

1 RCNY §3319-01

CHAPTER 3300

Safeguards during Construction or Demolition

§3319-01 Cranes and derricks.

(a) **Applicability.** The design, construction, permitting, installation, removal, adjustment, repair, inspection, maintenance, operation and use of cranes and derricks must conform to the requirements of Section 3319 of the New York City Building Code and this section. This includes, but is not limited to, cranes and derricks used for hoisting and/or rigging purposes; or used for construction, alteration, demolition, excavation and maintenance purposes, including for buildings, highways or sewers; or used for the installation of piles; or used for the hoisting or lowering of any article on the outside of any building or structure. This also includes any equipment that meets the definition of a crane or derrick, including, but not limited to, dedicated pile drivers and manufactured or custom designed hoisting machines.

Exception: Cranes and derricks listed in the exceptions set forth in Section 3319.3 of the New York City Building Code.

(b) **Definitions.** For the purposes of this section, the following terms have the following meanings:

ACCEPTANCE OR ACCEPTED (Construction documents). See Section 28-101.5 of the Administrative Code.

ACCESSORY. A secondary part or assembly of parts which contributes to the overall function and usefulness of a machine.

APPOINTED. Assigned specific responsibilities by the employer or by the employer's representative.

APPROVAL OR APPROVED (Construction documents). See Section 28-101.5 of the Administrative Code.

ANGLE INDICATOR (boom). An accessory which measures the angle of the boom to the horizontal.

ARCHITECT. A person licensed and registered to practice the profession of architecture under the education law of the state of New York.

ASSEMBLY/DISASSEMBLY (ASSEMBLED OR DISASSEMBLED). The installation or removal of structural components 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. The term assembly/disassembly includes the erection, climbing, jumping, or dismantling of a tower crane. The term assembly/disassembly does not include operations exclusive to the installation or removal counterweights, or to the unfolding and pinning of a boom or swing-away jib. The term assembly/disassembly also does not include the setup or breakdown of a self-erecting tower crane provided the setup of the self-erecting tower crane does not require a boom, mast, or jib section, or other attachment, to be installed at the site.

ATTACHMENTS. Elements that can be readily added to or removed from a crane or derrick and which expand the range or function of the crane or derrick. Examples include, but are not limited to: an auger, boom extension, clamshell, drill, jib, jib extension, or pile-driver.

AXIS OF ROTATION. The vertical axis around which the crane superstructure rotates.

AXLE. The shaft or spindle with which or about which a wheel rotates. On truck and wheel mounted cranes it refers to an automotive type of axle assembly including housing, gearing, differential, bearings and mounting appurtenances.

AXLE (bogie). Two or more automotive type axles mounted in tandem in a frame so as to divide the load between the axles and permit vertical oscillation of the wheels.

BASE (mounting). The base or carrier on which the rotating superstructure is mounted such as a truck, crawler or platform.

BOOM. A section or strut, of which the heel (lower end) is affixed to a base, carriage or support, and whose upper end supports a cable and sheaves where the load is lifted by means of wire rope and a hook.

BOOM ANGLE. The angle between the longitudinal centerline of the boom and the horizontal. The boom longitudinal centerline is a straight line between the boom foot pin (heel pin) centerline, and boom point sheave pin centerline.

BOOM HARNESS. The block and sheave arrangement on the boom point to which the topping lift cable is reeved for lowering and raising the boom.

BOOM HOIST. A hoist drum and rope reeving system used to raise and lower the boom.

BOOM POINT. The outward end of the top section of the boom, containing the hoist sheave assembly.

BOOM STOP. A device used to limit the angle of the boom at the highest position.

BRAKE. A device used for retarding or stopping motion by friction or power means.

CAB. A housing which covers the rotating superstructure machinery and/or operators station.

CABLEWAY. A power operated system for moving loads in a generally horizontal direction in which the loads are conveyed on an overhead cable, track or carriage.

CERTIFICATE OF APPROVAL. A certificate issued by the department upon review and approval of the engineering and testing of a specific make and model of hoisting equipment to ensure compliance with the applicable provisions of this code and its referenced standards.

CERTIFICATE OF OPERATION. A certificate issued by the department annually upon satisfactory inspection of the hoisting equipment holding a certificate of approval to ensure that the equipment continues to be in compliance with this code and its referenced standards.

CERTIFICATE OF ON-SITE INSPECTION. A certificate issued by the department based on a site-specific approval of the placement, founding and operation of hoisting equipment.

CLAMSHELL. A shovel bucket with two jaws that clamp together by their own weight when it is lifted by a closing line.

CLIMBING/JUMPING. The raising or lowering of a tower or climber crane to different floors or levels of a building or structure.

CLUTCH. A friction, electromagnetic, hydraulic, pneumatic or positive mechanical device for engagement of power.

COMPETENT PERSON. One who is capable of identifying existing predictable hazards in the surroundings or conditions that are unsanitary, hazardous or dangerous, and who has authorization to take prompt corrective measures to eliminate such hazards.

COMPONENT. A structural part or mechanical system that is integral to the crane or derrick, or an element that supports an integral structural part or mechanical system. Examples include, but are not limited to: a-frame, attachments, boom, boom tip, braking system, climbing frame or section, climbing mechanism, collar, counter jibs, counterweight, counterweight support system, engine, heel boom, hoist drum, hoist motor, machine deck or platform, mast, operator's cabin, pendant bars (excluding wire rope pendants), suspension system, tower base/base frame, tower top, and turntable. For a derrick, a component also includes base plates, junctions, poles and other uprights, seats, and stiff legs.

COUNTERWEIGHT. Weight used to supplement the weight of the machine in providing stability for lifting working loads.

CRANE. A power-operated machine for lifting or lowering a load and moving it horizontally which utilizes wire rope and in which the hoisting mechanism is an integral part of the machine. The definition of a crane shall also include articulating boom crane, regardless of whether it has a hoisting mechanism integral to the machine.

ARTICULATING BOOM CRANE. A power-operated machine for lifting or lowering a load and moving it horizontally that utilizes a boom consisting of a series of folding pin connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders, with or without a hoisting mechanism integral to the machine.

MOBILE CRANE. A commercial truck mounted crane, crawler crane, wheel mounted crane (multiple control stations), or wheel mounted crane (single control station).

COMMERCIAL TRUCK MOUNTED CRANE (BOOM TRUCK). A crane consisting of a rotating superstructure (center post or turntable), boom, operating machinery, and one or more operator's stations mounted on a frame attached to a commercial truck chassis, usually retaining a payload hauling capability whose power source usually powers the crane. Its function is to lift, lower, and swing loads at various radii.

CRAWLER CRANE. A crane consisting of a rotating superstructure with a power plant, operating machinery, and boom, mounted on a base and equipped with crawler treads for travel. Its function is to lift, lower, and swing loads at various radii.

SERVICE CRANE. A mobile crane utilized exclusively to perform one or more of the following auxiliary tasks at a site: (1) repairing or maintaining construction machinery, (2) delivering material within the confines of the site, (3) moving material within the site to a central location so that it may be lifted to the required areas of construction, or (4) moving within the site matting, dunnage, or equivalent from one location to another. A service crane does not include a crane used to make a delivery to the site

by hoisting it into the site from a point external to the site, or a crane used to hoist or lower articles to or from a building or structure during the course of construction or demolition.

WHEEL MOUNTED CRANE (MULTIPLE CONTROL STATIONS). A crane consisting of a rotating superstructure, operating machinery, and operator's station and boom, mounted on a crane carrier equipped with axles and rubber-tired wheels for travel, a power source(s), and having separate stations for driving and operating. Its function is to lift, lower, and swing loads at various radii.

WHEEL MOUNTED CRANE (SINGLE CONTROL STATION). A crane consisting of a rotating superstructure, operating machinery, and boom, mounted on a crane carrier equipped with axles and rubber-tired wheels for travel, a power source, and having a single control station for driving and operating. Its function is to lift, lower, and swing loads at various radii.

TOWER CRANE. A power-operated hoisting machine that utilizes a vertical tower with a rotating superstructure and includes a load boom (jib) in order to lift or lower a load and move it horizontally.

CLIMBER CRANE. A tower crane that can be raised to a new working height, either by adding tower sections to the top of the crane (top climbing), or by a system in which the entire crane is raised inside the structure (inside climbing).

SELF-ERECTING TOWER CRANE. A tower crane that adjusts its operating radius by means of a trolley traversing a jib and that; (i) possesses a vertical or nearly vertical tower or mast that is bottom slewing and mounted on fixed, traveling, or mobile bases; and (ii) is capable of folding and unfolding to facilitate transit from site to site with minimal assembly. A self-erecting tower crane is not considered to be a mobile crane, even if the self-erecting tower crane otherwise meets the definition of a mobile crane.

CRANE OR DERRICK NOTICE ENGINEER. The engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who filed the crane or derrick notice application.

DEDICATED PILE DRIVER. A power-operated machine that is designed primarily to drive, hammer, press, or vibrate piles into the earth ("pile drive") and which typically possess the ability to both hoist the material that will be pile driven and to pile drive that material.

DELIVERY. The dropping off or retrieval of materials or equipment to or from a site. Delivery does not include the performance of any construction or demolition work, including but not limited to holding steel, HVAC equipment, hoist towers, scaffolding, sidewalk shed components, or any other loads in place while they are bolted or otherwise affixed, or to the securing or lowering materials during the course of demolition work.

DERRICK. An apparatus consisting of a mast or equivalent member held at the top by guys or braces, with or without a boom, for use with a hoisting mechanism and operating ropes, for lifting or lowering a load and moving it horizontally. The definition of a derrick includes but is not limited to: A-frame derrick, basket derrick, breast derrick, Chicago boom derrick, gin pole derrick, guy derrick, shearleg derrick, and stiffleg derrick.

A-FRAME DERRICK. A derrick in which the boom is hinged from a cross member between the bottom ends of two upright members spread apart at the lower ends and joined at the top; the boom point secured to this junction of the side members, and the side members are braced or guyed from the junction point.

BASKET DERRICK. A derrick without a boom, similar to a gin pole with its base supported by ropes attached to corner posts or other parts of the structure. The base is at a lower elevation than its supports. The location of the base of a basket derrick can be changed by varying the length of the rope supports. The top of the pole is secured with multiple reeved guys to position the top of the pole to the desired location by varying the length of the upper guy lines. The load is raised and lowered by ropes through a sheave or block secured to the top of the pole.

BREAST DERRICK. A derrick without a boom. The mast consists of two side members spread farther apart at the base than at the top and tied together at top and bottom by rigid members. The mast is prevented from tipping forward by guys connected to its top. The load is raised and lowered by ropes through a sheave or block secured to the top crosspiece.

CHICAGO BOOM DERRICK. A derrick with a boom which is attached to a structure, an outside upright member of the structure serving as the mast, and the boom being stepped in a fixed socket clamped to the upright. The derrick is complete with load, boom and boom point swing line falls.

GIN POLE DERRICK. A derrick that consists of a boom without a mast and which has guys arranged from its top to permit leaning the mast in one or more directions. The load is lifted and lowered by ropes reeved through sheaves or blocks at the top of the mast and the lower block.

GUY DERRICK. A fixed derrick consisting of a mast capable of being rotated, supported in a vertical position by guys, and a boom whose bottom end is hinged or pivoted to move in a vertical plane with a reeved rope between the head of the mast and the boom point for raising and lowering the boom, and a reeved rope from the boom point for raising and lowering the load.

SHEARLEG DERRICK. A derrick without a boom. The mast, wide at the bottom and narrow at the top, is hinged at the bottom and has its top secured by a multiple reeved guy to permit handling loads at various radii by means of load tackle suspended from the mast top.

STIFFLEG DERRICK. A derrick similar to a guy derrick except that the mast is supported or held in place by two or more stiff members, called stifflegs, which are capable of resisting either tensile or compressive forces. Sills are generally provided to connect the lower ends of the stifflegs to the foot of the mast.

DIRECT AND CONTINUING SUPERVISION. See Section 28-401.3 of the Administrative Code.

DISMANTLING. The final process of taking apart, piece by piece, in a specific sequence, the components of a crane. Dismantling shall include climbing and jumping.

DRUM. The cylindrical member around which a rope is wound for raising and lowering the load or boom.

DYNAMIC (loading). Loads introduced into the machine or its components by forces in motion.

ENGINEER. A person licensed and registered to practice the profession of engineering under the education law of the state of New York; except that the certifications for matters relating to the manufacturer's design and applications for prototyping a crane or derrick may be made by an engineer who is (1) employed full time by the crane or derrick manufacturer and (2) who is licensed to practice the profession of engineering under the law of any state or foreign jurisdiction, or who submits proof, acceptable to the commissioner, of his or her professional qualifications.

ERECTION. The assembly and placement of crane sections and components into place, including all operations incidental thereto. Erection shall include climbing and jumping.

EXTENSION. See "Attachment."

GANTRY(A-Frame). A structural frame, extending above the superstructure of a crane, to which the boom support ropes are reeved.

GUDGEON PIN. A pin connecting the mast cap to the mast, allowing rotation of the mast.

GUY. A rope used to steady or secure the mast or other members in the desired position.

HOISTING EQUIPMENT. Equipment used to raise and lower personnel and/or material with intermittent motion. Hoisting equipment does not include scaffolds, mast climbers, and elevators.

HOISTING MACHINE. A power operated machine used for lifting or lowering a load, utilizing a drum and wire rope, excluding elevators. This shall include but not be limited to a crane, derrick, and cableway and hydraulic lifting system, and articulating booms.

HOISTING MECHANISM. A hoist drum and rope reeving system used for lifting and lowering loads.

INDEPENDENT (peer reviewer). A person who does not engage in any activities that may conflict with their objective judgement or integrity, including but not limited to having a financial and/or other interest in the design, construction, installation, manufacturer, or maintenance of the crane or derrick they are reviewing.

JIB. An extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in line with the boom or offset to various angles in the vertical plane of the boom.

JUMP (jumping). The process of adding or removing mast or tower sections to equipment that has already been erected.

LAY. That distance measured along a wire rope in which one strand makes one complete helical convolution about the core or center.

LOAD (working). The external load, in pounds (kilograms), applied to the crane or derrick, including the weight of auxiliary load attaching equipment such as load blocks, shackles, and slings.

LOAD BLOCK (upper). The assembly of hook or shackle, swivel, sheaves, pins, and frame suspended from the boom point.

LOAD BLOCK (lower). The assembly of hook or shackle, swivel, sheaves, pins and frame suspended by the hoisting ropes.

LOAD HOIST. A hoist drum and rope reeving system used for hoisting and lowering loads.

LOAD INDICATOR. A device that measures the weight of the load.

LOAD MOMENT INDICATOR. A system that aids the operator by sensing (directly or indirectly) the overturning moment of the crane or derrick. It compares this lifting condition to the equipment's rated capacity, and indicates to the operator the percentage of capacity at which the equipment is working.

LOAD MOMENT LIMITER. A system which aids the operator by sensing (directly or indirectly) the overturning moment of the crane or derrick. It compares this lifting condition to the equipment's rated capacity, and when the rated capacity is reached, it shuts off power to those equipment functions which can increase the severity of loading on the equipment.

LOAD RATINGS. Crane and derrick ratings in pounds (kilograms) established by the manufacturer in accordance with standards set forth in rules promulgated by the commissioner.

LOAD RATING CHART. A full and complete range of manufacturer's crane load ratings at all stated operating radii, boom angles, work areas, boom lengths and configurations, jib lengths and angles (or offset), as well as alternative ratings for use and nonuse of optional equipment on the crane, such as outriggers and extra counterweights, that affect ratings.

MANUFACTURER. A person, firm, or corporation that (i) builds or assembles, or has built or assembled, a crane or derrick, (ii) may lawfully sell and/or distribute such crane or derrick under its own name or trademark, and (iii) provides, either by itself or through authorized representatives, replacement parts, service support, technical support, safety bulletins, and recall notices for such crane or derrick.

MAST (derrick). The upright member of a derrick.

MAST (boom). A frame hinged at or near the boom hinge for use in connection with supporting a boom. The head of the mast is usually supported and raised or lowered by the boom hoist ropes.

MAST (jib). A frame hinged at or near the boom point for use in connection with supporting a jib.

MAST (tower). See "Tower."

OPERATION (OPERATED). Any work or activity performed by a crane or derrick, including but not limited to the lifting, lowering, or swinging of loads.

OUTRIGGERS (crane). Extendable or fixed members attached to the mounting base that rest on supports at the outer ends used to support the crane.

PILE DRIVER. A dedicated pile driver; or a crane or derrick equipped with an attachment or otherwise outfitted to drive, hammer, press, or vibrate piles into the earth ("pile drive"). However, the definition of a pile driver does not include excavating or earth-moving equipment fitted with a pile driving attachment.

QUALIFIED (peer reviewer). A New York State professional engineer who has the education, training, and experience required for the design of structures of a similar complexity and size as the crane or derrick notice application to be peer reviewed and to perform a complete review of the means, methods, and design proposed by the crane or derrick notice engineer.

QUALIFIED PERSON. A person who by possession of a recognized degree, certificate or professional standing, or who by knowledge, training and experience, has successfully demonstrated his or her ability to solve or resolve problems related to the subject matter, the work, or the project.

REEVING. A rope system in which the rope travels around drums and sheaves.

REGISTERED DESIGN PROFESSIONAL. An architect or engineer.

RIGGING FOREMAN. See section 104-20 of these rules.

ROPE. A continuous line of material comprised of a number of twisted or braided strands of fiber (natural or synthetic) or metal wire.

SIDE LOADING. A load applied at an angle to the vertical plane of the boom.

SILL. A member connecting the foot block and stiffleg or a member connecting the lower ends of a double member mast.

STANDING (GUY) ROPE. A supporting rope which maintains a constant distance between the points of attachment to the two components connected by the rope.

SUPERSTRUCTURE. The rotating upper frame structure of the machine and the operating machinery mounted thereon.

SWING. Rotation of the superstructure for movement of loads in a horizontal direction about the axis of rotation.

SWING MECHANISM. The machinery involved in providing rotation of the superstructure.

TACKLE. An assembly of ropes and sheaves arranged for hoisting and pulling.

TELESCOPIC BOOM. A boom constructed of sections of diminishing cross sections in which the sections fit within each other. The boom may be extended in a manner similar to a telescope.

TOWER. A vertical structural frame consisting of columns and bracing that are capable of supporting working and dynamic loads and transmitting them to the support(s).

TRANSIT. The moving or transporting of a crane from one job site to another.

TRAVEL. The function of the machine moving from one location to another on a job site.

TRAVEL MECHANISM. The machinery involved in providing travel power.

TWO-BLOCKING. A condition in which the lower load block or hook assembly comes into contact with the upper load block or boom point sheave assembly.

WHEEL BASE. Distance between centers of front and rear axles. For a multiple axle assembly the axle center wheel base measurement is taken as the midpoint of the assembly.

WHIPLINE. A separate hoist rope system of lighter load capacity and higher speed than provided by the main hoist.

WINCH HEAD. A power driven spool for handling of loads by means of friction between fiber or wire rope and spool.

(c) Permit and notification requirements for cranes and derricks.

(1) Certificates of approval, operation, and on-site inspection. Cranes and derricks must possess a certificate of approval, certificate of operation, and certificate of on-site inspection when required by Section 3319 of the Building Code.

