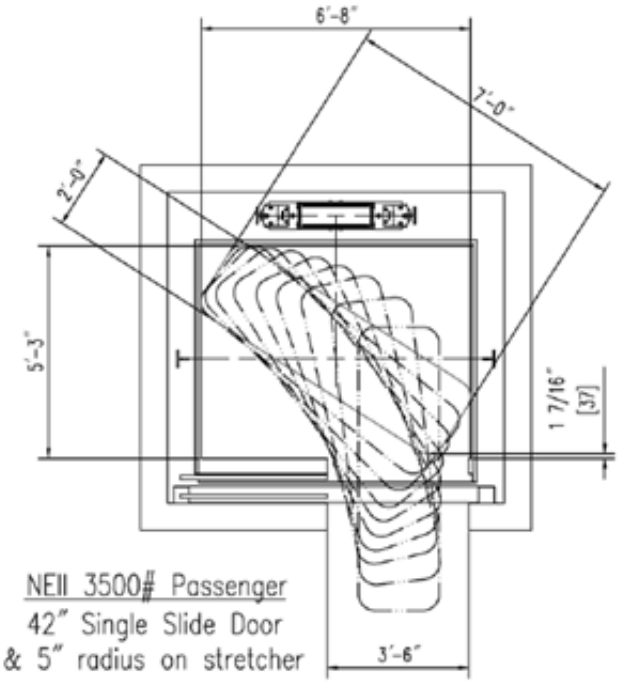
- **Must** have at least one elevator accessible to all floors
- **Must** have an elevator that can accommodate a stretcher:
  - 24-inch x 84-inch with not less than 5-inch radius corners
  - Standby power required

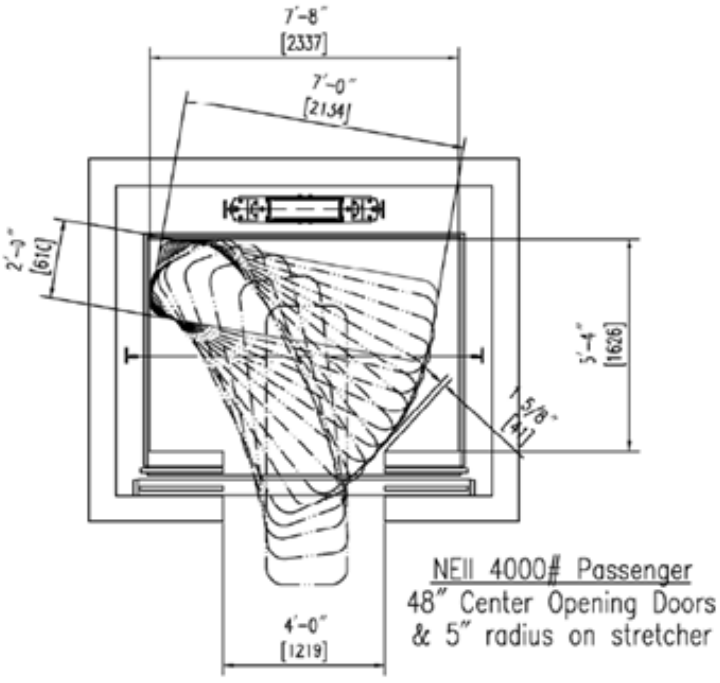
Exceptions

- Private-residence elevators
- LULA

BUILDINGS FIVE STORIES OR MORE

Stretchers





Excerpt of Figures 3002.4(a) and 3002.4(b) of 2009 IBC Commentary
Stretcher-sized elevator cars

ENERGY CODE REQUIREMENTS

- Applications filed on or after October 3, 2016 will be subject to the 2016 NYCECC
- Complete applications filed on or before October 2, 2016 will be subject to the 2014 NYCECC
- NYCECC – New York City Energy Conservation Code

Energy Code Requirements

Escalators & Moving Walks

- **Must** have automatic controls configured to reduce speed when not conveying passengers