Exceptions:

1. A certificate of on-site inspection is not required for:
 - 1.1 A pile driver that:
 - 1.1.1 Is set up and operated entirely within a site that is closed to the public; and
 - 1.1.2 Does not impart a load on the ground in excess of 500 psf (23.94 kPa), including the load of the platform, matting, or dunnage utilized to support the equipment.
 - 1.2 A clamshell that:
 - 1.2.1 Is set up and operated entirely within a site that is closed to the public;
 - 1.2.2 Is set up and operated at locations within the site that are set back from the edge of the excavation by a distance that is equal to or greater than the depth of the excavation; and
 - 1.2.3 Does not impart a load on the ground in excess of 500 psf (23.94 kPa), including the load of the platform, matting, or dunnage utilized to support the equipment.
 - 1.3 A mobile crane that has a boom length of 135 feet (41.15 m) or less, and is utilized at the site exclusively to:
 - 1.3.1 Install, adjust, maintain, repair, or remove a sidewalk shed; or
 - 1.3.2 Install or dismantle the initial level of a single or dual cab hoist, provided:
 - 1.3.2.1 Such installation or dismantling is limited to the hoist cars, counterweights, and initial mast sections needed for the car;
 - 1.3.2.2 Car or motor components to be hoisted are equipped with lifting lugs; and
 - 1.3.2.3 No object is hoisted more than 20 feet (6.1 m) above the bed of the delivery truck during such installation or dismantling operation.
2. A certificate of on-site inspection is not required for a mobile crane that is utilized under the direct and continuing supervision of a licensed master rigger, provided:
 - 2.1 Onsite supervision is provided by the licensee or a master rigging foreman, except that for a critical pick the licensee must provide the onsite supervision;
 - 2.2 A drawing indicating pertinent site features, obstacles, and restrictions, the location and configuration of the crane at the site, required matting or dunnage, and pedestrian and traffic control to be provided as per the requirements of the Department of Transportation, is prepared by or on behalf of the licensed master rigger and kept at the site, available to the commissioner upon request;
 - 2.3 The licensed master rigger is responsible for ensuring compliance with the drawing; and
 - 2.4 Such mobile crane:
 - 2.4.1 Does not exceed 250 feet (76.2 m) in boom length, including jibs and any other attachments;
 - 2.4.2 Is utilized for work that is not related to the construction of a new building, the full demolition of an existing building, or the vertical or horizontal enlargement of an existing building, including but not limited to the installation or removal of boilers or tanks at a new building, full demolition, or vertical or horizontal enlargement site;
 - 2.4.3 In all conditions of loading, is provided with adequate footing so as to not exceed the bearing capacity of the ground or subsurface elements;
 - 2.4.4 Does not impose a bearing pressure, including dunnage, exceeding 3,500 psf (167.85 kPa);
 - 2.4.5 Is not set up on a vault or similar subsurface structure;
 - 2.4.6 Is not set up on a steel platform, excluding mats or dunnage at the street or ground level; and
 - 2.4.7 Is not set up and operated in a location that requires approval of the New York City Transit Authority.
3. Provided an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, files an on-site waiver with the department on behalf of the equipment user, supported by plans and calculations upon request, certifying compliance with the items specified below, a certificate of on-site inspection is not required for:
 - 3.1 A mobile crane that:

- 3.1.1 Is located at the site for no more than 48 hours;
 - 3.1.2 Does not exceed 160 feet (48.76 m) in boom length, including jibs and any other attachments;
 - 3.1.3 Is set up and operated entirely within a safety zone where the distance from the crane to the boundary of the safety zone is equal to or greater than the length of the boom, jib, and any other attachments, and all areas and structures within the safety zone are closed to the public; and
 - 3.1.4 In all conditions of loading, is provided with adequate footing so as to not exceed the bearing capacity of the ground or subsurface elements.
- 3.2 A service crane that:
- 3.2.1 Is set up and operated entirely within a site that is closed to the public;
 - 3.2.2 Does not exceed 110 feet (33.53 m) in boom length, including jibs and any other attachments; and
 - 3.2.3 In all conditions of loading, is provided with adequate footing so as to not exceed the bearing capacity of the ground or subsurface elements.
- 3.3 A pile driver or clamshell that:
- 3.3.1 Is set up and operated entirely within a site that is closed to the public;
 - 3.3.2 Imparts a load on the ground in excess of 500 psf (23.94 kPa) but not exceeding 2,500 psf (119.7 kPa), including the load of the platform, matting, or dunnage utilized to support the equipment;
 - 3.3.3 In all conditions of loading, is provided with adequate footing so as to not exceed the bearing capacity of the ground or subsurface elements; and
 - 3.3.4 Is set up on ground that is able to support the load, as demonstrated to the satisfaction of the department on the basis of borings filed by the engineer.
- (2) **Temporary construction equipment permit.** A temporary construction equipment permit, such as an Alt II permit or a CD-5 permit, is required for:
- (i) A mobile crane that meets exception numbers 3 or 4 of Section 3319.3 of the New York City Building code, but does not meet any other exception of Section 3319.3 of the New York City Building code, and is used in conjunction with the construction, alteration, or demolition of a building.
 - (ii) Cranes and derricks with a manufacturer's rated capacity of 1 ton (907 kg) or less and used in conjunction with the installation, alteration, maintenance, repair, or removal of a building, building systems, or equipment located on a building.
- (3) **Noncompliance.** Where a crane or derrick requiring one or more of the certificates or permits is found not to be in compliance with one or more of the required certificates or permits, the use of such crane or derrick must cease. The crane or derrick must not be used until it has been brought into conformance with the certificates or permits, or amended certificates or permits have been issued by the department to reflect the state of the crane or derrick.
- (4) **Construction documents.** Plans, calculations, inspection reports, and other documents filed in conjunction with a certificate of approval, certificate of operation, certificate of on-site inspection, on-site waiver, or temporary construction equipment permit are considered to be construction documents subject to the provisions of Article 104 of Title 28 of the Administrative Code. Except as otherwise specified, the terms "approval" or "approved" in conjunction with such plans, calculations, inspection reports, and other documents will also mean "acceptance" or "accepted."
- (5) **Notification.**
- (i) **Notification prior to certain activities.** For a crane or derrick that requires a certificate of on-site inspection or an on-site waiver, or that is used under the direct and continuing supervision of a licensed master rigger, the equipment user must notify the department at least one day, but no more than two days, before an activity listed below:
 - (A) The arrival of the crane or derrick at the site;
 - (B) Any assembly/disassembly operation; except that for the erection, climbing, jumping, or dismantling of tower crane, the notification requirements of Section 3319.8.4 of the Building Code instead apply; or
 - (C) The pouring of a concrete foundation for a tower crane.
 - (ii) **Cancellation and rescheduling of notification.** If a scheduled activity pursuant to subparagraph (i) of this paragraph above is canceled after a notification is made to the department, the equipment user must notify the department no later than the date for which the activity was scheduled. The equipment user

must notify the department of the new intended commencement date at least one day but no more than two days before such activity.

- (iii) **Notification of departure of equipment.** For a crane or derrick that requires a certificate of on-site inspection or an on-site waiver, or that is used under the direct and continuing supervision of a licensed master rigger, the equipment user must notify the department of the departure of the crane or derrick from the site no more than two days following such departure.

Exception: Where the crane or derrick is anticipated to be at the site for 48 hours or less, notification of departure of the equipment pursuant to this subparagraph is not required provided the anticipated short duration of the crane or derrick at the site is indicated at the time of notification pursuant to subparagraph (i) of this paragraph. However, if the job extends for more than 48 hours, the department must be immediately notified of such extension, and notification of the departure of the equipment pursuant to this subparagraph is required.

- (d) **Certificate of approval.** Certificates of approval must comply with the requirements of Section 3319.4 of the New York City Building Code and the following.

- (1) **Application for a certificate of approval.** To request a certificate of approval in accordance with Section 3319.4 of the New York City Building Code, a prototype application must be filed on behalf of the manufacturer or equipment owner by an engineer who meets the requirements of paragraph (2) of subdivision (d) of this section. The application and all associated content must be provided in English, with United States customary units, or where acceptable to the commissioner, metric units. When required by the department, the application must be submitted in an electronic format acceptable to the commissioner. The application must include the following information:

- (i) **Manuals.** One or more manufacturer-furnished manuals, as necessary, to supply the information listed below. Required information is generic and does not have to provide specific part or model numbers:
 - (A) All configurations for which approval is sought.
 - (B) Overall dimensions of the crane or derrick, including for the boom, mast, jib, and attachments, or individual sections thereof, for which approval is sought.
 - (C) Where applicable, information on the carrier type, overall carrier length and width, and tailswing, both with outriggers extended and without.
 - (D) Rope information, including cable sizes and the number of drums, for both the main hoist line and the whipline.
 - (E) A generic listing of all safety devices and operational aids provided with the crane or derrick.
 - (F) Required configurations and procedures to secure the crane or derrick for unattended or out-of-service conditions. For a tower crane, other than a self-erecting tower crane, this must include boom configurations for weathervaning, information or limitations/prohibitions on locking or restricting the boom, and procedures to secure the tower crane in advance of a hurricane type wind event.
 - (G) For a tower crane, other than a self-erecting tower crane, erection, jumping, climbing, and dismantling procedures. Torque values for all bolted connections located on the crane and installed or modified during such work must be included. Collar details and information on how to support, install, and dismantle the collar must also be provided.
 - (H) For all cranes or derricks, other than a tower crane that is not a self-erecting tower crane, assembly, disassembly, and travel procedures, including, as applicable, installation and removal procedures for all attachments for which approval is sought. Torque values for all bolted connections installed or modified during crane set up or the installation of an attachment must be included.
 - (I) Operating instructions.
 - (J) Inspection criteria, including a schedule of manufacturer-recommended inspections.
 - (K) Maintenance criteria, including a schedule of manufacturer-recommended maintenance.
- (ii) **Brochure.** A manufacturer-furnished advertising brochure or drawing showing the general configuration and specifications for which approval is sought.
- (iii) **Load rating charts.** Manufacturer-furnished load rating charts showing each configuration for which approval is sought.
- (iv) **Inspection checklists.** Manufacturer-furnished checklists for the inspection of the crane or derrick. Such checklists must account for all components for which approval is sought and all phases of the manufacturer's recommended schedule of inspections, for example, daily, monthly, and annual.

- (v) **Maintenance checklists.** Manufacturer-furnished checklists for the maintenance of the crane or derrick. Such checklists must account for all components for which approval is sought and all phases of the manufacturer's recommended schedule of maintenance, for example, daily, monthly, and annual.
- (vi) **Listing of components.** Manufacturer-furnished list of all components for which approval is sought. The list is generic and does not have to provide specific part or model numbers. The list must also be accompanied by:
 - (A) For a tower crane, other than a self-erecting tower crane, manufacturer-furnished drawings indicating the weight, dimensions, center of gravity, and lifting points for the boom, mast, jib, collar, and all attachments, or individual sections thereof, for which approval is sought.
 - (B) For all cranes or derricks, other than a tower crane that is not a self-erecting tower crane, manufacturer-furnished drawings indicating, as applicable, the weight, dimensions, center of gravity, and lifting points for the lattice boom, jib, and all attachments, or individual sections thereof, for which approval is sought.
 - (C) In addition to the provisions of clauses (A) and (B) above, for a crane or derrick with a telescoping boom, manufacturer-furnished drawings indicating the weight, dimensions, and center of gravity for the entire crane or derrick with the boom fully retracted and fully extended.
- (vii) **Counterweight tables.** Manufacturer-furnished table of all counterweight combinations and counterweight attachments for each configuration for which approval is sought.
- (viii) **Tables of allowable installation and use.**
 - (A) **Tower cranes, other than self-erecting tower cranes.** For tower cranes, other than self-erecting tower cranes, the manufacturer must submit tables that include the following data for the tower crane at its maximum free standing height in each separate standard configuration indicated in the submitted load rating charts:
 1. The maximum in-service moment, based on a 45 mph in-service wind.
 2. The maximum out-of-service moment, based on a 98 mph out-of-service wind.
 3. The slewing moment, based on a 45 mph in-service wind.
 4. Corresponding vertical loads at the foundation.Such data must be calculated in accordance with ASCE 7- 2005, and be provided at Exposures B, C, and D. The maximum free standing height must be clearly indicated, and must be based on a 98 mph out-of-service wind, or a 45 mph in-service wind when such in-service wind produces a lower free standing height. Special conditions in which the crane may not be used or installed (e.g. crane configuration, height, exposure, etc.) must be clearly indicated.
 - (B) **All other cranes and derricks.** For all cranes or derricks, other than tower cranes that are not self-erecting tower cranes, the manufacturer must provide tables showing the maximum in-service and out-of-service boom, mast, and attachment lengths for each configuration for which approval is sought.
- (ix) **Technical certification.** A certification from the engineer who files the prototype application that:
 - (A) The crane or derrick for which approval is sought was designed and constructed in accordance with an applicable standard listed in paragraph (1) of subdivision (e) of this section. The standard and the year of the standard utilized must be noted.
 - (B) The manuals and load rating charts filed as part of the prototype application are in accordance with the requirements of paragraph (2) of subdivision (e) of this section.
 - (C) For a tower crane, other than a self-erecting tower crane, the data provided per subparagraph (viii) of paragraph (1) of subdivision (d) of this section conforms to ASCE 7- 2005.
 - (D) For a crane, the crane, in all configurations for which approval is sought, successfully passed the prototype testing required by paragraph (3) of subdivision (e) of this section.
- (x) **Contact information.** The manufacturer must supply contact information for the following:
 - (A) **Technical questions.** For technical questions, an individual, employed full-time by the manufacturer, who is authorized by the manufacturer to provide answers to technical questions related to the crane or derrick.
 - (B) **Service questions.** For service questions, a 24/7 telephone hotline that is maintained or authorized by the manufacturer.
 - (C) **Service support.** For jobsite service support, a manufacturer authorized service center, distributor, or authorized service provider located within a four hour travel window of New York City, which must be able to dispatch a factory trained service technician to New York City in the event of an emergency or major malfunction, as determined by the department, with the crane or derrick.

- (xi) **Safety bulletins and recall notices.** Certification from the manufacturer that safety bulletins and recall notices for the crane or derrick will be provided in accordance with paragraph (6) of subdivision (d) of this section.
 - (xii) **ISO certification.** The manufacturer must certify that it possesses the International Organization for Standardization (ISO), or equivalent, certification required by paragraph (4) of subdivision (e) of this section. A copy of the ISO certification, or equivalent, must be submitted.
- (2) **Engineer.** The engineer who files the application for the certificate of approval must be either:
- (i) A full-time employee of the manufacturer who is licensed to practice the profession of engineering under the law of any state or foreign jurisdiction, or who submits proof, acceptable to the commissioner, of his or her professional qualifications; or
 - (ii) A person licensed and registered to practice the profession of engineering under the education law of the state of New York.
- (3) **Issuance of the certificate of approval.** Upon approval of the prototype application, the department will issue an initial certificate of approval for the crane or derrick. The manuals, load rating charts, and other information submitted with the prototype application and accepted by the department are considered part of the certificate of approval.
- (4) **Amendments to the certificate of approval.**
- (i) **When required.** A certificate of approval must be amended in any of the following circumstances:
 - (A) Information provided in the load rating charts is no longer valid or will be altered.
 - (B) A configuration that was not provided for in the certificate of approval will be utilized.
 - (C) A component that was not provided for in the certificate of approval will be utilized. This includes, but is not limited to, components that have weights, dimensions, centers of gravity, or lifting points that are different from those listed in the certificate of approval.
 - (D) Information supplied per subparagraph (vii) of paragraph (1) of subdivision (d) of this section is no longer valid or will be altered.
 - (E) For a crane or derrick whose initial certificate of approval was issued on or after January 1, 2016, information supplied per subparagraph (viii) of paragraph (1) of subdivision (d) of this section is no longer valid or will be altered.
 - (ii) **Amendment request.** A request to amend a certificate of approval must be filed:
 - (A) **On behalf of the manufacturer.** On behalf of the manufacturer by an engineer who meets the requirements of paragraph (2) of subdivision (d) of this section; or
 - (B) **On behalf of the owner.** On behalf of the equipment owner by an engineer licensed and registered to practice the profession of engineering under the education law of the state of New York, provided:
 - 1. The manufacturer is no longer in business; or
 - 2. 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:
 - A. 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
 - B. The manufacturer declines to review the request; or
 - C. The manufacturer, within 30 days of the request, fails to acknowledge the request or initiate a review of the request; or
 - D. 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.
 - (iii) **Content of amendment request.** Amendment requests, and all associated content, must be provided in English, with United States customary units, or where acceptable to the commissioner, metric units. When required by the department, the application must be submitted in an electronic format acceptable to the commissioner. The amendment request must include the following information:
 - (A) A listing of revisions to the certificate of approval necessary to accord with the proposed amendment.
 - (B) Where load ratings are altered, revised load rating charts, along with a certification from the engineer who files the amendment request that the revised load rating charts are in accordance with the requirements of paragraph (2) of subdivision (e) of this section.
 - (C) Where applicable, revised component information in accordance with subparagraph (vi) of paragraph (1) of subdivision (d) of this section.

- (D) Where applicable, revised counterweight information in accordance with subparagraph (vii) of paragraph (1) of subdivision (d) of this section.
 - (E) Where applicable, revised data in accordance with subparagraph (viii) of paragraph (1) of subdivision (d) of this section. For a tower crane, other than a self-erecting tower crane, the engineer who files the amendment request must certify that the revised data conforms to ASCE 7-2005.
 - (F) Where changes are made that decrease the structural stability or structural strength of a crane, or increase the loads or stresses upon the crane, including but not limited to adding configurations, booms, or jibs, certification from the engineer who files the amendment request that the crane, as proposed to be amended, has successfully passed the prototype testing required by paragraph (3) of subdivision (e) of this section.
 - (G) In addition to the requirements of clauses (A) through (F) above, where the amendment request is filed on behalf of the manufacturer, any other supplements, as applicable, to the certificate of approval in accordance with paragraph (5) of subdivision (d) of this section.
 - (H) In addition to the requirements of clauses (A) through (F) above, where the amendment request is filed on behalf of the equipment owner:
 1. A certification from the equipment owner that the manufacturer is no longer in business; or a copy of the request made to the manufacturer, along with any response from the manufacturer, as required by item 2 of clause (B) of subparagraph (ii) of paragraph (4) of subdivision (d) of this section.
 2. When any information in the manufacturer's supplied manuals has to be revised, one or more revised manuals, as necessary, along with a certification from the engineer who files the amendment request that the revised manuals are in accordance with the requirements of paragraph (2) of subdivision (e) of this section. Deviations and modifications from the manufacturer's original materials must be clearly indicated.
 3. When any of the checklists required by subparagraphs (iv) or (v) of paragraph (1) of subdivision (d) of this section has to be revised, one or more revised checklists, as necessary. Deviations and modifications from the manufacturer's original materials must be clearly indicated.
 4. Certification from the engineer who files the amendment request, based upon a review of the design calculations and testing of the crane or derrick manufacturer by the engineer, or by sufficient calculations made by the engineer, or by testing acceptable to the commissioner, that:
 - A. The manufacturer's original safety factor of the equipment is not reduced by the proposed amendment.
 - B. The crane or derrick, as proposed to be modified by the amendment, complies with the applicable design and construction standard for the crane or derrick, as listed in paragraph (1) of subdivision (e) of this section.
 5. Plates, tags, and decals as necessary to accord with the proposed amendment, along with instructions for their use. Such items must be developed, signed, and sealed by the engineer who files the request for the amendment.
 6. Certification from the engineer who files the request for amendment that the engineer approves the modification/addition stipulated in the amendment, and specifies the equipment configuration to which the approval applies.
 7. Certification from the equipment owner that such owner will comply with the provisions of the amendment, including but not limited to ensuring their cranes or derricks which utilize the amendment are provided with the revised load rating charts and manuals, as well as plates, tags, and decals as necessary to accord with the proposed amendment.
- (iv) **Issuance.** Upon approval of the amendment by the department, the department will issue an amended certificate of approval for the crane or derrick.
- (A) **Special provisions for an amendment filed by an equipment owner.** Where an amendment request is filed by an equipment owner on or after January 1, 2016, only equipment owned by such owner may utilize the amendment. However, nothing in this clause will prohibit a separate equipment owner from filing, and the department approving, a separate amendment covering the same material.

(5) Manufacturer supplements to the certificate of approval. When required by subparagraphs (i) through (iv) below, the manufacturer must provide supplements to the certificate of approval. Such supplements, and all associated content, must be provided in English, with United States customary units, or where acceptable to the commissioner, metric units. When required by the department, the supplement must be submitted in an electronic format acceptable to the commissioner. Supplements must be filed by an engineer who meets the requirements of paragraph (2) of subdivision (d) of this section. No fee will be charged to file a supplement. When accepted by the department, a supplement will be considered part of the certificate of approval; except that any supplement filed under the provisions of subparagraph (iv) below will be applicable only for the specific job detailed in the certificate of on-site inspection.