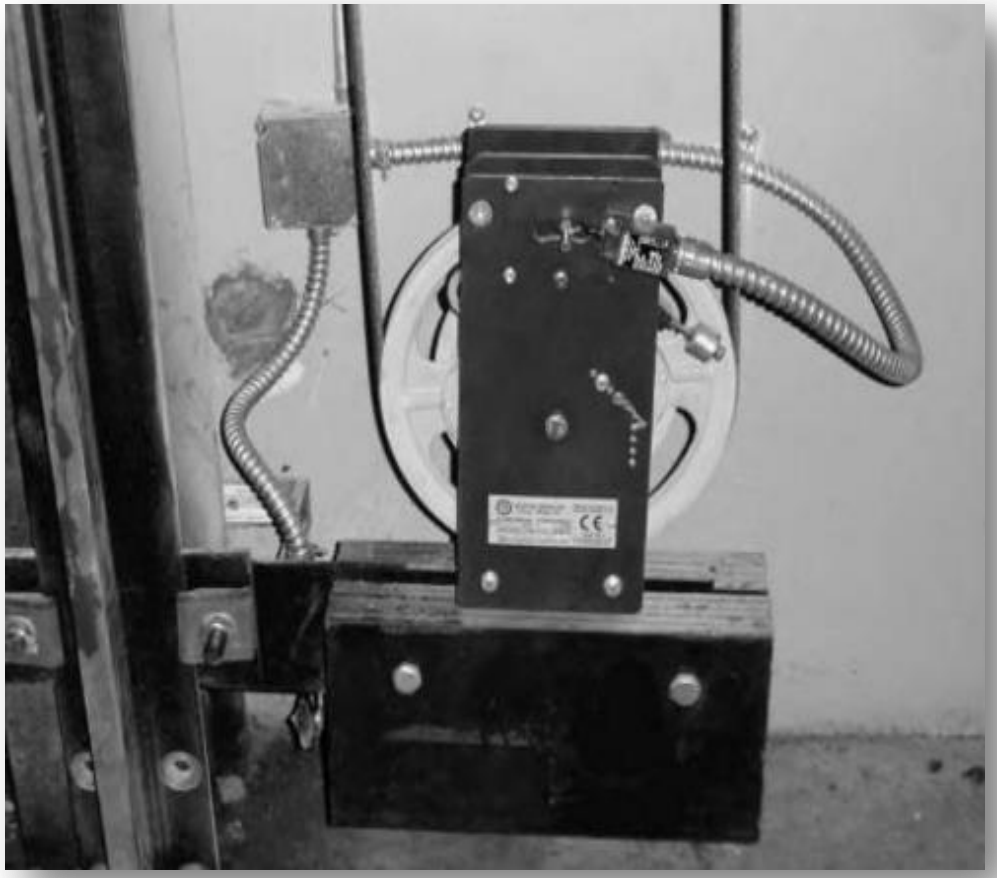
ENERGY CODE REQUIREMENTS

Escalators

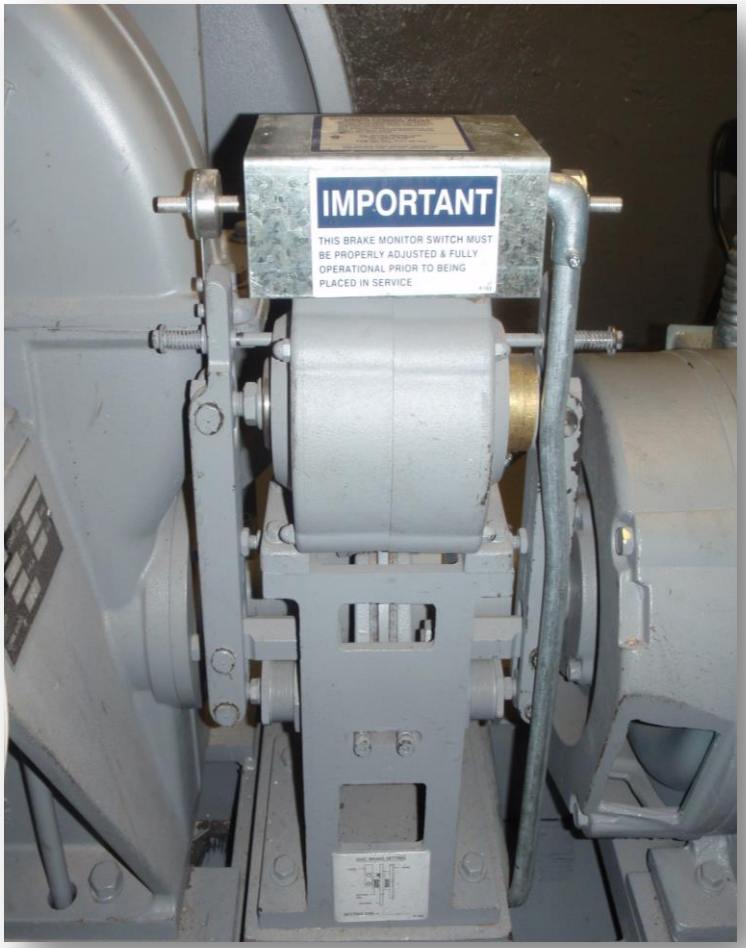
- An escalator designed either for one way down operation only or for reversible operation shall have variable frequency regenerative drive feeding back to the building electrical system when the escalator is loaded with passengers whose combined weight exceeds 750 lbs.