- (i) Manual updates.** When the manufacturer revises any of the information required by subparagraph (i) of paragraph (1) of subdivision (d) of this section, the manufacturer must provide to the department one or more revised manuals, as necessary. The engineer who files the revised manual must certify that the manual is in accordance with the requirements of paragraph (2) of subdivision (e) of this section.
- (ii) Updates to inspection and maintenance checklists.** When the manufacturer revises any of the checklists required by subparagraphs (iv) or (v) of paragraph (1) of subdivision (d) of this section, the manufacturer must provide to the department one or more revised checklists, as necessary.
Exception. Cranes or derricks whose initial certificate of approval was issued prior to January 1, 2016.
- (iii) Contact information updates.** When any manufacturer contact information required by subparagraph (x) of paragraph (1) of subdivision (d) of this section changes, the manufacturer must provide updated points of contact within five (5) business days of the change.
 - (A) Exception.** Cranes or derricks whose initial certificate of approval was issued prior to January 1, 2016.
 - (B) No manufacturer support.** Where there is no manufacturer to support a crane or derrick, the certificate of approval will remain valid.
- (iv) Site specific wind analysis for a tower crane.** For a tower crane, other than a self-erecting tower crane, the manufacturer must submit a site specific wind analysis to the department prior to the approval of the crane or derrick notice application. Such analysis must:
 - (A)** Cover each configuration for which crane or derrick notice application approval is sought;
 - (B)** Be based upon the following information, with such information submitted to the manufacturer by the engineer who files the crane or derrick notice application:
 1. Project address;
 2. Crane make and model;
 3. Maximum lifting capacity;
 4. Distance of the crane from the building;
 5. Proposed tie-in spacing;
 6. Elevations and sections detailing the location and configuration of the crane at the site, in both plan view and elevation view, with dimensions indicated;
 7. Where an environmental load reduction is utilized in accordance with Chapter 16 of the New York City Building Code:
 - 7.1. A copy of the action plan required by Chapter 16 of the New York City Building Code;
 - 7.2. Proposed tie-in spacing for the action plan configuration; and
 - 7.3. Elevations and sections detailing the action plan configuration of the crane at the site, in both plan view and elevation view, with dimensions indicated.
 8. New York City wind load conditions, including exposure category and height distribution of the wind. Such information must be in accordance with Chapter 16 of the New York City Building Code, and based on the following:
 - 8.1. An in-service wind speed of at least 45 mph;
 - 8.2. An out-of-service wind speed that is not less than that allowed by Chapter 16 of the New York City Building Code; and
 - 8.3. Where an environmental load reduction is utilized in accordance with Chapter 16 of the New York City Building Code, an out-of-service wind speed equal to that required by Chapter 16 of the New York City Building Code for the full, unreduced, design wind speed.
 - (C)** Contain the following information from the manufacturer for the given in-service, out-of-service, and, where applicable, full, unreduced, design wind speed at the center of the tower:

1. Wind load base shear.
 2. Wind load overturning moment at the base.
 3. Vertical loads at the base.
 4. Overturning moment at the base center due to vertical loads.
 5. Maximum tower and boom displacements due to wind.
 6. The slewing moment.
- (D) Contain a certification from the manufacturer that the information provided per clause (C) above is based on the information provided by the engineer per clause (B) above;
- (E) Contain a certification from the manufacturer that, in accordance with the requirements of the standard listed in the certificate of approval for the design and construction of the crane (e.g. ASME B30-3 or EN 14439), the boom, mast, jib, attachments, and working deck of the crane will sustain the wind loads specified in (B)(8) above; and
- (F) Note any special conditions in which the crane may not be used or installed (e.g. crane configuration, height, exposure, etc.).
- (6) **Safety bulletins and recall notices.** The department will provide to each manufacturer a list containing the serial numbers of all cranes and derricks registered in New York City manufactured by such manufacturer. The manufacturer in turn must provide to the department all safety bulletins and recall notices issued by such manufacturer related to cranes and derricks found on the list provided by the Department when the safety bulletin or recall notice is issued. No fee will be charged to file such bulletin or notice with the department.
- Safety bulletins and recall notices will not be considered part of a crane or derrick's certificate of approval and will not impact the validity of any such certificate. The department may require proof that a crane or derrick with a certificate of operation or a certificate of on-site inspection, or a crane or derrick for which such certificate(s) are sought complies with the safety bulletin or recall notice.
- (7) **ISO certification.** If the manufacturer loses its International Organization for Standardization (ISO), or equivalent, certification for the make and model of the crane or derrick, this loss must be reported to the department within ten (10) business days after it occurs.
- Exception.** Cranes or derricks whose initial certificate of approval was issued prior to January 1, 2016.
- (8) **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.
- (9) **Previously issued temporary certificates of approval.** Temporary certificates of approval issued prior to January 1, 2016, are deemed to be approved as an initial certificate of approval, retroactive to the date of issuance of the temporary certificate of approval, provided such temporary certificate of approval was not otherwise revoked prior to January 1, 2016, and provided that the prototype application for such temporary certificate of approval contained a certification from the manufacturer of the crane or derrick, or a person licensed and registered to practice the profession of engineering under the education law of the state of New York, that the crane or derrick was designed and constructed in accordance with one of the standards listed in clauses (A) through (F) of sub paragraph (i) of paragraph (1) of subdivision (e) of this section.
- (10) **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.

(e) **Standards.**

(1) **Design and construction standards.**

- (i) **Design and construction standards for cranes or derricks whose prototype application is submitted on or after January 1, 2016.** Cranes and derricks, and their components, whose prototype application is submitted on or after January 1, 2016 must, in their entirety, be designed and constructed in accordance with the following:
- (A) **Mobile cranes, other than an articulating boom crane.** For a mobile crane, other than an articulating boom crane, ASME B30.5 (2004, 2007, 2011, or 2014 editions), or EN 13000 (2004, 2010, or 2014 editions).
- (B) **Tower cranes, other than a self-erecting tower crane.** For a tower crane, other than a self-erecting tower crane, ASME B30.3 (2004, 2009, 2012, or 2016 editions), or EN 14439 (2006 or 2009 editions).
- (C) **Derricks.** For a derrick, ASME B30.6 (2003, 2010, or 2015 editions).
- (D) **Articulating boom crane.** For an articulating boom crane, ASME B30.22 (2005, 2010, or 2016 editions).

- (E) **Self-erecting tower crane.** For a self-erecting tower crane, ASME B30.29 (2012 edition), or EN 14439 (2009 edition).
 - (F) **Dedicated pile drivers.** EN 996 (2009 or 2014 editions) or EN 16228 (2014 edition).
 - (G) **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.
- (ii) **Design and construction standards for cranes and derricks whose prototype application was submitted prior to January 1, 2016.** Cranes and derricks, and their components, whose prototype application was submitted prior to January 1, 2016 must have been designed and constructed in accordance with the following:
- (A) **Mobile cranes manufactured prior to October 1, 2006 and whose prototype application was submitted prior to October 1, 2006.** Mobile cranes, and their components, manufactured prior to October 1, 2006 and whose prototype application was submitted prior to October 1, 2006 must, in their entirety, be designed and constructed in accordance with ASME B30.5 – 1968.
 - (B) **Mobile cranes manufactured on or after October 1, 2006 and whose prototype application was submitted on or after October 1, 2006 but prior to January 1, 2016.** Mobile cranes, and their components, manufactured on or after October 1, 2006 and whose prototype application was submitted on or after October 1, 2006 but prior to January 1, 2016, must, in their entirety, be designed and constructed in accordance with ASME B30.5 – 2004 Chapter 5-1 except Section 5-1.9.9, or EN 13000 (2004) except Section 4.2.6.
 - (C) **Mobile cranes manufactured prior to October 1, 2006 and whose prototype application was submitted on or after October 1, 2006 but prior to January 1, 2016.** Mobile cranes, and their components, manufactured before October 1, 2006 and whose prototype application was submitted on or after October 1, 2006 but prior to January 1, 2016, must, in their entirety, be designed and constructed in accordance with one of the following standards:
 - (i) ASME B30.5 – 2004 Chapter 5-1 except Section 5-1.9.9;
 - (ii) ASME B30.5 – 2000 Chapter 5-1 except Section 5-1.9.9;
 - (iii) ASME B30.5 – 1994 Chapter 5-1 except Section 5-1.9.9;
 - (iv) ASME B30.5 – 1989 Chapter 5-1 except Section 5-1.9.9;
 - (v) ASME B30.5 – 1982 Chapter 5-1 except Section 5-1.9.9;
 - (vi) EN 13000 (2004) except Section 4.2.6; or
 - (vii) Such other standard as the Commissioner deems appropriate.
- (2) **Manuals and load rating chart standards.** Manuals and load rating charts for cranes and derricks must be in English, with United States customary units, or where acceptable to the commissioner, metric units, and be in accordance with an applicable standard listed in paragraph (1) of subdivision (e) of this section. Manuals and load rating charts must also include manual or chart numbers, and page numbers.
- (i) **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 this section or within the New York City Construction Codes.
- (3) **Prototype testing standards.**
- (i) Prototype testing of mobile cranes submitted prior to October 1, 2006. A prototype of each mobile crane, and their components, submitted before October 1, 2006 must be tested for strength and stability in accordance with ASME B30.5-1968. Lattice boom cranes must also be tested in accordance with SAE J987 - 1967 and all mobile cranes with lattice or telescopic booms must also be tested in accordance with SAE J765 - 1990.
 - (ii) Prototype testing of mobile cranes submitted on or after October 1, 2006. A prototype of each mobile crane, and their components, submitted on or after October 1, 2006 must meet the prototype testing requirements in Test Option A or Test Option B as outlined below:
 - (A) **Test Option A:** SAE J1063 or SAE J987,
 1. The following applies to equipment with cantilevered booms (such as telescopic boom cranes): All tests listed in SAE J1063 - 1993, Table 1, must be performed to load all critical structural elements to their respective limits. All the strength margins listed in SAE J1063 - 1993, Table 2 must be met.
 2. The following applies to equipment with pendant supported lattice booms: All the tests listed in SAE J987 - 2003, Table 1, must be performed to load all critical structural elements to their respective limits. All the strength margins listed in SAE J987 – 2003, Table 2 must be met.

- (B) Test Option B:** EN 13000. All testing and verification requirements of EN 13000 (2004) must be met. In applying EN 13000 (2004), the following additional requirements must be met:
1. The following applies to equipment with cantilevered booms (such as telescopic boom cranes): The analysis methodology, such as computer modeling, must demonstrate that all load cases listed in SAE J1063 - 1993 meet the strength margins listed in SAE J1063-1993 Table 2.
 2. The following applies to equipment with pendant supported lattice booms: The analysis methodology, such as computer modeling, must demonstrate that all load cases listed in SAE J987 - 2003 meet the strength margins listed in SAE J987- 2003 Table 2.
 3. Analysis verification. The physical testing requirements under SAE J1063 - 1993 and SAE J987 - 2003 must be met unless the reliability of the analysis methodology, such as computer modeling, has been demonstrated by a documented history of verification through strain gauge measuring or strain gauge measuring in combination with other physical testing.
- (iii)** Prototype testing of tower cranes manufactured on or after November 8, 2010. Tower cranes manufactured on or after November 8, 2010, must meet the prototype testing requirements in EN 14439 (2006).
- (4) Manufacturing standards.** Cranes and derricks, and their components, whose application for prototype approval is submitted on or after January 1, 2016 must, in their entirety, be manufactured by an entity that possesses an ISO 9001 certification, or an equivalent international certification acceptable to the commissioner.
- (f) Annual renewal of the certificate of operation.** Application for renewal of a certificate of operation, as stipulated in Section 3319.5 of the New York City Building Code, must be accompanied by inspection and maintenance records in accordance with paragraph (1) of subdivision (k) of this section and paragraph (1) of subdivision (m) of this section. Upon approval of the application, a new certificate of operation will be issued after a satisfactory inspection by a department inspector.
- (g) Certificate of on-site inspection.**
- (1) Conformity with the certificate of approval and certificate of operation.** No certificate of on-site inspection, or an extension, renewal, or amendment to such certificate, will be granted for a crane or derrick which requires, but does not possess, a certificate of approval or certificate of operation, or which is not in conformance with the certificate of approval or certificate of operation.
 - (2) Application for a certificate of on-site inspection.** To apply for a certificate of on-site inspection in accordance with Section 3319.6 of the New York City Building Code, an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, must file, on behalf of the equipment user, a crane or derrick notice application with the department.
 - (i) Crane or derrick notice plans.** The application must be accompanied by one or more plans, as applicable, showing the following information for each configuration for which crane or derrick notice application approval is sought:
 - (A) Ground and subsurface elements.** Elevations and sections detailing all pertinent ground and subsurface elements, with dimensions, slopes, estimated bearing values, loads imposed, and surcharges indicated, including, as applicable:
 1. Soil;
 2. Streets, sidewalks, public plazas, and equivalent spaces;
 3. Foundations;
 4. Retaining walls;
 5. Excavations;
 6. Sheet piling, shoring, and bracing;
 7. Vaults;
 8. Manholes;
 9. Subways, stations, and entrances;
 10. Tunnels; and
 11. For a tower crane:
 - 11.1. Utilities impacted by the tower crane foundation; and
 - 11.2. The water table level.

- (B) **Site conditions.** Elevations and sections detailing all pertinent site conditions, with dimensions indicated, including, as applicable:
1. North arrow;
 2. Buildings and structures at the site and adjacent to the site, with projections, setbacks, and equipment and structures located on the roof or setback indicated;
 3. Temporary construction, such as platforms, runback structures, scaffolds, mast climbers, hoists, horizontal netting, cocoon systems, climbing formwork, sidewalk sheds, fences, and barricades;
 4. Pedestrian and traffic control to be provided as per the requirements of the Department of Transportation;
 5. Other cranes or derricks at the site, with swing radii indicated;
 6. Trees and other natural obstructions; and
 7. Above ground utilities and infrastructure, including but not limited to, street lights, traffic lights, bollards, bus shelters, street furniture, traffic signs, hydrants, electrical lines with voltage values indicated, phone lines, bridges, viaducts, subway exits, elevated subways and railroads, elevated transit platforms, and towers.
- (C) **Location and configuration.** Elevations and sections detailing the location and configuration of the crane or derrick at the site, in both plan view and elevation view, with dimensions indicated, including, as applicable:
1. The proposed location of the crane or derrick, including areas where the crane or derrick will be assembled, disassembled, operate, or travel;
 2. The configuration of the crane or derrick;
 3. Outrigger location and configuration;
 4. The swing radius of the tail or counterweights;
 5. The maximum and minimum swing radius and load path of the boom and load;
 6. Minimum clearances for the boom/jibs/attachments and counterweights. If necessary, operation restrictions necessary to prevent contact must be clearly shown; and
 7. Pick and landing zones.
- (D) **Footing, foundation, tie-ins, and supporting elements.** Elevations and sections detailing the footing or founding of the crane or derrick and any foundations, tie-ins, or other structures supporting the crane or derrick, with dimensions, materials, bearing values, loads imposed, reactions, and concrete strengths to be obtained prior to installation indicated, including, as applicable:
1. For a crane:
 - 1.1. Matting, dunnage, or equivalent;
 - 1.2. Ramps;
 - 1.3. Platforms, and all connections between the platform and the base building or structure;
 - 1.4. Foundations and all connections between the foundation, the base building or structure, and the crane; and
 - 1.5. Tie-in connections, including but not limited to the tie-in, base building or structure, collar, pin, inner bracings or similar reinforcement, and any rope or structure supporting the tie-in collar to the tower leg.
 2. For a derrick, platforms or dunnage, and all connections between the platforms or dunnage, the base building or structure, and the derrick.
 3. For any crane or derrick:
 - 3.1. Bracing;
 - 3.2. Roofs, setbacks, or equivalent upon which the crane or derrick is located;
 - 3.3. Modifications required to the base building or structure, other structural elements, or to adjacent retaining walls, excavations, or foundations; and
 - 3.4. Level or plumb tolerances, which may not exceed the recommendations of the crane or derrick manufacturer.
- (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, details of such bolted connection, including elevations and sections, with dimensions indicated, including, as applicable:
1. Bolts;

2. Bolt hole sizes;
 3. Bolt grades and specifications;
 4. Bolt torque values;
 5. Re-torquing schedule and procedures;
 6. Plates;
 7. Rods, with pre-tensioning information;
 8. Dowels;
 9. Clamping forces; and
 10. Grout or steel bushings.
- (F) **Anchors.** Elevations and sections detailing anchored connections to a structure, with dimensions indicated, including, as applicable:
1. Type of anchor;
 2. Anchor size;
 3. Anchor hole size;
 4. Epoxy or grout specifications;
 5. Installation instructions; and
 6. Pull out testing criteria.
- (G) **Welded connections.** For a welded 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, details of such welded connection, including elevations and sections, with dimensions indicated, including, as applicable:
1. Material information;
 2. Welding specifications; and
 3. Welding procedures.
- (H) **Structural steel.** Where the plans call for the use of structural steel, for example in the foundation, platform, dunnage, or tie-in connections, and such structural steel is not provided by the manufacturer of the crane or derrick, or an entity authorized by the manufacturer, the shape, size, and grade of the steel must be specified on the plans.
- (I) **Counterweights.** Where a crane utilizes removable counterweights, or where a derrick requires counterweights, the required weight, dimensions, and acceptable materials for the counterweights must be specified on the plans. Such information must be based on the requirements of the manufacturer of the crane or derrick.
- (J) **Aviation hazards.** Aircraft warning lights and markings must be indicated on the plans when such lights and markings are required by the Federal Aviation Administration.
- (K) **Electrical information.** For a tower crane, other than a self-erecting tower crane, the crane's electrical requirements must be indicated on the plans, including voltage, amperage, phasing, grounding, and any other electrical information specific to the tower crane.
- (L) **Special inspections.** All materials, equipment, installation, fabrication, erection, or placement of components and connections, as well as construction operations subject to special inspection in accordance with paragraph (6) of subdivision (k) of this section must be identified on the plans.
- (M) **Range of tolerances.** Where a plus or minus range of tolerances is considered to be acceptable by the crane or derrick notice engineer, specific values indicating the numerical range of tolerance must be indicated.
- (ii) **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.
- (A) **Content.** The assembly/disassembly plan must include the following information:
1. All information listed in subparagraph (i) of paragraph (2) of this subdivision for a crane or derrick notice plan that is relevant to the assembly/disassembly operation, including but not limited to:
 - 1.1. Location where the crane or derrick will be assembled/disassembled, including any areas of travel;
 - 1.2. Pertinent ground, subsurface, and site conditions, including but not limited to pedestrian and traffic control to be provided as per the requirements of the Department of Transportation; and
 - 1.3. The configuration of the crane or derrick at the start and completion of the assembly/disassembly operation, and at all phases throughout the work.

2. Procedures, including sequencing, for the assembly/disassembly operation, including but not limited to counterweight placement or removal;
 3. Weight, dimensions, and center of gravity for components that will be hoisted or lowered during the assembly/disassembly operation;
 4. Location and configuration of assist cranes or derricks;
 5. The maximum wind threshold at which assembly/disassembly operations may occur; and
 6. For the erection, climbing, jumping, or dismantling of a tower crane, information required by Section 3319.8.1 of the New York City Building Code.
- (B) Self-contained document.** The assembly/disassembly plan must be a complete, self-contained document.
- (C) Maximum assembly/disassembly wind threshold.** The maximum assembly/disassembly wind threshold listed in the assembly/disassembly plan cannot exceed 30mph (3-second gust). This threshold must take into account the wind action plans for each assist crane or derrick, and where such a threshold is lower than that for the assembly/disassembly operation generally, this lower threshold must be listed as the threshold for the assembly/disassembly operation.
- (D) Specific to configurations.** The assembly/disassembly plan must include all applicable information for each configuration for which crane or derrick notice application approval is sought. Where multiple configurations are included, the assembly/disassembly plan must clearly identify the applicable procedures for each configuration.
- (E) Able to be fully implemented based upon site conditions.** The assembly/disassembly plan must account for all site conditions and be able to be fully implemented based upon site conditions. Where the manufacturer's specifications can be fully implemented at the site, the plan must incorporate this information. Where site conditions prevent full implementation of the manufacturer's specifications, the engineer must contact the manufacturer and develop alternate procedures, as appropriate, and incorporate them into the assembly/disassembly plan.
- (iii) Pre-operational test procedures, including load test.** For a tower crane and a derrick, the application must be accompanied by procedures for the pre-operational test. The pick zones for the load test portion of the pre-operational test must also be indicated. For a tower crane, the application must also be accompanied by procedures for the setting of pre-limiting and limiting devices. The procedures required by this sub paragraph must be in accordance with the manufacturer's specifications and the following, and in no case may the weight utilized during the load test exceed the manufacturer's specifications:
- (A)** For a tower crane, other than a self-erecting tower crane, ASME B30.3 (2016 edition) Section 3-1.7.
 - (B)** For a self-erecting tower crane, ASME B30.29 (2012 edition) Section 29-1.1.3.
 - (C)** For a derrick, ASME B30.6 (2015 edition) Sections 6-2.2.1 and 6-2.2.2.
- (iv) Loads imposed.** Where the crane or derrick imparts a load on a building or structure, the application must be accompanied by either:
- (A)** Crane or derrick notice plans that:
 1. Are sealed and stamped "reviewed for loads imposed" by the registered design professional of record for the project; and
 2. Contain a note, signed and sealed by the registered design professional of record for the project, indicating that all permanent modifications or supporting elements required to be added to the base building or structure, including but not limited to rebar, have been incorporated into the plans and/or shop drawings for the base building or structure;
 - (B)** A signed and sealed letter from the registered design professional of record for the project that includes the following:
 1. A statement that he or she has reviewed the submitted crane or derrick notice plans for the loads imposed on the building or structure;
 2. The drawing numbers and dates of the crane or derrick notice plans indicating the bracing and modifications required for the building or structure to support the loads imposed;
 3. A statement attesting to the adequacy of the building or structure to support the loads imposed; and
 4. A statement that all permanent modifications or supporting elements required to be added to the base building or structure, including but not limited to rebar, have been incorporated into the plans and/or shop drawings for the base building or structure; or

- (C) For a project for which there is no registered design professional of record for the project, a signed and sealed letter from the crane or derrick notice engineer that includes the following:
 1. A statement that he or she has investigated the design of the building or structure;
 2. The drawing numbers and dates of the crane or derrick notice plans indicating the bracing and modifications required for the building or structure to support the loads imposed;
 3. A statement attesting to the adequacy of the building or structure to support the loads imposed; and
 4. A statement that he or she will verify that such bracing and modifications have been completed in accordance with the approved crane or derrick notice plans before loads are imposed by the crane or derrick.
- (v) **Wind action plan.** The application must be accompanied by a wind action plan.
 - (A) **Content.** The wind action plan must include the following information:
 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); and
 4. The communication protocol for safeguarding the crane or derrick in the event of changes of forecasts over weekends or longer stoppage periods.
 - (B) **Self-contained document.** The wind action plan must be a complete, self-contained document.
 - (C) **Maximum in-service threshold.** The maximum in-service wind threshold listed in the wind action plan cannot exceed 30 mph (3-second gust) or the threshold specified by the manufacturer, whichever is lower.

Exceptions: The 30 mph (3-second gust) criterion does not apply to:

 1. A mobile crane where the crane is set up and operated entirely within a safety zone, provided:
 - 1.1 The distance from the crane to the boundary of the safety zone is equal to or greater than the length of the boom, jib, and any other attachments; and
 - 1.2 All areas and structures within the safety zone are closed to the public.
 2. A tower crane, where the crane is set up and operated entirely within a safety zone, provided:
 - 2.1 The distance from the crane to the boundary of the safety zone is equal to or greater than the height of the mast and the length of the boom, jib, and any other attachments; and
 - 2.2 All areas and structures within the safety zone are closed to the public.
 - (D) **Specific to configurations.** The wind action plan must include all applicable thresholds and procedures for each configuration for which crane or derrick notice application approval is sought. Where multiple configurations are included, the wind action plan must clearly identify the applicable thresholds and procedures for each configuration.
 - (E) **Able to be fully implemented based upon site conditions.** The wind action plan must account for all site conditions and be able to be fully implemented based upon site conditions. Where the manufacturer's specifications can be fully implemented at the site, the plan must incorporate this information. Where site conditions prevent full implementation of the manufacturer's specifications (e.g. site conditions make it impossible to point the boom into the wind), the engineer must contact the manufacturer and develop alternate procedures and/or thresholds, as appropriate, and incorporate them into the wind action plan.
 - (F) **Emergency action plan.** Where load reductions are utilized in accordance with Section 1618 of the Building Code, the emergency action plan required by Section 1618.3 of the Building Code must also be included in the wind action plan.
- (vi) **Certifications.** The application must be accompanied by the following certifications:
 - (A) **Investigation of conditions.** Certification from the crane or derrick notice engineer that he or she has investigated the ground, subsurface, and site conditions, and has accounted for them in the submitted plans and procedures.
 - (B) **Loads.** Certification from the crane or derrick notice engineer that:
 1. The loads, surcharges, and values indicated in the crane or derrick notice application account for all conditions of loading, including wind.

2. The crane or derrick, including any footing, foundation, tie-in, or supporting element, in all proposed conditions of loading, including assembly/disassembly or traveling, will not exceed the bearing capacity of the ground or subsurface elements, or any footing, foundation, tie-in, or supporting element.
 3. The crane or derrick, including any footing, foundation, tie-in, or supporting element, when secured and stowed in accordance with the submitted procedures will be able to sustain, without failure, the specified wind loads.
- (C) **Clearances.** Certification from the crane or derrick notice engineer that the crane or derrick, in all proposed configurations, including assembly/disassembly or traveling, will clear all site obstructions.
- (vii) **Calculations.** The application must be accompanied by the following calculations from the crane or derrick notice engineer, verifying:
- (A) The stability of the crane if outriggers must be set at asymmetrical positions.
Exception: Calculations are not required if an analysis, conducted by a computer program authorized by the crane manufacturer, verifies the stability of the crane.
 - (B) Indicated loads imposed and surcharges.
 - (C) Indicated reaction forces.
 - (D) Any other supporting calculations upon request.
- (viii) **Power lines.** When operating near overhead power lines, including during assembly/disassembly or traveling, the crane or derrick notice plan or the assembly/disassembly plan, as applicable, must indicate compliance with the applicable provisions of paragraph (3) of subdivision (s) of this section, and, where applicable, the application must be accompanied by the determination and procedures required by paragraph (3) of subdivision (s) of this section.
- (3) **Approval of the crane or derrick notice application.** The crane or derrick notice application will be approved in accordance with the provisions of Article 104 of Chapter 1 of Title 28 of the Administrative Code.
- (i) **Transit authority approval.** For a crane or derrick that requires approval of the New York City Transit Authority, no crane or derrick notice application will be approved by the department until a copy of the approval from the Transit Authority has been filed with the department.
 - (ii) **Site specific wind analysis for tower cranes.** For a tower crane, other than a self-erecting tower crane, no crane or derrick notice application will be approved by the department until the information required by subparagraph (iv) of paragraph (5) of subdivision (d) of this section has been submitted to the department.
- (4) **Phased filings.** Information required to be filed with the crane or derrick notice application per paragraph (2) of subdivision (g) of this section may be filed in phases, and approval of the crane or derrick notice application per paragraph (3) of subdivision (g) of this section may be granted in phases, provided all information filed for the phase is complete and covers all aspects of the crane or derrick in such phase.
- (5) **Amendments.** See Article 104 of Title 28 of the Administrative Code.
- (6) **Prohibition on arrival at the site.** No crane or derrick that requires a certificate of on-site inspection may be present at a site until the department has approved the crane or derrick notice application.

Exceptions:

1. **Tower crane foundation.** Where a tower crane foundation needs to be constructed, the foundation may be installed prior to the approval of a crane or derrick notice application, provided:
 - 1.1 Plans for the tower crane foundation, signed and sealed by the crane or derrick notice engineer, are filed with and accepted by the department prior to the installation of the tower crane foundation. Such plans do not need to reference a specific crane or crane configuration, however, the plans must indicate the dimensions, materials, and bearing value of the foundation, along with anticipated loads imposed and reaction forces of the tower crane on the foundation;
 - 1.2 Special inspection reports for the installed foundation are filed with the department prior to the approval of the crane or derrick notice application; and
 - 1.3 The foundation, as installed, and any subsequent modifications required to account for the specific tower crane to be utilized, is indicated on the crane or derrick notice plans.
2. **Tower crane anchor stool and first mast section.** The anchor stool and first mast section of a tower crane, other than a self-erecting tower crane, may be installed prior to the approval of a crane or derrick notice application and the crane or derrick device application, provided:
 - 2.1 The anchor stool and first mast section are indicated on the plans filed and accepted under exception 1.1 above;

- 2.2 An inspection report for the anchor stool and first mast section is accepted by the department prior to their installation;
 - 2.3 A survey report, attesting that the anchor stool and first mast section, as installed, is plumb, is submitted as part of the crane or derrick notice application. Such survey report must be based upon a survey performed by a surveyor who meets the definition of a qualified person, and must be signed and dated as accepted by the licensed rigger who supervised the installation of the anchor stool and first mast section;
 - 2.4 Where a special inspection is required by paragraph (6) of subdivision (k) of this section, the special inspection reports for the foundation are submitted as part of the crane or derrick notice application;
 - 2.5 Where the anchor stool is not provided by the manufacturer of the crane, the crane or derrick notice engineer notes, on the crane or derrick notice plans, his or her acceptance of the anchor stool; and
 - 2.6 The anchor stool and first mast section, as installed, and any subsequent modifications required to account for the specific tower crane to be utilized, is indicated on the crane or derrick notice plans.
- (7) Issuance, renewal, and continued validity of the certificate of on-site inspection.**
- (i) Issuance of the certificate of on-site inspection.** Prior to the initial use at the site of a crane or derrick that requires a certificate of on-site inspection, the crane or derrick must be inspected and tested as required by subparagraphs (i) and (ii) of paragraph (8) below. Upon successful passage of such inspections and tests, and submittal of the inspection report in accordance with subparagraph (iv) of paragraph (8) below, a certificate of on-site inspection is deemed to be issued.
 - (ii) Continued validity of the certificate of on-site inspection for a phase or jump.** Where a crane or derrick project includes multiple phases or jumps, the continued validity of the certificate of on-site inspection is contingent upon the crane or derrick passing the inspection and tests required by subparagraphs (i) and (ii) of paragraph (8) below for each phase or jump. Upon successful passage of such inspections and tests, and submittal of the inspection report in accordance with subparagraph (iv) of paragraph (8) below, the certificate of on-site inspection is deemed to cover such phase or jump.
Exception: A phase does not include the relocation of a mobile crane to another location at the site, provided such relocation is indicated on the approved crane or derrick notice plans, and provided such relocation does not require the crane to be assembled or disassembled.
 - (iii) Renewal of the certificate of on-site inspection after one year.** Where the crane or derrick remains at the site for a period of one (1) year or longer, the continued validity of the certificate of on-site inspection is contingent upon the crane or derrick passing the inspections and tests required by subparagraph (iii) of paragraph (8) below, and submittal of the inspection report in accordance with subparagraph (iv) of paragraph (8) below, at least eleven (11) months but no more than one (1) year following the last inspection performed in accordance with subparagraphs (i) or (ii) above or this subparagraph.
- (8) Inspections and tests for a certificate of on-site inspection.**
- (i) Inspections and tests required for the issuance of the certificate of onsite inspection and the continued validity of the certificate of on-site inspection for a phase.** When required by subparagraphs (i) or (ii) of paragraph (7) of subdivision (g) of this section, the following inspections and tests must be performed.
 - (A) Engineer's inspection.** Prior to and following the setup, assembly, erection, jumping, or climbing of a crane or derrick, the crane or derrick notice engineer, or a qualified person employed and supervised by such engineer, must perform an inspection and verify compliance with the approved crane or derrick notice plans, including but not limited to:
 1. Ground, subsurface, and site conditions match the approved crane or derrick notice plans;
 2. Loads imposed conditions match those as indicated on the approved crane or derrick notice plans;
 3. Modifications, including bracing, required for the base building or structure, other structural elements, or to adjacent retaining walls, excavations, or foundations have been completed and are in accordance with the approved crane or derrick notice plans;
 4. Concrete elements that will sustain crane or derrick loads, for example, foundations or tie-in floors, have obtained sufficient strength in accordance with the approved crane or derrick notice plans; and
 5. The footing, foundation, and supporting elements of the crane or derrick, including but not limited to, ramps, platforms, matting, dunnage, or installed tie-in connections are free from damage or deformation, free from debris and standing water, and are in accordance with the

approved crane or derrick notice plans. This inspection may be accomplished by visual observation. Where bolts, anchors, welds, or steel for such items are detailed on such approved plans, this includes verification that such elements are in accordance with the approved plans.

Exceptions:

1. The engineer's inspection is not required prior to the installation of a tower crane foundation, anchor stool, or first mast section installed in accordance with the provisions of the exceptions to paragraph (6) of subdivision (g) of this section.
2. The engineer's inspection does not have to include items required inspected by another entity, as indicated in the clauses below.

(B) Inspection of bolts, pins, links, and straps.

1. **Tower cranes.** Where a tower crane was erected, climbed, or jumped, the licensed rigger responsible for supervising such operation must perform an inspection prior to and following such operation and verify that all bolts and pins installed on the tower crane during the course of erection, jumping, or climbing, including during previous such sessions, as well as all tie-in collars, inner bracings or similar reinforcement for the tie-in connection, and ropes or structures supporting the tie-in collar to the tower leg:

1.1 Are in place;

1.2 Are free from damage or deformation. This inspection may be accomplished by visual observation; and

1.3 Meet the requirements and tolerances of the manufacturer and, where applicable, the approved crane or derrick notice plans.

Exception: Bolts and pins located beyond the connection point of the tie-in connection to the collar, or below the first mast section. Such bolts and pins must instead be inspected as part of the engineer's inspection per clause (A) above.

2. **Self-erecting tower cranes.** Following the setup of a self-erecting tower crane, including any subsequent setup operations at the site, a qualified person designated by the equipment user must verify that the pins and interlocks have been placed and set in accordance with the manufacturer specifications.

Exception: Where the self-erecting tower crane was set up by or under the direct and continuing supervision of a licensed master or tower crane rigger, such licensed rigger must perform the inspection.

3. **All other cranes and derricks.** Prior to and following the assembly of a crane or derrick, the assembly/disassembly director must perform an inspection and verify that all bolts, pins, links, and straps installed on the crane or derrick during the setup or assembly, including during previous such sessions:

2.1 Are in place (or, if applicable, removed, e.g. from areas if luffing jib is not to be utilized);

2.2 Are free from damage or deformation. This inspection may be accomplished by visual observation; and

2.3 Meet the requirements and tolerances of the manufacturer and, where applicable, the approved crane or derrick notice plans.

Exceptions:

1. Tower cranes and self-erecting tower cranes are subject to the applicable provisions of items numbers 1 or 2 above.

2. For a derrick, bolts, pins, links, and straps located at or beyond the connection point to the base building or structure. Such bolts and pins must instead be inspected as part of the engineer's inspection per clause (A) above.

- (C) Surveyor's inspection for a tower crane.** Following the erection, jumping, or climbing of a tower crane, other than a self-erecting tower crane, a surveyor who meets the definition of a qualified person and who is acceptable to the licensed rigger responsible for climbing or jumping the tower crane must survey the tower crane and verify it is plumb within tolerances specified on the approved crane or derrick notice plans.

- (D) Pre-operational test, including load test.** Following the initial setup, assembly, or erection of a tower crane or a derrick, and following any subsequent setup, assembly, erection, jumping, or climbing that would necessitate a pre-operational test, the crane or derrick must pass a preoperational test in accordance with the approved pre-operational test procedures submitted with

the crane or derrick notice application. The pre-operational test must be witnessed by, and verification that the crane or derrick has passed the test made by either:

1. The crane or derrick notice engineer;
2. A qualified person employed and supervised by such engineer;
3. A qualified person employed by the equipment owner;
4. A qualified person employed by the crane or derrick manufacturer or a manufacturer authorized service center, distributor, or service provider; or
5. A licensed master or tower crane rigger, or, for a derrick, a licensed master rigger or a master rigging foreman.

(E) Special inspections. Special inspections must be completed in accordance with paragraph (6) of subdivision (k) of this section. Prior to and following the setup, assembly, erection, jumping, or climbing of a crane or derrick, the crane or derrick notice engineer, or a qualified person employed and supervised by such engineer, must verify required special inspections have been successfully completed.

(F) Unassembled inspection. Prior to an assembly/disassembly operation, the assembly/disassembly director must perform an unassembled inspection to verify that:

1. The components to be installed match those listed on the Certificate of Operation; and
2. Structural components to be installed are free from damage or deformation. This inspection may be accomplished by visual observation.

(G) Assembled inspection. Following an assembly/disassembly operation, the assembly/disassembly director must perform an assembled inspection to verify that:

1. Mechanical, hydraulic, and electrical components of the crane or derrick (e.g. rope reeving system, electrical and hydraulic connections) are properly assembled and connected; and
2. Structural components, except for those inspected as part of the engineer's inspection per clause (A) above, are free from damage or deformation. This inspection may be accomplished by visual observation.

(ii) Inspection of tie-in connection to the base building or structure. When required by subparagraphs (i) or (ii) of paragraph (7) of subdivision (g) of this section, the crane or derrick notice engineer, or a qualified person employed and supervised by such engineer, must observe the tie-in installation during the installation of a tie-in connection for a tower crane and verify that the tie-in is connected to the base building or structure in accordance with the approved crane or derrick notice plans. This includes, but is not limited to, the location and size of bolt holes, the condition of the floor slab, the leveling of the tie-in, that bolts and threaded rods have been pre-tensioned, and that specified bolts and plates have been installed.

(iii) Inspections and tests required for annual renewal. When required by subparagraph (iii) of paragraph (7) of subdivision (g) of this section, the following inspections and tests must be performed to renew the certificate of on-site inspection.

(A) Engineer's inspection. The crane or derrick notice engineer, or a qualified person employed and supervised by such engineer, must perform an inspection and verify:

1. Continued compliance with the approved crane or derrick notice plans, except for those items required to be inspected by another entity, as indicated in the clauses below; and
2. Where a temporary load reduction is utilized per Section 1618 of the New York City Building Code, that the installation complies with the requirements of the approved construction documents for the temporary installation and the action required plan required by Section 1618.3 of the New York City Building Code:
 - 2.1. Is still in effect;
 - 2.2. Has been revised to reflect current conditions of the installation; or
 - 2.3. Is no longer required, as the installation has been retrofitted to comply with the loads for new construction without any reduction.

(B) Inspection of bolts, pins, links, and straps. Where the crane or derrick was assembled at the site, a qualified person designated by the equipment user must perform an inspection and verify the applicable items listed in clause (B) of subparagraph (i) of paragraph (8) of subdivision (g) of this section.

Exception: For a tower crane that was erected, climbed, or jumped by or under the direct and continuing supervision of a licensed master or tower crane rigger, the inspection must be performed by a licensed master or tower crane rigger, or a master rigging foreman.