MACHINE ROOM LESS (MRL) ELEVATORS

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



BRAKE MAINTENANCE



Requirement

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

BRAKE MAINTENANCE

Requirement

- Brake maintenance shall be entered in the maintenance records.
- A metal tag indicating the elevator maintenance company and date of service shall be attached to the elevator controller.

ELEVATOR SAFETY

- **Safety of Workers**: Occupational Safety and Health Administration (OSHA) Safety Regulation
- **Fall Protection**: Personal Fall – Arrest system, guardrail system, barricades
- **Electrical Safety**: Personal protective equipment, safety checklist
- **Proper Use of Jumpers**: Use extreme caution, only use on inspection and ensure jumpers removed before placing equipment back in service
- **Lock-out** and **Tag-out**
- Use of **caution tape** when elevators are being serviced

SAFETY CULTURE DEVELOPMENT

Minimum Operational Requirements

- Comply with Federal, State and City regulations

Develop a Culture of Safety

- Develop a Safety Management System
- Proactively manage safety through
  - Employee training & communication
  - Proper safety equipment & tools
  - Create an environment where mechanics champion safety
  - Empower mechanics to own safety
  - Support the safest work, not the fastest
  - Vehicle Management/Driver Accountability
  - Invest in the safety program

EDUCATION

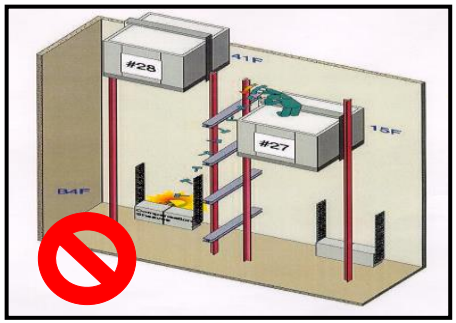
Educate Mechanics on Process

- Classroom and hands-on training reinforces the learning process
- Improves accountability and compliance
- Frequent training/communication
- Elevator Field Employees' Safety Handbook

ESTABLISH RULES

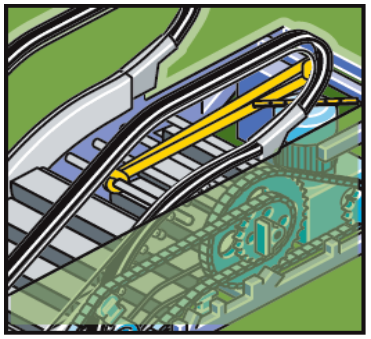
NEVER ride escalator when steps are removed.

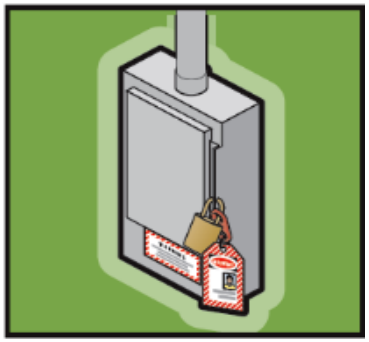
NEVER ride the car top with the elevator in normal operation.