- (C) **Surveyor's inspection for a tower crane.** For a tower crane, other than a self-erecting tower crane, a surveyor who meets the definition of a qualified person and who is acceptable to the licensed rigger responsible for inspecting the tower crane in accordance with clause (B) above must survey the tower crane and verify it is plumb within tolerances specified on the approved crane or derrick notice plans.
- (D) **Pre-operational test for a derrick, including load test.** A derrick must pass a pre-operational test in accordance with the approved pre-operational test procedures submitted with the crane or derrick notice application, or where the approved crane or derrick notice application did not include specifications for the test, in accordance ASME B30.6 (2015 edition) Sections 6-2.2.1 and 6-2.2.2, except that in no case may the weight of the load exceed 100% of the rated capacity of the derrick. The pre-operational test must be witnessed by, and verification that the crane or derrick has passed the test made by either:
1. The crane or derrick notice engineer;
 2. A qualified person employed and supervised by such engineer;
 3. A qualified person employed by the equipment owner;
 4. A qualified person employed by the crane or derrick manufacturer or a manufacturer authorized service center, distributor, or service provider; or
 5. A licensed master rigger or a master rigging foreman.
- (iv) **Certificate of on-site inspection report.** The results of the applicable inspections and tests required by subparagraphs (i) through (iii) above must be documented in a certificate of on-site inspection report.
- (A) **Content.** The report must, at a minimum:
1. Detail the results of the applicable inspections or tests required by subparagraphs (i) through (iii) above, and contain a certification of the results from the individual who performed the inspection; and
 2. If the crane or derrick initially failed an inspection or test, including but not limited to a deviation from the approved crane or derrick notice plans, before passing a subsequent inspection or test, this information must be detailed, along with a description of any adjustment, modification, maintenance, repair, or other corrective action taken, including amending the approved crane or derrick notice plans.
- (B) **Signing, dating, and sealing.** The certificate of on-site inspection report must be signed and dated by the individuals who performed the inspection or witnessed the test. Where such individual is required to be supervised or authorized by a professional engineer or a licensed rigger, such licensed individual must also sign and date such sections of the report, and for a professional engineer, affix his or her seal to such sections of the report.
- (C) **Submitting and maintaining reports.** After the crane or derrick successfully passes the inspections and tests required by subparagraphs (i) through (iii) above, the certificate of on-site inspection report must be submitted to the department.
- (v) **Reporting a failed inspection or test.** If the crane or derrick fails an inspection or test required by subparagraphs (i) through (iii) above, and the condition that led to the failure is not corrected by the end of the inspection or test, such condition must be reported to the department at the conclusion of the inspection or test.
- Exception:** Issues that pose an immediate hazard to the safety of the public or property must immediately be reported to the department.
- (9) **Deviation from approved plans.** Where deviations from the approved crane or derrick notice plans are identified, the crane or derrick may not operate until it is brought into compliance with the approved plans, or an amendment to the crane or derrick notice plans to reflect conditions at the site has been approved by the department.
- (10) **Suspension or revocation of a certificate of on-site inspection.** The department may suspend or revoke a certificate of on-site inspection in accordance with the provisions of Section 28-105.10 of the New York City Administrative Code.
- (11) **United States customary units.** All calculations and measurements submitted as part of a crane or derrick notice application, amendment, inspection or test report, or similar documentation, must be in United States customary units.
- (12) **Conformance with the building code.** All loads, material strengths, and calculations provided or utilized in connection with the crane or derrick notice application, or an amendment to such application, must be in accordance with the New York City Building Code.

Exception: Loads, material strengths, and calculations provided by the manufacturer of the crane or derrick.

(13) Peer review. Peer reviews for crane or derrick notice applications must be in accordance with the requirements of subparagraphs (i) through (xiii) below.

(i) Peer review required. A crane or derrick notice application is subject to a peer review when the crane or derrick notice application proposes any one of the following:

- (A) The use of a mobile crane with a boom, including jibs and any other extensions to the boom, equal to or greater than 300 feet (91.44 m) in length.
- (B) The use of a mobile crane in a configuration where the manufacturer requires, at a wind speed of 20 mph (32.19 kph) or less (sustained or gust):
 - 1. The boom or boom/jib combination to be laid down;
 - 2. The boom or boom/jib combination to be placed in a jackknife position; or
 - 3. Other special protective measures to be implemented.
- (C) The placement of a mobile crane with a maximum manufacturer rated capacity in excess of 10 tons (9.07 metric tons) on any elevation of a building above grade.

In addition, where other out of the ordinary or complex loading, load paths, configurations, operations, or site conditions exist, or where the crane application requires coordination among city agencies, the commissioner may require peer review.

(ii) Peer reviewer. The peer review must be performed by a qualified and independent New York State professional engineer who has been retained by or on behalf of the equipment user.

(A) Peer reviewer to be acceptable to crane or derrick notice engineer. The peer reviewer's qualifications must be acceptable to the crane or derrick notice engineer.

(B) Department reserves right to reject peer reviewer. The department reserves the right to reject a peer reviewer on the grounds of lack of qualification or independence.

(iii) Responsibility of crane or derrick notice engineer. The crane or derrick notice engineer retains sole responsibility for the crane or derrick design indicated on the submitted crane or derrick notice application. The activities and reports of the peer reviewer do not relieve the crane or derrick notice engineer of any responsibility for the crane or derrick design indicated on the submitted crane or derrick application.

(iv) Standard of care for of peer reviewer. The standard of care to which the peer reviewer must be held in the performance of the peer review and report must be equal to the level of skill and care required to prepare and submit the crane or derrick notice application.

(v) Scope of the peer review. The peer reviewer must perform an independent review and analysis of the crane or derrick design indicated on the submitted crane or derrick notice application to confirm the design is in general conformance with New York City Codes, rules, and regulations for cranes and derricks. The review and analysis to determine general conformance shall include but not be limited to the following:

(A) Confirm that drawings are complete, existing conditions and base building construction loading have been accurately represented on the drawings, and that any structures including, but not limited to, vaults, adjacent buildings, overhead wires, transit structures, and utilities are accurately represented on the drawings.

(B) Confirm that approved load charts have been included and maximum picks represented correctly.

(C) Where applicable, review the project's geotechnical report design recommendations and inspection reports to determine that appropriate design criteria for dunnage or foundations has been utilized. If no design criteria have been specified on the crane or derrick notice application design drawings, the peer reviewer must state any assumptions or criteria utilized in the analysis of the crane or derrick notice application design.

- (D) Confirm the assembly/disassembly plan is complete, specific to the configurations shown in the crane or derrick notice application, and able to be fully implemented based upon site conditions.
- (E) Confirm the wind action plan is complete, specific to the configurations shown in the crane or derrick notice application, and able to be fully implemented based upon site conditions.
- (F) Where applicable, confirm that complete pre-operational test procedures, including load test procedures, are included.
- (G) Confirm that the crane or derrick has a complete load path into the base building structure or ground.
- (H) Perform independent calculations for all structural members, connections and systems included in the load path determined in item vii above and verify the foundation and structural elements' ability to support the crane or derrick loads.
- (I) Other items required by the commissioner.

(vi) Design criteria and assumptions not shown. If the design criteria and design assumptions are not shown on the crane or derrick notice application drawings or in the computations, the crane or derrick notice engineer must provide a statement of these criteria and assumptions to the peer reviewer. In addition, the crane or derrick notice engineer must provide other information and/or calculations if requested by the peer reviewer.

(vii) Peer review report. The peer reviewer must submit a report to the department stating his or her opinion regarding the design of the crane or derrick proposed in the crane or derrick notice application and detailing whether or not the crane or derrick design indicated on the submitted crane or derrick notice application is in general conformance with New York City Codes, rules, and regulations for cranes and derricks. The determination of general conformance shall be based upon the review and analysis performed in accordance with subparagraph (v) of this paragraph.

(A) Report contents. The peer review report must, at a minimum, contain the following information:

1. Confirmation that the crane or derrick notice application:
 - A. Complies with each of the items listed in subparagraph (v) of this paragraph.
 - B. All design loads and their combinations are adequate and compliant with New York City codes, rules, and regulations for cranes and derricks and specific project conditions.
 - C. The crane and its supporting elements can safely sustain the design loads.
2. In the introduction to the peer review report, the peer reviewer must list his or her qualifications and include a statement that he or she is independent from the crane or derrick notice engineer.
3. All calculations, specific conclusions and results of verification calculations performed by the peer reviewer.
4. A listing of all drawings and reports used in verification (including revision numbers and dates). Where the peer reviewer relied upon reports or data prepared by others, including but not limited reports by specialty consultants (e.g. geotechnical reports), or reports prepared by the crane or derrick manufacturer, the reliance must be disclosed in the peer review report. Such reports or data must be maintained by the peer reviewer for a minimum of six years after the date of project completion, and must be provided to the department upon request.

(B) Conclusions. The peer review report must provide a clear conclusion either:

1. Accepting that the crane or derrick design indicated on the submitted crane or derrick notice application is in general conformance with New York City Codes, rules, and regulations for cranes and derricks; or
 2. Rejecting the design.
- (C) **Positive statements to be unequivocal.** Positive evaluations with conclusions that contain exceptions will not be accepted by the department.
- (D) **Basis of report.** The peer review report must be based on and reference only the set of documents submitted to the department with the crane or derrick notice application; all drawings and the latest revision dates must be clearly enumerated in the peer review report.
- (E) **Changes to be enumerated.** Peer review reports must enumerate the changes, if any, made by the crane or derrick notice engineer as a result of discussions following an initial structural peer review evaluation.
- (F) **Cover statement.** The peer review report must include a cover letter provided by the department and completed by the peer reviewer.
- (G) **Signed and sealed.** The peer review report and cover statement must be signed and sealed by the peer reviewer.
- (viii) **Copy to be provided to equipment user.** The peer reviewer must provide a copy of submitted peer review reports and cover statements to the equipment user.
- (ix) **Phased submission.** If the crane or derrick notice application is to be submitted in phases, the peer review and report must be phased. The crane or derrick notice engineer must provide the peer reviewer with sufficient information to make a peer review of the phased submission. The phased peer review report submission must cover the documents submitted for that phase, and must be without any exclusion that would make the review incomplete.
- (x) **Log of discussions.** The peer reviewer must keep a log of any discussions with the crane or derrick notice engineer. The log must be made available to the commissioner upon request.
- (xi) **Modifications to the design.** Amendments to the crane or derrick notice application that include changes that substantially modify the basis of the peer review evaluation will not be approved by the department until an amended peer review report and cover statement is submitted to the department by the peer reviewer. The report must provide a statement of acceptance that the design indicated in the amended crane or derrick notice application is in general conformance with New York City codes, rules, and regulations for cranes and derricks. It is the responsibility of the crane or derrick notice engineer to clearly identify on the plans the changes that are substantial and to notify the peer reviewer of any such changes.
- (xii) **Disputes.** When a dispute arises between the crane or derrick notice engineer and the peer reviewer regarding compliance with New York City Codes, rules, or regulations for cranes and derricks, and which cannot be resolved by the parties, the dispute must be reported to the department in the form of a letter from the crane or derrick notice engineer.
- (xiii) **Changes in designated peer reviewer.** The peer reviewer cannot be changed without the express consent of the department. The current peer reviewer must submit a written request for withdrawal to the department detailing the reason for the withdrawal request and a report of the peer review findings to date.
- (h) **Crane or derrick log.** For a crane or derrick that requires a certificate of on-site inspection, or that is used under the direct and continuing supervision of a licensed master rigger, the equipment user must maintain, for the

duration of the job, a crane or derrick log. The log may be maintained in an electronic format acceptable to the commissioner. The log must, at a minimum, contain the following information:

- (1) Equipment user custody of the crane or derrick, as evidenced by an entry noting the corporate name of the equipment user and the date and time the equipment user takes or relinquishes custody over the crane or derrick. Such entry must be signed and dated by an authorized representative of the equipment user;
- (2) Records of inspections required by paragraphs (1) and (2) of subdivision (k) of this section. Such records must be signed and dated by the hoisting machine operator who performed the inspection;
- (3) The meeting log for the erection, climbing, jumping, or dismantling of a tower crane required by Section 3319.8.6 of the New York City Building Code;
- (4) The date and time of pre-shift meetings held in accordance with section 3319-02(j) of these rules, along with the names, titles, and company affiliations of those who participated in the meeting; and
- (5) The assembly/disassembly director for the assembly/disassembly operation, as evidenced by an entry noting the name and contact information of the assembly/disassembly director. Such entry must be signed and dated by the assembly/disassembly director. If the assembly/disassembly director changes prior to the completion of the operation, this must be noted in the log, with the name and contact information of the new assembly/disassembly director entered, signed and dated by the new assembly/disassembly director.

(i) **Personnel.**

- (1) **Operators.** Operators of cranes and derricks must be licensed in accordance with Article 405 of Title 28 of the Administrative Code.

Exceptions:

1. Operators exempted by Article 405 of chapter 4 of Title 28 of the Administrative Code.
 2. Operators exempted by Section 3319 of the New York City Building Code.
 3. Learners in the presence of and under the direct supervision of a licensed operator in accordance with section 104-23 of these rules.
 4. Operators of cranes described in exceptions 3 and 4 of Section 3319.3 of the New York City Building Code, provided the crane is used in connection with the installation or maintenance of street lighting or public utility overhead power distribution systems.
 5. Operators of a mobile crane that has a boom length of 135 feet (41.15 m) or less, and that is utilized at the site to exclusively to:
 - 5.1. Install, adjust, maintain, repair, or remove a sidewalk shed; or
 - 5.2. Install or dismantle the initial level of a single or dual cab hoist, provided:
 - 5.2.1. Such installation or dismantling is limited to the hoist cars, counterweights, and initial mast sections needed for the car;
 - 5.2.2. Car or motor components to be hoisted are equipped with lifting lugs; and
 - 5.2.3. No object is hoisted more than 20 feet (6.1 m) above the bed of the delivery truck during such installation or dismantling operation.
 6. Operators of dedicated pile drivers, provided that, beginning January 1, 2019, such operator possesses a valid certification for the operation of the pile driver issued by an organization acceptable to the commissioner and accredited by the National Commission for Certifying Agencies (NCCA) or the American National Standards Institute (ANSI).
 7. On or before January 1, 2022, operators of mobile cranes with telescoping or hydraulic booms, including jibs and any other extensions to the boom, not exceeding 50 feet (15.24 m) in length with a manufacturer's rated capacity of 3 tons (2.72 t) or less, provided:
 - 7.1. The work does not meet the definition of a critical pick as set forth in section 3302.1 of the Building Code;
 - 7.2. The work is not related to steel erection; and
 - 7.3. The operator holds a valid certification for the operation of the crane, acceptable to the commissioner, issued by the manufacturer of the crane for the specific make and model of crane to be operated; or
 - 7.4. The operator holds a valid certification for the operation of a mini crane issued by an organization acceptable to the commissioner and accredited by the National Commission for Certifying Agencies (NCCA) or the American National Standards Institute (ANSI).
- (2) **Rigging supervisor.** Rigging work must be supervised in accordance with Section 3316.9.1 of the New York City Building Code, and where required, riggers must be licensed in accordance with Chapter 4 of Title 28 of the New York City Administrative Code.

- (3) **Rigging crew.** Members of the rigging crew, including signalpersons, must be trained or certified in accordance with Section 3316.9.2 of the New York City Building Code, or must work under the direct and continuing supervision of a licensed rigger.
- (4) **Lift director.** Where a lift director is designated, the lift director will possess the responsibility and authority as indicated in section 3319-02 of these rules.
- (5) **Flagpersons and pedestrian traffic managers.** Flagpersons and pedestrian traffic managers must meet the requirements of the Department of Transportation.
- (6) **Assembly/disassembly director.** No crane or derrick that requires a certificate of on-site inspection may be assembled or disassembled unless an assembly/disassembly director provides continuous, onsite supervision of such assembly/disassembly operation, and ensures compliance with the approved assembly/disassembly plan, and as applicable, relevant rigging plans.
- (i) **Designation and qualifications.** The assembly/disassembly director must be designated by the equipment user and must be a person who meets the criteria for both a competent person and a qualified person, or a competent person who is assisted by one or more qualified persons; where the assembly/disassembly operation is to be supervised by a licensed master or tower crane rigger or a master rigging foreman, such licensee or foreman must be designated as the assembly/disassembly director.
- (ii) **Training and licensing.** Where the assembly/disassembly operation involves the hoisting or lowering of articles, the assembly/disassembly director must either be a licensed master or tower crane rigger, a master rigging foreman, be trained or certified as a rigging supervisor in accordance with Section 3316.9.2 of the New York City Building Code, or have completed the training requirements of Section 3319.10 of the New York City Building Code.
- Exception:** For the erection, jumping, climbing, or dismantling of a tower crane, the assembly/disassembly director must be the licensed master or tower crane rigger who is supervising the erection, jumping, climbing, or dismantling work; such licensed rigger must be trained in accordance with Section 3319.10 of the New York City Building Code.
- (iii) **Review of the assembly/disassembly plan.** The assembly/disassembly director must review the approved assembly/disassembly plan, and as applicable, relevant rigging plans, immediately prior to the commencement of the assembly/disassembly operation. It is the responsibility of the equipment user to verify that the assembly/disassembly director has reviewed the materials, as required above.
- (7) **Assembly/disassembly crew.** Before beginning assembly/disassembly operations for a crane or derrick that requires a certificate of on-site inspection, the assembly/disassembly director must ensure that all members of the assembly/disassembly crew, including signalpersons, understand their tasks and hazards associated with their tasks. Where the assembly/disassembly operation involves the hoisting or lowering of articles, the individuals who attach or detach articles from the hook of hoisting equipment utilized in conjunction with the assembly/disassembly operation, and signalpersons, must either be trained or certified as a rigging crew member in accordance with Section 3316.9.2 of the New York City Building Code, or have completed the training requirements of Section 3319.10 of the New York City Building Code.
- Exception:** Individuals who erect, jump, climb, or dismantle a tower crane must be trained in accordance with Section 3319.10 of the New York City Building Code.
- (8) **Specialty crews.** Notwithstanding the foregoing, specialty crews must comply with the requirements of section 104-20 of these rules.
- (j) **Reserved.**
- (k) **Inspections.** Cranes and derricks must be inspected in accordance with the following.
- (1) **Frequent inspection.** Prior to each shift the hoisting machine operator must perform a frequent inspection.
- (i) **Inspection items.** The frequent inspection must include a check of the following:
- (A) **Mobile cranes and dedicated pile drivers, other than articulating boom cranes.** For mobile cranes and dedicated pile drivers, other than articulating boom cranes:
1. Items (a)-(c), (e) and (g)-(j) of Section 5-2.1.2 of ASME B30.5 (2014 edition);
 2. Safety devices and operational aids for malfunction;
 3. Attachments for damage or deformation. This inspection may be accomplished by observation from the ground without lowering the boom unless deficiencies are suspected;

4. Ground conditions around the equipment for proper support, including ground settling under and around outriggers/stabilizers and supporting foundations, ground water accumulation, or similar conditions;
 5. The equipment for level position within the tolerances specified in the approved crane or derrick notice plans, or, where plans are not required, by the equipment manufacturer's recommendations. This inspection must be performed both before each shift and after each move and setup;
 6. Operator cab windows for significant cracks, breaks, or other deficiencies that would hamper the operator's view;
 7. For a dedicated pile driver, pile driving rig for cracks, damage, deformation, or excessive wear;
 8. For a friction crane, deterioration or leakage in air systems; and
 9. For a friction crane, hoist brakes, clutches, and operating levers for proper functioning.
- (B) Tower cranes, other than a self-erecting tower crane.** For a tower crane, other than a self-erecting tower crane:
1. Items (a) – (h) and (j) – (l) of Section 3-2.1.3 of ASME B30.3 (2016 edition); and
 2. Operator cab windows for significant cracks, breaks, or other deficiencies that would hamper the operator's view.
- (C) Derricks.** For a derrick, items (a) – (e) and (g) – (i) of Section 6-2.1.2 of ASME B30.6 (2015 edition).
- (D) Articulating boom cranes.** For an articulating boom crane:
1. Items (a) – (d) and (f) – (l) of Section 22-2.1.3 of ASME B30.22 (2016 edition); and
 2. Items 3 through 6 in clause (A) above.
- (E) Self-erecting tower cranes.** For a self-erecting tower crane:
1. Items 1-4, 6-7, and 9 of Section 29-2.1.3(b) of ASME B30.29 (2012 edition);
 2. Items 3 through 6 in clause (A) above;
 3. Structural members for damage or deformation. This inspection may be accomplished by observation from the ground without lowering the mast/boom unless deficiencies are suspected; and
 4. Rope reeving for compliance with crane manufacturer's specifications.
- (ii) Record of inspection.** Where the crane or derrick requires a certificate of on-site inspection, at the conclusion of the inspection, the hoisting machine operator must record the results of the inspection in the crane or derrick log required by subdivision (h) of this section. Any deficiencies must be clearly noted.
- (iii) Defects.** Any defects revealed by the inspection must be corrected. Where such defects constitute a safety hazard, the crane or derrick cannot be operated until such defects are corrected.
- (2) Parking/securing inspection.** The hoisting machine operator must perform a parking/securing inspection at the end of the shift, including the end of an assembly/disassembly operation where the crane or derrick will not immediately begin operation, and any other time the crane or derrick is taken out of service and parked or secured, including but not limited to inclement weather.
- Exceptions:**
1. When the crane or derrick is removed from the site.
 2. When the telescopic or articulating boom is fully retracted.
 3. When the self-erecting tower crane has been fully broken down.
- (i) Inspection items.** The inspection must verify that the crane or derrick is in a proper out of service configuration for occurring and forecasted winds and weather conditions, and its controls have been secured.
- (ii) Record of inspection.** Where the crane or derrick requires a certificate of on-site inspection, at the conclusion of the inspection, the hoisting machine operator must record the following information in the crane or derrick log required by subdivision (h) of this section:
- (A)** The out of service configuration in which the crane was left (e.g. boomed up with boom and jib angles specified, boom or boom/jib combination laid down, boom or boom/jib combination jackknifed, or other special protective measures implemented);
- (B)** A reference to the approved wind action plan drawing, or, where such a plan is not required, the page of the manufacturer's manual that specifies the indicated out of service configuration; and

- (C) The maximum wind speed allowed for such configuration as indicated in the approved wind action plan, or, where such a plan is not required, the manufacturer's manual.
- (3) **Periodic inspection.** A periodic inspection of the crane or derrick must be performed at one to twelve month intervals, or as specifically recommended by the manufacturer, depending upon its activity, severity of service, and environment.
- (i) **Inspection items.** At a minimum, the periodic inspection must include a check of all of the items listed for a frequent inspection by paragraph (1) above, and a check for the following:
- (A) Deformed, cracked or corroded members in the crane or derrick structure and boom.
 - (B) Loose bolts or rivets.
 - (C) Cracked or worn sheaves and drums.
 - (D) Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers and locking devices.
 - (E) Excessive wear on brake and clutch system parts, linings, pawls and ratchets.
 - (F) Load, boom angle and other indicators over their full range, for any significant inaccuracies.
 - (G) Gasoline, diesel, electric or other power plants for improper performance or non-compliance with safety requirements.
 - (H) Excessive wear of chain drive sprockets and excessive chain stretch.
 - (I) Crane or derrick hooks. Magnetic particle or other suitable crack detecting inspection should be performed at least once each year by an approved inspection agency retained by the owner. Certified inspection reports are to be made available to the department upon request.
 - (J) Travel steering, braking and locking devices, for malfunction.
 - (K) Excessively worn or damaged tires.
 - (L) Derrick gudgeon pin for cracks, wear and distortion each time the derrick is to be erected.
 - (M) Foundation or supports must be inspected for continued ability to sustain the imposed loads.
- (ii) **Defects.** Any defects revealed by inspection must be corrected. Where such defects constitute a safety hazard the crane or derrick must not be operated until such defects are corrected.
- (4) **Cranes and derricks not in regular use.**
- (i) Where a crane or derrick has been idle for one month or more, but less than six months, the equipment owner must perform an inspection that meets the requirements of paragraph (1) of this subdivision and subparagraph (i) of paragraph (1) of subdivision (m) of this section (a "frequent inspection" for the crane or derrick and for the ropes) before submitting an application for a certificate of on-site inspection in accordance with Section 3319.6 of the New York City Building Code.
- (ii) Where a crane or derrick has been idle for six months or longer, the equipment owner must perform an inspection that meets the requirements of paragraph (3) of this subdivision and subparagraph (ii) of paragraph (1) of subdivision (m) of this section (a "periodic inspection" for the crane or derrick and for the ropes) before submitting an application for a certificate of on-site inspection in accordance with Section 3319.6 of the New York City Building Code.
- (5) **Inspections for a certificate of on-site inspection.** See paragraph (8) of subdivision (g) of this section.
- (6) **Special inspections.** Special inspections for cranes and derricks, as well as special inspectors and special inspection agencies must meet the requirements of Chapter 1 of Title 28 of the Administrative Code, Chapter 17 of the New York City Building Code, and any rules thereunder promulgated by the commissioner.
- (i) **Special inspection required.** The following special inspections are required for cranes and derricks:
- (A) **Inspection of fabricated steel.** Fabricated steel, including welds made at the fabricators facility, must be in accordance with Section 1704.2 of the New York City Building Code.
 - Exceptions:**
 1. Steel fabricated by the manufacturer of the crane or derrick, or an entity authorized by the manufacturer.
 2. Fabricated steel for which the shop drawings for the steel are signed, sealed, and stamped as reviewed by the crane or derrick notice engineer, and such shop drawings are kept at the site and made available to the commissioner upon request.
 - (B) **Tower crane foundations.** Foundations for a tower crane are subject to the following types of special inspection, as applicable:
 1. Steel welding of field welds;
 2. Structural steel high strength bolts, except for those provided or authorized by the crane manufacturer;
 3. Concrete construction;
 4. Subsurface conditions; and

5. Deep foundations.
 - (C) **Modifications to the base building or structure, other structural elements, or to adjacent retaining walls, excavations, or foundations.** Modifications to the base building or structure, other structural elements, or to adjacent retaining walls, excavations, or foundations, including but not limited to reinforcing provided to sustain tie-in connection loads, are subject to the following types of special inspection, as applicable:
 1. Steel welding of field welds;
 2. Structural steel high strength bolts;
 3. Concrete construction;
 4. Subsurface conditions;
 5. Deep foundations; and
 6. Excavations.
 - (D) **Platforms, dunnage, or ramps.** Platforms, dunnage, or ramps that support a crane or derrick, and connections between such platform, dunnage, or ramp and the base building or structure are subject to the following types of special inspection, as applicable:
 1. Steel welding of field welds;
 2. Structural steel high strength bolts; and
 3. Concrete construction.
 - (ii) **Concrete placement less than 50 cubic yards.** Concrete special inspections are required even if the total concrete placement on the given project is less than 50 cubic yards (38 m³).
 - (iii) **Permanent elements.** Special inspection of items listed in subparagraph (i) above and that will remain as permanent construction with the base building or structure, including but not limited to tower crane foundations and rebar embedded in floors, must be performed by the special inspector for the base building or structure.
 - (iv) **Providing copies of records to the crane or derrick notice engineer.** The special inspector must provide all documentation relating to the special inspection, including but not limited to documentation of the inspection results, to the crane or derrick notice engineer upon request by such engineer.
- (I) **Maintenance of Cranes and Derricks.**
- (1) **Preventive maintenance.**
 - (i) A preventive maintenance program based on the crane or derrick manufacturer's recommendations shall be established. Dated and detailed records shall be readily available to the department.
 - (ii) It is recommended that replacement parts be obtained from the original equipment manufacturer.
 - (2) **Maintenance procedure.**
 - (i) Before adjustments and repairs are started on a crane or derrick, the following precautions shall be taken as applicable:
 - (A) Crane or derrick placed or arranged where it will cause the least interference with other equipment or operations in the area.
 - (B) All controls at the "off" positions.
 - (C) Starting means rendered inoperative.
 - (D) Warning or "out of order" signs placed on the crane or derrick and hoist.
 - (E) Power plant stopped or disconnected at take-off.
 - (F) Boom lowered to the ground if possible or otherwise secured against dropping.
 - (G) Lower load block lowered to the ground or otherwise secured against dropping.
 - (ii) After adjustment and repairs have been made, the crane or derrick shall not be operated until all guards have been reinstalled, safety devices reactivated and maintenance equipment removed.
 - (3) **Adjustments and Repairs.**
 - (i) Any unsafe conditions disclosed by the inspection requirements of subdivision (k) of this section shall be corrected before operation of the crane or derrick is resumed. Adjustments and repairs shall be done only by a competent person.
 - (ii) Adjustments shall be maintained to assure correct functioning of components. The following are examples:
 - (A) All functional operating mechanisms.
 - (B) Safety devices.
 - (C) Control systems.
 - (D) Power plants.

- (E) Tie downs or anchorages.
- (F) Signal system.
- (G) Guys.
- (iii) Repairs or replacements shall be provided promptly as needed for safe operation. The following are examples:
 - (A) All critical parts of functional operating mechanisms which are cracked, broken, corroded, bent or excessively worn.
 - (B) All critical parts of the crane or derrick structure which are cracked, bent, broken or excessively corroded.
 - (C) Crane or derrick hooks showing defects described in 15.3.5 shall be discarded. Repairs by welding or reshaping are not acceptable unless written approval of the department is obtained.
 - (D) Pitted or burned electrical contacts should be corrected only by replacement and in sets. Controller parts should be lubricated as recommended by the manufacturer.
- (iv) All replacement parts or repairs shall have at least the original safety factor and be in accordance with the specifications of the manufacturer. Approval of the department shall be required for the replacement or repair of main structural members as listed below, for which no fee will be required:
 - (A) Boom or mast;
 - (B) Jib or extensions;
 - (C) Gantries;
 - (D) Counterweight supports and attachments;
 - (E) Rope; and
 - (F) Overturning stability.

Exception: Only clauses (A), (B) and (E) above apply to derricks.

(4) Lubrication of Cranes and Derricks.

- (i) All moving parts of the crane or derrick and hoist for which lubrication is specified, including rope and chain, shall be regularly lubricated. Lubricating systems shall be checked for proper delivery of lubricant. Particular care should be taken to follow manufacturer's recommendations as to point and frequency of lubrication, maintenance of lubricant levels and types of lubricants to be used. Lubrication shall be performed under the supervision of the crane operator, oiler or maintenance engineer.
- (ii) Machinery shall be stationary while lubricants are being applied and protection provided as called for in clauses (B) through (E) of subparagraph (i) of paragraph (2) of subdivision (1) of this section inclusive, unless such machinery is equipped for automatic lubrication.

(m) Rope Inspection, Replacement and Maintenance by Owner for Cranes and Derricks.

(1) Rope Inspection.

(i) Frequent Inspection.

- (A) All ropes in continuous service shall be visually inspected once every working day. A visual inspection shall consist of observation of all rope that can reasonably be expected to be in use during the day's operation. This visual inspection shall be directed towards discovering gross damage that may be an immediate hazard, including the following:
 1. Distortion of the rope such as kinking, crushing, unstranding, birdcaging, main strand displacement, or core protrusion. Loss of rope diameter in a short rope length or unevenness of outer strands should provide evidence that the rope or ropes must be replaced.
 2. General corrosion
 3. Broken or cut strands
 4. Number, distribution and type of visible broken wires (See subparagraph (ii) of paragraph (2) of subdivision (m) of this section for further guidance)
 5. Core failure in rotation-resistant ropes. When such damage is discovered, the rope shall be either removed from service or given an inspection as detailed in subparagraph (ii) of paragraph (1) of subdivision (m) of this section.
- (B) Care shall be taken when inspecting sections of rapid deterioration such as flange points, crossover points, and repetitive pickup points.
- (C) Care shall be taken when inspecting the following types of rope:
 1. Rotation-resistant rope.
 2. Boom hoist rope.

(ii) Periodic Inspection.

- (A) There shall be periodic inspections performed at least annually. The inspection frequency shall be determined by a qualified person and shall be based on such factors as expected rope life as determined by experience on the particular installation or similar installations, severity of the environment, percentage of capacity lifts, frequency rates of operation, and exposure to shock loads. Inspections need not be at equal calendar intervals and should be more frequent as the rope approaches the end of its useful life.
- (B) In the event a periodic inspection is not feasible within a 12-month period due to existing set-up and configuration of the equipment or due to site conditions, such periodic inspection shall be performed as soon as it becomes feasible but no longer than an additional 6 months for running ropes and, for standing ropes, at the time of disassembly. Written notification and approval of the commissioner must be obtained prior to extending the use of the rope beyond the 12-month inspection period.
- (C) Periodic inspections shall be performed by a qualified person. This inspection shall cover the entire length of rope. Only the surface wires of the rope shall be inspected. Any deterioration resulting in an appreciable loss of original strength shall be noted and determination made as to whether further use of the rope would constitute a hazard. The periodic inspection shall include examination of the following:
 1. Points listed in clause (A) of subparagraph (i) of paragraph (1) of subdivision (m) of this section.
 2. Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.
 3. Severely corroded or broken wires at end connections.
 4. Severely corroded, cracked bent, worn or improperly applied end connections.
- (D) Care shall be taken when inspecting sections of rapid deterioration, such as the following:
 1. Sections in contact with saddles, equalizer sheaves, or other sheaves where rope travel is limited.
 2. Sections of the rope at or near terminal ends where corroded or broken wires may protrude.
- (E) All rope that has been idle for a period of six months or more shall be given a periodic inspection before it is placed into service.

(2) Rope Replacement.

- (i) When a rope reaches any one of the specified removal criteria, it may be allowed to operate to the end of the work shift, based on the judgement of a qualified person. The rope shall be replaced after that work shift, at the end of the day, or at the latest time prior to the equipment being used by the next work shift.
- (ii) Removal criteria for rope replacement shall meet manufacturer's specification or as follows:
 - (A) **Broken Wires:**
 1. In running ropes, six randomly distributed broken wires in one lay or three broken wires in one strand in one lay.
 2. In rotation-resistant ropes, two randomly distributed broken wires in six diameters or four randomly distributed broken wires in 30 rope diameters.
 3. One outer wire broken at the point of contact with the core rope that has worked its way out of the rope structure and protrudes or loops out from the rope structure. Additional inspection of this section is required.
 4. Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure.
 5. Evidence of heat damage from any cause.
 6. Reductions from nominal diameter of more than the following:
 - A. 1/64 in. for diameters up to and including 5/16 in.
 - B. 1/32 in. for diameters up to and including 1/2 in.
 - C. 3/64 in. for diameters up to and including 3/4 in.
 - D. 1/16 in. for diameters up to and including 1 1/8 in.
 - E. 3/32 in. for diameters up to and including 1 1/2 in.
 7. In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

- (iii) Replacement rope shall have strength rating at least as great as the original rope furnished or recommended by the crane manufacturer. Any deviation from the original size, grade, or construction shall be specified by the rope manufacturer, the crane manufacturer, or a qualified person.
 - (iv) Discarded rope shall not be used for slings.
- (3) Rope Maintenance.**
- (i) Rope shall be stored to prevent damage or deterioration.
 - (ii) Unreeling or uncoiling of rope shall be done as recommended by the rope manufacturer and with extreme care to avoid kinking or inducing a twist.
 - (iii) Before cutting a rope, seizings shall be placed on each side of the place where the rope is to be cut to prevent unlaying of the strands. On preformed rope, one seizing on each side of the cut is required. On non-preformed ropes of 7/8 inch diameter or smaller, two seizings on each side of the cut are required, and for non-preformed rope of one inch diameter or larger, three seizings on each side of the cut are required.
 - (iv) During installation care shall be observed to avoid dragging of the rope in dirt or around objects which will scrape, nick, crush, or induce sharp bends in it.
 - (v) Rope should be maintained in a well lubricated condition. It is important that lubricant applied as part of a maintenance program shall be compatible with the original lubricant and to this end the rope manufacturer should be consulted. Those sections of rope which are located over sheaves or otherwise hidden during inspection and maintenance procedures require special attention when lubricating rope. The object of rope lubrication is to reduce internal friction and to prevent corrosion. Periodic field lubrication is particularly important for non-rotating rope.
- (n) Safety Devices Required.** All cranes and derricks shall be equipped with safety devices as provided herein, except equipment used exclusively for pile driving, clamshell and dragline used for excavation. The commissioner shall approve these safety devices.
- (1) Indicators or Limiters.** All mobile cranes with a maximum rated capacity of 3 tons or more shall be equipped with a load indicator, load moment indicator, or a load moment limiter.
- (i) Cranes with a total boom length including jibs and any other extensions not exceeding 150 feet shall be exempt.
 - (ii) Cranes manufactured before December 30, 1993 shall be exempt. The margin of stability for determination of load ratings of these cranes shall be established at 75 percent of the load, which will produce a condition of tipping or balance with the boom in the least stable direction relative to the mounting where overturning stability governs the lifting performance.
 - (iii) Cranes shall have a radius or boom angle indicator provided in conjunction with a load indicator.
- (2) Anti-Two Blocking Features.** All mobile cranes with a maximum rated capacity exceeding one ton manufactured after February 28, 1992, shall be equipped with anti-two-blocking features as follows:
- (i) Telescopic Boom Cranes shall have an anti-two-block device for all points of two-blocking that automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom and/or jib tip.
 - (ii) Lattice Boom Cranes shall have an anti-two-block device for all points of two-blocking that either automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom and/or jib tip or warns the operator in time for the operator to prevent two-blocking.
- (3) Additional Safety Devices Required.** All mobile cranes with a maximum rated capacity exceeding one ton shall be equipped with the following additional safety devices:
- (i) A deadman control on the control levers in the cab or crane operator's station, where the crane is electrically powered.
 - (ii) An effective audible warning and operating signal on the outside of the cab.
 - (iii) Boom stops and boom hoist safety shutoffs. However, boom stops shall not be required for telescopic booms.
 - (iv) An indicator for leveling the crane.
 - (v) Hoist drum rotation indicator if the drum is not visible from the operator's station.
- (4) Malfunctioning Safety Devices.** The load indicator, load moment indicator, load moment limiter, hoist drum rotation indicator, and the anti-two blocking devices shall also be known as operational aids, which provide information to facilitate the operation of a crane or that take control of particular functions without action of

the operator when a limiting condition is sensed. When any of these operational aids are inoperative or malfunctioning, the following alternative measures shall be implemented to allow continued use of the crane:

- (i) Load indicator, load moment indicator, or load moment limiter: The weight of the load shall be determined from a reliable source (such as the manufacturer's equipment specification), by a reliable calculation method (such as calculating a steel beam from measured dimensions and a known per foot weight) or by other equally reliable means before the load is hoisted. To ensure that the weight of the load does not exceed the crane ratings at the maximum radius at which the load is to be handled, the radius shall be determined through the use of a boom angle indicator, radius indicator or by measurement.
 - (ii) Hoist drum rotation indicator: Mirrors and/or remote video cameras and displays shall be provided so that the operator can see the drum.
 - (iii) Anti-two-block device: The cable shall be clearly marked (so that it can easily be seen by the operator) at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking or an additional signal person shall be utilized to monitor the position of the load block or overhaul ball.
 - (iv) Recalibration or repair of the safety device shall be accomplished as soon as is reasonably possible, as determined by a qualified person.
- (5) **Tower Cranes and Climber Cranes.** All tower cranes and climber cranes excluding truck-mounted tower cranes shall have the following:
- (i) Warning light activated at 100% allowable overturning moment,
 - (ii) Acoustic signal sounding at 105% allowable overturning moment,
 - (iii) Automatic stop if 110% allowable overturning moment is reached,
 - (iv) Automatic stop if load exceeds maximum rated load in high gear,
 - (v) Automatic stop if load exceeds maximum rated load in intermediate gear,
 - (vi) Automatic stop if load exceeds maximum rated load in low gear,
 - (vii) Pre-deceleration before top position of the hook,
 - (viii) Limit switch for top position of the hook,
 - (ix) Pre-deceleration before low position of the hook,
 - (x) Limit switch for the trolley traveling out,
 - (xi) Limit switch for the trolley traveling in,
 - (xii) Acceleration limit on the hoisting movement,
 - (xiii) Acceleration limit on the swing movement,
 - (xiv) Acceleration limit on the trolley movement, and
 - (xv) Deadman control on both control levers in box.
- (6) **Derricks.** Safety devices for derricks shall be approved by the commissioner and shall be installed within six months after said devices are accepted. However, where electrically powered, a deadman control on control levers shall be installed prior to applying for a certificate of operation pursuant to Section 3319.5 of the New York City Building Code.

(o) **Characteristics and Special Requirements for Derricks.**

(1) **Rated load marking.**

- (i) For derricks, a substantial, durable and clearly legible load rating chart shall be provided for each particular installation. The rating chart shall be securely affixed where it is visible to personnel responsible for the operation of, the equipment. The chart shall include but not be limited to the following data:
 - (A) Manufacturer's load ratings as approved by the department at corresponding ranges of boom angle or operating radii.
 - (B) Specific lengths of components on which the load ratings are based.
 - (C) Required parts for hoist reeving.
 - (D) Size and construction of all ropes shall be shown either on the rating chart or in the operating manual.
- (ii) For all other derricks, the manufacturer shall provide sufficient information from which capacity charts can be prepared and approved by the department for the particular installation. The capacity charts shall be located either at the derrick or the job site office.