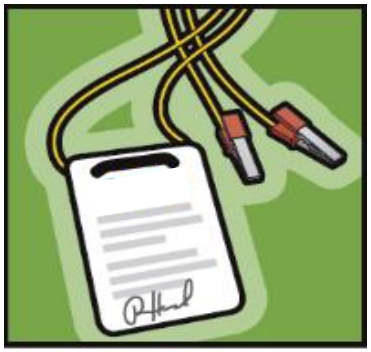


NEVER work above or below others when working in the hoistway.

ESTABLISH RULES







ALWAYS secure the step chain from movement.

ALWAYS lock and tag out equipment when power is not required.

ALWAYS follow proper jumper procedures.

ESTABLISH RULES

ALWAYS use barriers and redundant controls (LOTO) when unattended.

ALWAYS use fall protection when a fall hazard exists.

NEW ELV1 FORM

NYC Buildings

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

- ☐ New Installation
- ☐ Alteration / Replacement
- ☐ Dismantle
- ☐ Remove
- ☐ Permit Renewal
- ☐ Permit Reinstatement
- ☐ Permit Withdrawal

Permit Number:_____

Building Code_____ Electrical Num:_____

2 Location Information

Borough: Block Lot

BIN:

Address

City State: Zip

Occupancy Group _____

NEW ELV1 FORM

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?	☐	☐

NEW ELV1 FORM

9	Cars and Counterweight	☐ NA

Car Inside Dimensions	feet		in by	feet	in
Car Inside Area:		Sq. feet			
Multi Compartment Elevator	☐ Yes	☐ No	*(if Yes, complete below)*		
Compartment 1:					
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			

NEW ELV1 FORM

9	Cars and Counterweight	☐ NA

Car Inside Dimensions ____ feet ____ in by ____ feet ____ in

Car Inside Area: ____ Sq. feet

Multi Compartment Elevator ☐ Yes ☐ No *(if Yes, complete below)*

Compartment 1: _____

Car Inside Dimensions: ____ feet ____ in by ____ feet ____ in

Car Inside Area: ____ Sq. feet

Compartment 2: _____

Car Inside Dimensions: ____ feet ____ in by ____ feet ____ in

Car Inside Area: ____ Sq. feet

Car Safety Type: ☐ Other: _____

☐ Instantaneous ☐ Flexible Guide ☐ Gradual WC

Counterweight Safety Type: ☐ Other: _____

☐ Instantaneous ☐ Flexible Guide ☐ Gradual WC

Car Opening: ☐ Door ☐ Gate

Operation: ☐ Manual ☐ Power

Contact Type: ____ Manufacturer: ____

Car to Counterweight Ratio ___ % ☐ N/A

NEW ELV1 FORM

10	Hoist way Opening	☐ NA

☐ Door ☐ Gate Door Monitoring Circuits: ☐ Yes ☐ No

☐ 1 1/2 Hr Fire Rated Construction Type

NEW ELV1 FORM

12	Personnel Hoist Information	☐ NA

Hoist car manufacturer

Model #

Hoist Mast manufacturer

Hoist Safety manufacturer

Hoist car dimensions

Hoist capacity (lbs.) Car Safety

Hoist Safety Expiration Date:

Hoist Counterweighted ☐ Yes ☐ No

Speed(FPM) Rise

13	Escalator Information	☐ NA

Escalator manufacturer

Model #

Speed Rise

Step Width Angle

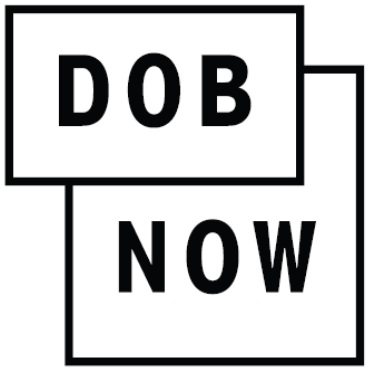
Capacity

Number of flat steps

Brake Torque

Flame/Heat/Smoke protection provided? ☐ Yes ☐ No

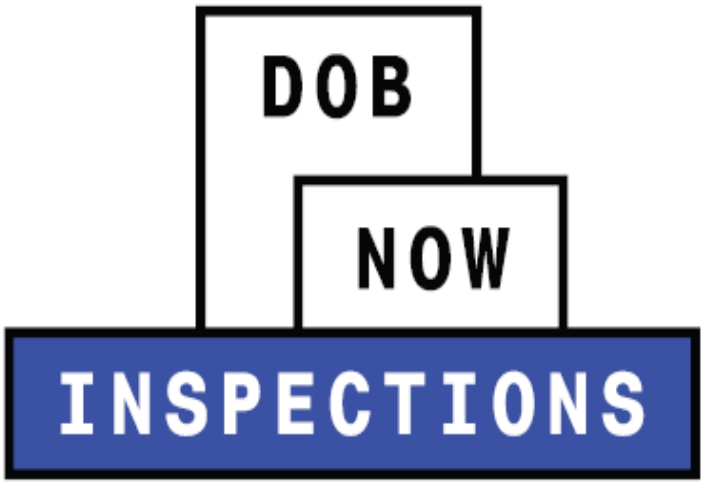
DOB NOW Overview



DOB NOW is an interactive, web-based portal that will enable building owners, design professionals, filing representatives, and licensees to do all business with DOB online, including:

- Submit applications
- Make payments
- Schedule appointments
- Check the status of an application
- Pull permits
- Make renewals

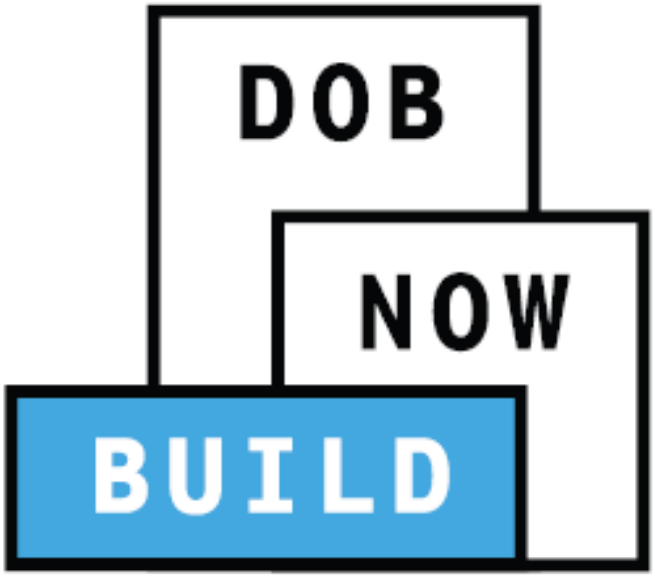
DOB NOW: *INSPECTIONS* OVERVIEW



DOB NOW: *Inspections* is the new name for *Inspection Ready* and continues to enable online:

- Scheduling
- Tracking
- Notifications
- Enforcement & development inspections

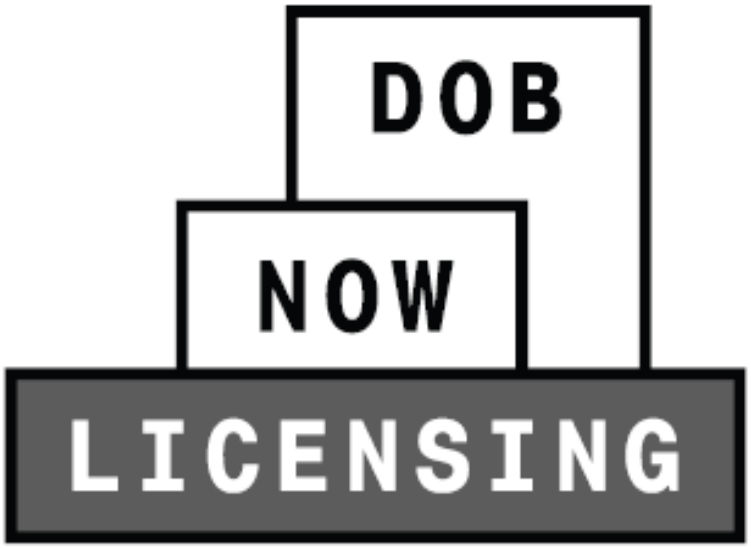
DOB NOW: *BUILD* OVERVIEW



DOB NOW: *Build* enables

- Job filings
- Permits
- Post Approval Amendments (PAA)
- Corrections
- Withdrawals
- Superseding
- After Hour Variances (AHV)
- Letters of Completion

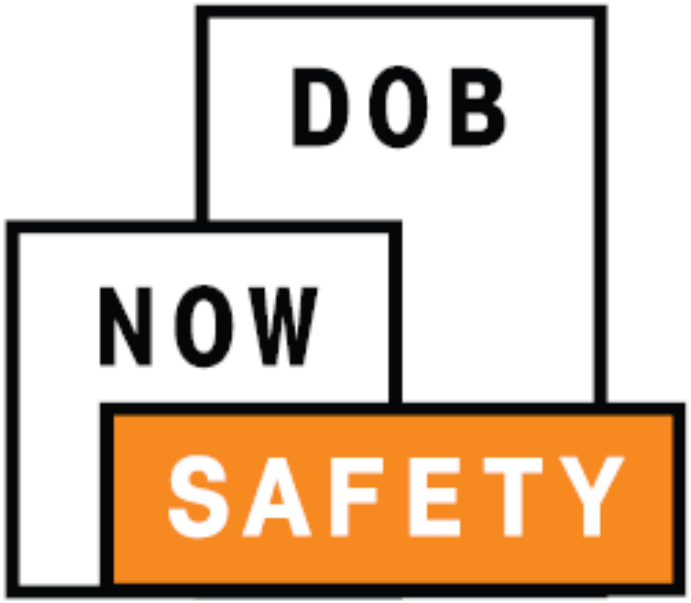
DOB NOW: *LICENSING* OVERVIEW



DOB NOW: *Licensing* enables

- Exam filing
- Issuance
- Renewal for Licensees

DOB NOW: *SAFETY* OVERVIEW



DOB NOW: *Safety* enables

- Submission of initial compliance filings
- Submission of amended filings
- Submission of extension requests

DOB NOW RECAP: FOUR GOALS

Improved Processing

Better Customer Service

Greater Transparency

Increased Access to Information

IMPACT TO CUSTOMERS

Better Customer Service	Customers are able to submit DOB NOW: *Build* job filings and DOB NOW: *Safety* compliance filings **online** for work types live in DOB NOW, which is more convenient than having to travel to a DOB office.
Increased Access to Information	Customers can view real-time information on job filings and compliance filings for work types live in DOB NOW in one place online: the DOB NOW Public Portal.
Greater Transparency	DOB NOW will make construction in the City more transparent for residents and building owners.
Improved Processing	Moving from paper-based to digital makes it easier for DOB to review applications and process them.

DOB NOW Live & Upcoming Releases

Module	Filings	Target Go Live
DOB NOW: Public Portal	Already live DOB NOW filings	Already Live!
DOB NOW: Build Job Filings	Plumbing and Sprinkler	Already Live!
	Standpipe	Already Live!
	Antenna	Fall 2017
	Curb Cut	Fall 2017
	Boiler	Fall 2017
	Fuel Burning	Fall 2017
	Fuel Storage	Fall 2017
	Elevator	Fall 2017
DOB NOW: Safety Compliance Filings	Façade	Already Live!
	Boiler	Fall 2017

DOB NOW Resources

- **Register for eFiling** to use DOB NOW
- **Use FAQs** for more information, look at the DOB NOW: *Build* and DOB NOW: *Safety* FAQs available on the DOB website
- **DOB NOW Support E-mail Address:** for questions or comments, please e-mail dobnowsupport@buildings.nyc.gov

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

AIA NYC Department of Buildings Contact:

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(212) 393-2163

Melaguzman@buildings.nyc.gov