(2) **Construction.**

- (i) **General.** Derricks shall be constructed to adequately meet all stresses imposed on all members and components.

- (ii) Guy derricks.**

 - (A)** The minimum number of guys is six. Preferably, the guys should be equally spaced around the mast.
 - (B)** The manufacturer shall furnish complete information recommending:

 - 1. The number of guys;
 - 2. The spacing around the mast;
 - 3. The maximum vertical slope and initial tension or sag of all guys;
 - 4. The size and construction of rope to be used in each.
 - (C)** The mast base shall permit free rotation of the mast with allowance for slight tilting of the mast caused by guy slack.
 - (D)** The mast cap shall:

 - 1. Permit free rotation of the mast;
 - 2. Adequately withstand tilting and cramping action imposed by the guy loads;
 - 3. Be secured to the mast to prevent disengagement during erection; and
 - 4. Be provided with means for attachment of guy ropes.
- (iii) Stiff leg derrick.**

 - (A)** The mast shall be supported in the vertical position by two stiff legs one end of each being connected to the top of the mast and the other end securely anchored. The stiff legs shall be capable of withstanding the loads imposed by the boom at any point within its range of swing.
 - (B)** The mast base shall:

 - 1. Permit free rotation of mast;
 - 2. Permit slight inclination of the mast without binding; and
 - 3. Provide means to prevent the mast from lifting out of its socket when the mast is in tension.
 - (C)** The stiff leg connecting member at the top of the mast shall:

 - 1. Permit free rotation of the mast;
 - 2. Adequately withstand the loads imposed by the action of the stiff legs; and
 - 3. Be so secured as to oppose lift off forces at all times.
- (3) Ropes and reeving accessories.**

 - (i) Guy ropes.**

 - (A)** Guy ropes shall be of suitable size, grade and construction to withstand the maximum load imposed.
 - (B)** The nominal breaking strength of each rope shall be no less than three times the load applied to the rope.
 - (C)** Tie downs or kicker devices which may be easily loosened shall have locknuts or other suitable provision to prevent loosening.
 - (ii) Boom hoist ropes.**

 - (A)** Boom hoist ropes shall be of suitable size, grade and construction to withstand the maximum load imposed.
 - (B)** The live rope reeving system in a boom suspension shall withstand the maximum load imposed and be of sufficient length to permit lowering the boom point to horizontal position with at least three full wraps of rope remaining on the hoist drum.
 - (C)** The nominal breaking strength of the most heavily loaded rope in a system shall be no less than three and a half times the loads applied to that rope.
 - (iii) Main hoist ropes.**

 - (A)** Main hoist ropes shall be of a suitable size and construction to withstand the maximum load imposed.
 - (B)** Ropes in the main hoisting system shall be of sufficient length for the entire range of movement specified for the application with at least three full wraps of rope on the hoist drum at all times.
 - (C)** The nominal breaking strength of the most heavily loaded rope in a system shall be no less than three and a half times the load applied to that rope.
 - (iv) Reeving accessories.**

 - (A)** Socketing shall be done in the manner specified by the manufacturer of the assembly.
 - (B)** Rope end shall be anchored securely to the drum.
 - (C)** Eyes shall be made in an approved manner and rope thimbles should be used in the eye.
 - (D)** U-bolt clips shall have the U-bolt on the dead or short end, and the saddle on the live or long end of the rope. Spacing and number of all types of clips shall be in accordance with the clip

manufacturer's recommendation and submitted to the department. Clips shall be drop-forged steel in all sizes manufactured commercially. When a newly installed rope has been in operation for an hour, all nuts on the clip bolts shall be retightened, and they should be checked for tightness at frequent intervals thereafter.

(E) Swaged, compressed, or wedge-socket fittings shall be applied as recommended by the rope, derrick, or fitting manufacturer.

(F) Where a half wedge socket is used it shall be of a positive locking type.

(G) If a load is supported by more than one rope, the tension in the parts shall be equalized.

(v) **Sheaves.**

(A) Sheave grooves shall be smooth and free from surface defects which could cause rope damage. The cross sectional radius at the bottom of the groove should be such as to form a close fitting saddle for the size rope used and the sides of the groove should be tapered outwardly to facilitate entrance of the rope into the groove. Flange corners should be rounded and the rims should run true about the axis of rotation.

(B) Sheaves carrying ropes which can be momentarily unloaded shall be provided with close fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again.

(C) The sheaves in the lower load block shall be equipped with close-fitting guards that will prevent ropes from becoming fouled when the block is lying on the ground with ropes loose.

(D) Means should be provided, if necessary, to prevent chafing of the ropes.

(E) All running sheaves shall be equipped with means for lubrication. Permanently lubricated, sealed and/or shielded bearings shall be acceptable.

(F) Boom and hoisting sheaves shall have pitch diameters not less than eighteen times the nominal diameter of the rope used.

(G) Boom point sheaves should be provided with suitable guides to limit the offlead angle of the rope when entering the grooves from either side.

(4) **Anchoring and guying.**

(i) **Guy derricks.**

(A) The mast base shall be securely anchored. Maximum horizontal and downward vertical thrusts encountered when handling rated loads with the particular guy slope and spacing stipulated for the application are among the design factors for which provision must be made.

(B) The guys shall be secured to the ground or other firm anchorage. Maximum horizontal and vertical pulls encountered while handling rated loads with the particular guy slope and spacing stipulated for the application are among the factors for which provision must be made.

(ii) **Stiff leg derricks.**

(A) The mast base shall be securely anchored. Maximum horizontal and upward and downward vertical thrusts encountered while handling rated loads stipulated for the application with the particular stiff-leg spacing and slope are among the factors for which provision must be made.

(B) The stiff legs shall be securely anchored. Maximum horizontal and vertical upward and downward thrusts encountered while handling rated loads with the particular stiff-leg arrangement stipulated for the application are among the factors for which provision must be made.

(5) **Hoist.** The hoist shall be suitable for the derrick work intended and shall be securely anchored to prevent displacement from the imposed loads.

(p) **Operation of Cranes and Derricks.**

(1) **Operators.**

(i) Cranes and derricks shall be operated only by the following persons:

(A) Persons licensed as operators by the department of buildings in accordance with Section 28-405 of the Administrative Code of the City of New York.

(B) Learners in the presence of and under the direct supervision of a licensed operator.

(ii) No person other than those listed under subparagraph (i) of paragraph (1) of subdivision (p) of this section and persons such as oilers and supervisors, whose duties require them to do so, shall enter the cab of a crane and then only in the performance of his duties and with knowledge and consent of the operator.

(2) **Operating practices.**

- (i) The operator shall not engage in any practice which will divert his attention while actually engaged in operating the crane or derrick hoist.
 - (ii) The operator shall respond to signals only from the appointed signal men.
 - (iii) The operator shall be responsible for the operation of the crane or derrick hoist.
 - (iv) For mobile cranes, the warning signal shall be sounded each time before on-site traveling and intermittently during such travel, particularly when approaching workmen.
 - (v) Before leaving his crane or derrick unattended, the operator shall:
 - (A) Land any attached load, bucket, lifting magnet, or other device.
 - (B) Disengage clutches.
 - (C) Set travel, swing, boom brakes and other locking devices.
 - (D) Put controls in the "off" position.
 - (E) Stop the engine.
 - (F) Secure mobile cranes against accidental travel.
 - (G) Lock and secure the equipment against unauthorized operation.
 - (vi) On leaving a mobile crane overnight, ground chocks shall be set and crane booms shall be lowered to ground level or otherwise fastened securely against displacement by wind loads or other external forces.
 - (vii) If there is a warning sign on the switch or engine starting controls, the operator shall not close the switch or start engine until the warning sign has been removed by the person placing it there.
 - (viii) Before closing the switch, or starting the engine, the operator shall see to it that all controls are in the "off" position and all personnel are in the clear.
 - (ix) If power fails during operation, the operator shall:
 - (A) Set all brakes and locking devices.
 - (B) Move all clutch or other power controls to the "off" position.
 - (C) Communicate with the appointed individual in charge of operations.
 - (D) If practical, the suspended load should be landed under brake control.
 - (x) The operator shall familiarize himself with the equipment and its proper care. If adjustments or repairs are necessary, or any defects are known he shall report the same promptly to his employer or other person responsible for the equipment and shall also notify the next operator of the defects upon changing shifts.
 - (xi) All controls shall be tested by the operator at the start of a new shift. If any controls do not operate properly, they shall be adjusted or repaired before operations are begun.
 - (xii) Booms of mobile cranes which are being assembled or disassembled on the ground with or without support of the boom harness (equalizing sheaves, bridal and boom pendants) should be securely supported by proper blocking to prevent dropping of the boom sections.
- (3) **Load rating chart for tower and climber cranes.** A substantial, durable and clearly legible rating chart must be provided with each tower and climber crane and securely affixed in the cab. The chart must include load ratings approved by the department for specific lengths of components, counterweights, swing, and radii.

(q) Handling the Load. No crane or derrick shall be loaded beyond the rated load.

- (1) **Size of load.** On all operations involving cranes or derricks which are not equipped with those safety devices which make use of load measuring systems, there shall be a competent appointed individual assigned on a full-time basis to be responsible for determining the magnitude of loads to be lifted or lowered. The operator shall not make a lift unless he has first determined the weight of the load or is informed of such weight by the appointed person responsible for the operation.
- (2) **Attaching the load.**
 - (i) The hoist rope shall not be wrapped around the load.
 - (ii) The load shall be attached to the hook by means of slings or other approved devices.
- (3) **Moving the load.**
 - (i) The appointed individual directing the lift shall see that:
 - (A) In the case of a mobile crane, the crane is level and where necessary, chocked properly.
 - (B) The load is well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.
 - (ii) Before starting to hoist, he shall take care that:
 - (A) Hoist ropes are not kinked.
 - (B) Multiple part lines are not twisted around each other.
 - (C) The hook is brought over the load in such a manner as to prevent swinging.

- (D) If there is a slack rope condition, the rope is properly seated on the drum and in the sheaves.
- (iii) During hoisting, care should be taken that:
 - (A) There is no sudden acceleration or deceleration of the moving load.
 - (B) The load does not contact any obstructions.
- (iv) Side loading of booms shall be limited to freely suspended loads. Cranes shall not be used for dragging loads sideways. Derricks shall not be used for side loading.
- (v) The operator shall not lift, lower, swing or travel while any person is on the load or hook unless notification is filed with the Department pursuant to paragraph (6) of subdivision (q) of this section. The operator shall not carry loads over people or over any occupied building unless the top two floors are vacated or overhead protection with a design live load of 300 psf is provided.
- (vi) On truck cranes, loads shall be lifted over the front area only as recommended by the manufacturer and submitted to the department of buildings.
- (vii) The operator shall test the brakes each time a load approaching the rated load is handled by raising it a few inches and applying the brakes.
- (viii) For mobile cranes, outriggers shall be used when the load to be handled at that particular radius exceeds the rated load without outriggers as given by the manufacturer for that crane and approved by the department of buildings.
- (ix) Neither the load nor the boom shall be lowered below the point where less than three full wraps of rope remain on their respective drums.
- (x) When two or more cranes are used to lift one load, one appointed person shall be responsible for the operation. He shall analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.
- (xi) In transit, the following additional precautions for mobile cranes shall be exercised:
 - (A) The boom shall be carried in line with the direction of motion.
 - (B) The superstructure shall be secured against rotation. When negotiating turns or when the boom is supported on a dolly, the superstructure may be rotated by a licensed crane operator only.
 - (C) The empty hook shall be lashed or otherwise restrained so that it cannot swing freely.
- (xii) Before traveling a crane with a load, proposed travel should be shown on a plan of operation and approved by the department. Such data shall be filed with an application for on-site inspection.
- (xiii) A crane shall not be traveled with the boom so high that it may bounce back over the cab.
- (xiv) When rotating the crane or derrick, sudden stops shall not be made. Rotational speed shall be such that the load does not swing out beyond the radii at which it can be controlled. A tag or restraint line shall be used when rotation of the load is hazardous.
- (xv) When a crane is to be operated at a fixed radius, the boom hoist pawl or other positive locking device shall be engaged.
- (xvi) Use of winch heads:
 - (A) Ropes shall not be handled on a winch head without knowledge of the operator.
 - (B) While a winch is being used, the operator shall be within convenient reach of the power unit control lever.
- (4) Holding the load.**
 - (i) The operator shall not leave his position at the controls while the load is suspended.
 - (ii) People shall not be permitted to stand or pass under a load.
 - (iii) If the load must remain suspended for any considerable length of time, the operator shall hold the drum from rotating in the lowering direction by activating the positive controllable means at the operator's station.
 - (iv) In all cases, when booms are raised or lowered from the horizontal, load blocks including hooks and weight balls shall be left on the ground or deposited to the ground before raising or lowering booms.
- (5) Securing derrick booms.**
 - (i) Dogs, pawls, or other positive braking mechanism on the hoist shall be engaged. When not in use, the derrick boom shall:
 - (A) Be laid down;
 - (B) Be secured to a stationary member, as nearly under the head as possible, by attachment of a sling to the load block; or
 - (C) Hoisted to a vertical position and secured to the mast.

- (6) **Hoisting Personnel.** Written notification shall be submitted to the commissioner at least three (3) business days prior to the date the hoisting equipment may be used to move personnel. In addition to the requirements of this section, the applicant shall also comply with all applicable OSHA requirements.
- (i) The applicant shall be an engineer or a licensed master rigger. However, where the boom length, including jibs and any other extensions, is greater than 250 ft, the applicant shall be an engineer.
 - (ii) The notification shall include the following:
 - (A) A description of work,
 - (B) The start date and duration of the work,
 - (C) Manufacturer's information on the personnel platform used to perform the work,
 - (D) The number of people who will be on the platform,
 - (E) The actual pick load and the maximum radius of the pick,
 - (F) The allowable pick load for maximum radius from load chart approved by the commissioner,
 - (G) Description of how the person/people on the platform and the hoisting machine operator will communicate,
 - (H) Designation of Site Safety coordinator,
 - (I) Equipment user's company name, and address, and
 - (J) The name and title of principal from the equipment user company.
 - (iii) Where the applicant is an engineer, the request shall also include a copy of the Certificate of On-Site Inspection.
 - (iv) Where the applicant is a master rigger, the request shall also include:
 - (A) The make, model number and Certificate of Operation of the Hoisting Machine.
 - (B) A sketch or description of the foundation for the hoisting machine.
 - (v) Exception: If the boom length, including jibs and any other extensions, is less than 100 ft. and the lift is supervised by a master rigger, written notification is not required.
- (r) **Signals.**
- (1) **Requirements.** Signals must comply with the following:
 - (i) **Mobile cranes, other than an articulating boom crane, and dedicated pile drivers.** For a mobile crane, other than an articulating boom crane, and for dedicated pile drivers, ASME B30.5 (2014 edition) Section 5-3.3, except for sections 5-3.3.3 and 5-3.3.7.
 - (ii) **Tower cranes, other than a self-erecting tower crane.** For a tower crane, other than a self-erecting tower crane, ASME B30.3 (2016 edition) Section 3-3.3, except for section 3-3.3.3;
 - (iii) **Derricks.** For a derrick, ASME B30.6 (2015 edition) Section 6-3.4;
 - (iv) **Articulating boom crane.** For an articulating boom crane, ASME B30.22 (2016 edition) Section 22-3.3, except for section 22-3.3.3.
 - (v) **Self-erecting tower crane.** For a self-erecting tower crane, ASME B30.29 (2012 edition) Section 29-3.2, except for section 29-3.2.3.
 - (2) **Qualifications.** All signalpersons must complete the training or certification required by Section 3316.9.2 of the New York City Building Code, or, where working under the direct and continuing supervision of a licensed rigger or sign hanger, have been deemed by the licensee to be knowledgeable as to the operations to be undertaken and the signals to be utilized.
- (s) **Miscellaneous.**
- (1) **Ballast or counterweight.** No crane may be assembled, operated, or disassembled without the amount and position of counterweight and/or ballast in place as specified by the approved crane or derrick notice plans, or the approved assembly/disassembly plan, or, where such plans are not required, by the specifications of the crane or derrick manufacturer.
 - (A) **Labeling or stenciling of removable counterweight modules.** Where counterweight modules can be removed, each counterweight module must be labeled or stenciled in a format acceptable to the commissioner to indicate the weight of the module. The label or stencil must be visible when the module is in its assembled state.
 - (B) **Certified weight for removable counterweight modules.** A certified weight for each removable counterweight module must be provided to the department upon request. The certified weight must be determined by the manufacturer, an entity authorized by the manufacturer, or an entity acceptable to the commissioner.
 - Exception:** Removable counterweight modules provided by the crane manufacturer, or a manufacturer authorized service center, distributor, or service provider.

(C) Enclosing concrete counterweights. Concrete counterweights must be enclosed to protect against damage and spalling.

(2) Reserved.

(3) Operating near electric power lines. Operations near overhead power lines, including during assembly or disassembly, must be in accordance with the following.

(i) Power line safety (up to 350 kV) – assembly and disassembly.

(A) Options. Before assembling or disassembling equipment, the equipment user must determine if any part of the equipment, load line, or load (including rigging and lifting accessories) could get, in the direction or area of assembly/disassembly, closer than 20 feet (6.1 m) to a power line during the assembly/disassembly process. If so, the equipment user must meet the requirements in Option (1), Option (2), or Option (3), as follows:

1. Option (1) – Deenergize and ground. Confirm from the utility owner/operator that the power line has been deenergized and visibly grounded at the site.

2. Option (2) – 20 foot clearance. Ensure that no part of the equipment, load line or load (including rigging and lifting accessories), gets closer than 20 feet (6.1 m) to the power line by implementing the measures specified in clause (B) below.

3. Option (3) – Table A clearance.

3.1 Determine the line's voltage and the minimum clearance distance permitted under Table A of this paragraph; and

3.2 Determine if any part of the equipment, load line, or load (including rigging and lifting accessories), could get closer than the minimum clearance distance to the power line permitted under Table A of this paragraph. If so, then the equipment user must follow the requirements in clause (B) below to ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer to the line than the minimum clearance distance.

(B) Preventing encroachment/electrocution. Where encroachment precautions are required under Option (2), or Option (3) of this subparagraph, all of the following requirements must be met:

1. Conduct a planning meeting with the assembly/disassembly director, hoisting machine operator, assembly/disassembly crew and the other workers who will be in the assembly/disassembly area to review the location of the power line(s) and the steps that will be implemented to prevent encroachment/electrocution.

2. If tag lines are used, they must be nonconductive.

3. At least one of the following additional measures must be in place. The measure selected from this list must be effective in preventing encroachment. The additional measures are:

3.1 Use a dedicated spotter who is in continuous contact with the equipment hoisting machine operator. The dedicated spotter must:

3.1.1 Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to: A clearly visible line painted on the ground; a clearly visible line of stanchions; a set of clearly visible line-of-sight landmarks (such as a fence post behind the dedicated spotter and a building corner ahead of the dedicated spotter);

3.1.2 Be positioned to effectively gauge the clearance distance;

3.1.3 Where necessary, use equipment that enables the dedicated spotter to communicate directly with the hoisting machine operator; and

3.1.4 Give timely information to the hoisting machine operator so that the required clearance distance can be maintained.

3.2 Reserved.

3.3 A device that automatically warns the hoisting machine operator when to stop movement, such as a range control warning device. Such a device must be set to give the hoisting machine operator sufficient warning to prevent encroachment.

3.4 A device that automatically limits range of movement, set to prevent encroachment.

3.5 An elevated warning line, barricade, or line of signs, in view of the hoisting machine operator, equipped with flags or similar high-visibility markings.

(C) Assembly/disassembly below power lines prohibited. No part of a crane or derrick, load line, or load (including rigging and lifting accessories), whether partially or fully assembled, is allowed

below a power line unless the equipment user has confirmed that the utility owner/operator has deenergized and (at the site) visibly grounded the power line.

- (D) **Assembly/disassembly inside Table A clearance prohibited.** No part of a crane or derrick, load line, or load (including rigging and lifting accessories), whether partially or fully assembled, is allowed closer than the minimum approach distance under Table A of this paragraph to a power line unless the equipment user has confirmed that the utility owner/operator has deenergized and (at the site) visibly grounded the power line.
 - (E) **Voltage information.** Where Option (3) of this subparagraph is used, the utility owner/operator of the power lines must provide the requested voltage information within two working days of the equipment user's request.
 - (F) **Power lines presumed energized.** The equipment user must assume that all power lines are energized unless the utility owner/operator confirms that the power line has been and continues to be deenergized and visibly grounded at the site.
 - (G) **Posting of electrocution warnings.** There must be at least one electrocution hazard warning conspicuously posted in the hoisting machine operator's cab or at the operator's station so that it is in view of the operator and (except for overhead gantry and tower cranes) at least two on the outside of the equipment.
- (ii) **Power line safety (up to 350 kV) – equipment operations.**
- (A) **Hazard assessments and precautions inside the work zone.** Before beginning equipment operations, the equipment user must:
 - 1. Identify the work zone by either:
 - 1.1 Demarcating boundaries (such as with flags, or a device such as a range limit device or range control warning device) and prohibiting the hoisting machine operator from operating the equipment past those boundaries; or
 - 1.2 Defining the work zone as the area 360 degrees around the equipment, up to the equipment's maximum working radius.
 - 2. Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet (6.1 m) to a power line. If so, the equipment user must meet the requirements in Option (1), Option (2), or Option (3), as follows:
 - 2.1 **Option (1) – Deenergize and ground.** Confirm from the utility owner/operator that the power line has been deenergized and visibly grounded at the site.
 - 2.2 **Option (2) – 20 foot clearance.** Ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer than 20 feet (6.1 m) to the power line by implementing the measures specified in clause (B) below.
 - 2.3 **Option (3) – Table A clearance.**
 - 2.3.1 Determine the line's voltage and the minimum approach distance permitted under Table A of this paragraph; and
 - 2.3.2 Determine if any part of the equipment, load line or load (including rigging and lifting accessories), while operating up to the equipment's maximum working radius in the work zone, could get closer than the minimum approach distance of the power line permitted under Table A of this paragraph. If so, then the equipment user must follow the requirements in clause (B) below to ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), gets closer to the line than the minimum approach distance.
 - (B) **Preventing encroachment/electrocution.** Where encroachment precautions are required under Option (2) or Option (3) of this subparagraph, all of the following requirements must be met:
 - 1. Conduct a planning meeting with the hoisting machine operator and the other workers who will be in the area of the equipment or load to review the location of the power line(s), and the steps that will be implemented to prevent encroachment/electrocution.
 - 2. If tag lines are used, they must be non-conductive.
 - 3. Erect and maintain an elevated warning line, barricade, or line of signs, in view of the hoisting machine operator, equipped with flags or similar high-visibility markings, at 20 feet (6.1 m) from the power line (if using Option (2) of this subparagraph) or at the minimum approach distance under Table A of this paragraph (if using Option (3) of this subparagraph). If the hoisting machine operator is unable to see the elevated warning line, a dedicated spotter must

be used as described in 4.2 below in addition to implementing one of the measures described in 4.3 or 4.4 below.

4. Implement at least one of the following measures:
 - 4.1 Reserved.
 - 4.2 A dedicated spotter who is in continuous contact with the hoisting machine operator. Where this measure is selected, the dedicated spotter must:
 - 4.2.1 Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to: A clearly visible line painted on the ground; a clearly visible line of stanchions; a set of clearly visible line-of sight landmarks (such as a fence post behind the dedicated spotter and a building corner ahead of the dedicated spotter);
 - 4.2.2 Be positioned to effectively gauge the clearance distance;
 - 4.2.3 Where necessary, use equipment that enables the dedicated spotter to communicate directly with the hoisting machine operator; and
 - 4.2.4 Give timely information to the hoisting machine operator so that the required clearance distance can be maintained.
 - 4.3 A device that automatically warns the hoisting machine operator when to stop movement, such as a range control warning device. Such a device must be set to give the hoisting machine operator sufficient warning to prevent encroachment.
 - 4.4 A device that automatically limits range of movement, set to prevent encroachment.
 - 4.5 Reserved.

Exception: The requirements of item number 4, above, do not apply to electric power transmission and distribution work.

- (C) **Voltage information.** Where Option (3) of this subparagraph is used, the utility owner/operator of the power lines must provide the requested voltage information within two working days of the equipment user's request.
- (D) **Operations below power lines.** No part of the equipment, load line, or load (including rigging and lifting accessories) is allowed below a power line unless the hoisting machine operator has confirmed that the utility owner/operator has deenergized and (at the site) visibly grounded the power line.

Exceptions:

1. Electric power transmission and distribution work.
2. For equipment with non-extensible booms: The uppermost part of the equipment, with the boom at true vertical, would be more than 20 feet (6.1 m) below the plane of the power line or more than the Table A of this paragraph minimum clearance distance below the plane of the power line.
3. For equipment with articulating or extensible booms: The uppermost part of the equipment, with the boom in the fully extended position, at true vertical, would be more than 20 feet (6.1 m) below the plane of the power line or more than the Table A of this paragraph minimum clearance distance below the plane of the power line.
4. The equipment user determines that compliance is infeasible and meets the requirements of subparagraph (iv) of this paragraph; except that where the crane or derrick requires a certificate of on-site inspection, the determination must be made by an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution. Such determination must be filed with the crane or derrick notice application.

- (E) **Power lines presumed energized.** The equipment user must assume that all power lines are energized unless the utility owner/operator confirms that the power line has been and continues to be deenergized and visibly grounded at the site.
- (F) **Working near transmitter/communication towers.** When working near transmitter/communication towers where the equipment is close enough for an electrical charge to be induced in the equipment or materials being handled, the transmitter must be deenergized or the following precautions must be taken:
 1. The equipment must be provided with an electrical ground; and
 2. If tag lines are used, they must be non-conductive.

(G) **Reserved.**

(H) **Manufacturer specifications.** Devices originally designed by the manufacturer for use as a safety device, operational aid, or a means to prevent power line contact or electrocution, when used to comply with this paragraph, must meet the manufacturer's procedures for use and conditions of use.

Table A – Minimum Clear Distances

Voltage (nominal, kV, alternating current)¹	Minimum clearance distance (feet)
up to 50	10
over 50 to 200	15
over 200 to 350	20
over 350 to 500	25
over 500 to 750	35
over 750 to 1,000	45
over 1,000	(as established by the utility owner/operator or an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution).

¹ Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

(iii) **Power line safety (over 350 kV).** The requirements of subparagraphs (i) and (ii) of this paragraph apply to power lines over 350 kV.

Exceptions:

1. For power lines at or below 1000 kV, wherever the distance "20 feet (6.1 m)" is specified in subparagraphs (i) or (ii) above, the distance "50 feet" (15.24 m) must be substituted.
2. For power lines over 1000 kV, the minimum clearance distance must be established by the utility owner/operator or an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution.

(iv) **Power line safety (all voltages) – equipment operations closer than the Table A zone.** Equipment operations in which any part of the equipment, load line, or load (including rigging and lifting accessories) is closer than the minimum approach distance under Table A of this paragraph to an energized power line is prohibited, except where the equipment user demonstrates that all of the following requirements are met:

(A) The equipment user determines that it is infeasible to do the work without breaching the minimum approach distance under Table A of this paragraph.

Exception: Where the crane or derrick requires a certificate of on-site inspection, the determination must be made by an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution. Such determination must be filed with the crane or derrick notice application.

(B) The equipment user determines that, after consultation with the utility owner/operator, it is infeasible to deenergize and ground the power line or relocate the power line.

Exception: Where the crane or derrick requires a certificate of onsite inspection, the determination must be made by an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution. Such determination must be filed with the crane or derrick notice application.

(C) The power line owner/operator or an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution, determines the minimum clearance distance that must be maintained to prevent electrical contact in light of the on-site conditions. The factors that must be considered in making this determination include, but are not limited to:

Conditions affecting atmospheric conductivity; time necessary to bring the equipment, load line, and load (including rigging and lifting accessories) to a complete stop; wind conditions; degree of sway in the power line; lighting conditions, and other conditions affecting the ability to prevent electrical contact.

Exception: Electric power transmission and distribution work.

- (D) A planning meeting with the equipment user and utility owner/operator (or an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution) is held to determine the procedures that will be followed to prevent electrical contact and electrocution; except that where the crane or derrick requires a certificate of on-site inspection, such procedures must be developed by an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution. Where a crane or derrick requires a certificate of on-site inspection, such procedures must be filed with the crane or derrick notice application. At a minimum these procedures must specify the following:
1. If the power line is equipped with a device that automatically reenergizes the circuit in the event of a power line contact, before the work begins, the automatic reclosing feature of the circuit interrupting device must be made inoperative if the design of the device permits.
 2. A dedicated spotter who is in continuous contact with the hoisting machine operator. The dedicated spotter must:
 - 2.1 Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to: A line painted on the ground; a clearly visible line of stanchions; a set of clearly visible line-of-sight landmarks (such as a fence post behind the dedicated spotter and a building corner ahead of the dedicated spotter);
 - 2.2 Be positioned to effectively gauge the clearance distance;
 - 2.3 Where necessary, use equipment that enables the dedicated spotter to communicate directly with the hoisting machine operator; and
 - 2.4 Give timely information to the hoisting machine operator so that the required clearance distance can be maintained.
 3. An elevated warning line, or barricade (not attached to the crane), in view of the hoisting machine operator (either directly or through video equipment), equipped with flags or similar high-visibility markings, to prevent electrical contact. However, this provision does not apply to electric power transmission and distribution work.
 4. An insulating link/device installed at a point between the end of the load line (or below) and the load; except that an insulating link/device is not required for electric power transmission and distribution work.
 5. Nonconductive rigging if the rigging may be within the Table A of this paragraph distance during the operation.
 6. If the equipment is equipped with a device that automatically limits range of movement, it must be used and set to prevent any part of the equipment, load line, or load (including rigging and lifting accessories) from breaching the minimum approach distance established under clause (C) above.
 7. If a tag line is used, it must be of the nonconductive type.
 8. Barricades forming a perimeter at least 10 feet (3.05 m) away from the equipment to prevent unauthorized personnel from entering the work area. In areas where obstacles prevent the barricade from being at least 10 feet (3.05 m) away, the barricade must be as far from the equipment as feasible.
 9. Workers other than the hoisting machine operator must be prohibited from touching the load line above the insulating link/device and crane. Hoisting machine operators remotely operating the equipment from the ground must use either wireless controls that isolate the hoisting machine operator from the equipment or insulating mats that insulate the hoisting machine operator from the ground.
 10. Only personnel essential to the operation are permitted to be in the area of the crane and load.
 11. The equipment must be properly grounded.

12. Insulating line hose or cover-up must be installed by the utility owner/operator except where such devices are unavailable for the line voltages involved.
- (E) The procedures developed to comply with clause (D) above are documented and immediately available on-site.
 - (F) The equipment user and utility owner/operator (or an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution) meet with the hoisting machine operator and the other workers who will be in the area of the equipment or load to review the procedures that will be implemented to prevent breaching the minimum approach distance established in clause (C) above and prevent electrocution.
 - (G) The procedures developed to comply with clause (D) above are implemented.
 - (H) The utility owner/operator (or an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution) and all employers of employees involved in the work must identify one person who will direct the implementation of the procedures. The person identified in accordance with this clause must direct the implementation of the procedures and must have the authority to stop work at any time to ensure safety.
 - (I) **Reserved.**
 - (J) If a problem occurs implementing the procedures being used to comply with clause (D) above, or indicating that those procedures are inadequate to prevent electrocution, the equipment user must safely stop operations and either develop new procedures to comply with clause (D) above or have the utility owner/operator deenergize and visibly ground or relocate the power line before resuming work.
 - (K) Devices originally designed by the manufacturer for use as a safety device, operational aid, or a means to prevent power line contact or electrocution, when used to comply with this paragraph, must comply with the manufacturer's procedures for use and conditions of use.
 - (L) **Reserved.**
 - (M) **Reserved.**
- (v) **Power line safety – while traveling under or near power lines.**
- (A) **Traveling with a load.** When traveling under or near a powerline with a load, the traveling operation must comply with the applicable requirements of subparagraphs (ii), (iii), or (iv) of this paragraph. In addition the requirements of subparagraph (xii) of paragraph (3) of subdivision (q) of this section also apply.
 - (B) **Traveling without a load.** When traveling under or near a powerline without a load, the equipment user must ensure that:
 1. The boom/mast and boom/mast support system are lowered sufficiently to meet the requirements of this subparagraph.
 2. The clearances specified in Table T of this paragraph are maintained.
 3. The effects of speed and terrain on equipment movement (including movement of the boom/mast) are considered so that those effects do not cause the minimum clearance distances specified in Table T of this paragraph to be breached.
 4. If any part of the equipment while traveling will get closer than 20 feet (6.1 m) to the power line, the equipment user must ensure that a dedicated spotter who is in continuous contact with the driver/operator is used. The dedicated spotter must:
 - 4.1 Be positioned to effectively gauge the clearance distance;
 - 4.2 Where necessary, use equipment that enables the dedicated spotter to communicate directly with the driver/operator; and
 - 4.3 Give timely information to the driver/operator so that the required clearance distance can be maintained.
 5. When traveling at night, or in conditions of poor visibility, in addition to the measures specified in items 1 through 4 above, the equipment user must ensure that:
 - 5.1 The power lines are illuminated or another means of identifying the location of the lines is used; and
 - 5.2 A safe path of travel is identified and used.

TABLE T – MINIMUM CLEARANCE DISTANCES WHILE TRAVELING WITH NO

LOAD

Voltage (nominal, kV, alternating current) ¹	While traveling—minimum clearance distance (feet)
up to 0.75	4
over .75 to 50	6
over 50 to 345	10
over 345 to 750	16
Over 750 to 1,000	20
Over 1,000	(as established by the utility owner/operator or an engineer, licensed and registered to practice the profession of engineering under the education law of the state of New York, who is also a qualified person with respect to electrical power transmission and distribution).

¹Note: The value that follows "to" is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.

(4) Electrical equipment.

(i) General.

- (A) Wiring and equipment shall comply with the electrical code of the City of New York.
- (B) The voltage used on control circuits shall not exceed 750 volts.

(ii) Equipment.

- (A) Electric equipment shall be so located or enclosed that live parts will not be exposed to accidental contact.
- (B) All motor, controller and switch frames shall be grounded.
- (C) Electric equipment shall be thoroughly protected from dirt, grease and oil, and where exposed to the weather, shall be thoroughly protected therefrom.
- (D) Guards for live parts shall be substantial and so located that they cannot be deformed so as to make contact with the live parts.
- (E) Name plates shall not be removed.

(iii) Controllers.

- (A) Each cage operated crane and derrick shall be provided with a device which will disconnect all motors from the line on failure of power and will not permit any motor to be restarted until the controller handle is brought to the "off" position, or a reset switch or button is operated.
- (B) Lever operated controllers shall be provided with a notch or latch which in the "off" position prevents the handle from being inadvertently moved to the "on" position.
- (C) The controller operating handle shall be located within convenient reach of the operator.
- (D) As far as practicable, the movement of each controller handle shall be in the same general directions as the resultant movements of the load.
- (E) For floor operated cranes and derricks, the controller or controllers, if rope operated, shall automatically return to the "off" position when released by the operator.

(5) **Demolition.** Where a crane or derrick is utilized to facilitate the mechanical demolition of a building or structure, the requirements of Section 3306 of the New York City Building Code will apply.

(6) **Footing.** Mobile cranes must be provided with adequate footing, including but not limited timber, cribbing, plates, mats, or other structural members, in order to distribute the load so as not to exceed the allowable bearing capacity the ground, subsurface elements, or structure.

(7) **Special provisions for cranes operating on a sidewalk or roadway.** Where a crane is operated on the sidewalk or roadway, a permit from the New York City Department of Transportation must be obtained. The pressure on such surface must not exceed 3,500 psf (167.85 kPa).

(8) Storage.

- (i) Necessary clothing and personal belongings must be stored in or about the crane or derrick in such a manner as to not interfere with access or operation.
- (ii) Tools, oil cans, waste, extra fuses, and other necessary articles must be stored in a tool box and must not be permitted to lie loose in or about the cab or cage.

(9) Refueling.

- (i) Refueling must comply with Section 3320.3.2 of the New York City Building Code. For the purposes of satisfying this requirement, the term “material handling equipment” in such section must be read to mean “crane or derrick.”
 - (ii) Machines must not be refueled with the engine running.
- (10) Fire Extinguishers.**
- (i) A carbon dioxide, dry chemical or equivalent fire extinguisher must be kept in the cab or in the vicinity of the crane or derrick.
 - (ii) Operating and maintenance personnel must be familiar with the use and care of the fire extinguishers provided.
- (t) Wind and weather.** Cranes and derricks are subject to the following wind and weather restrictions.
- (1) Wind action plan and manufacturer procedures.** The hoisting machine operator must follow the approved wind action plan, where a wind action plan is required, and the applicable manufacturer procedures related securing the crane or derrick against wind and weather.
 - (2) Hoisting machine operator to review wind action plan and manufacturer procedures.** The hoisting machine operator must review the approved wind action plan, where a wind action plan is required, and the applicable manufacturer procedures related to securing the crane or derrick against wind and weather prior to the operator’s initial commencement of work with the crane or derrick at the job, each time the crane or derrick enters into a new phase, and each time the wind action plan is amended. It is the responsibility of the equipment user to verify that the hoisting machine operator has reviewed the approved wind action plan and the applicable manufacturer procedures, as required above, and to notify the hoisting machine operator each time the wind action plan is amended.
 - (3) Start of work.** No hoisting machine operator may start a pick when:
 - (i) The wind speed exceeds the threshold specified in the approved wind action plan, or where such a plan is not required, 30 mph (3-second gust) or the threshold specified by the manufacturer, whichever is lower; or
 - (ii) As otherwise warranted by weather conditions or weather forecasts.
 - (4) In-service.** The following must be observed at all times the crane or derrick is in service.
 - (i) During picks, it is the responsibility of the hoisting machine operator to safely bring the pick to a stop and safely land the load:
 - (A)** When the wind speed exceeds the threshold specified in the approved wind action plan, or where such a plan is not required, 30 mph (3-second gust) or the threshold specified by the manufacturer, whichever is lower; or
 - (B)** As otherwise warranted by weather conditions or weather forecasts.
 - (ii) At the end of the shift, or as weather conditions otherwise warrant, the hoisting machine operator must properly park or secure the crane or derrick for occurring or forecasted winds in accordance with the approved wind action plan, or where such plan is not required, in accordance with the manufacturer’s specifications.
 - (5) Assembly/disassembly operations.** Assembly/disassembly operations may not begin if the wind speed exceeds the thresholds specified in the approved assembly/disassembly plan, or if winds are forecast to exceed the thresholds specified in the approved assembly/disassembly plan before the crane or derrick that is to assembled/disassembled, and all assist cranes or derricks involved in such operation, can be parked or secured. The provisions of paragraphs (3) and (4) of this subdivision above also apply to all hoisting machine operators engaged in the assembly/disassembly operation; except that the term “approved wind action plan” means “approved assembly/disassembly plan.”

Exception: Where an assembly/disassembly plan is not required, the thresholds established by the manufacturer will govern.
 - (6) Inspection to verify the crane or derrick has been secured.** An inspection must be performed when required by, in accordance with, the requirements of paragraph (2) of subdivision (k) of this section.
 - (7) Measuring wind.** For the purposes of this subdivision, wind speed must be determined in accordance with one of the options listed in subparagraphs (i) through (iii) of this paragraph.

Exceptions:

 - 1. For a crane, other than a pile driver or clamshell, that requires a certificate of on-site inspection and that utilizes a lattice boom, lattice jib, or lattice mast at the site, only the option listed in subparagraph (i) of this paragraph may be utilized; except, however, should the anemometer on the crane malfunction, the option listed in subparagraph (ii) of this paragraph may be utilized.

2. For a derrick that requires a certificate of on-site inspection, only the options listed in subparagraphs (i) or (ii) of this paragraph may be utilized.
- (i) Anemometer on the crane or derrick. An anemometer provided by the crane or derrick manufacturer, or an entity acceptable to the manufacturer, and installed at the top of the boom or other location specified by the manufacturer. The anemometer must measure a 3-second gust wind. A real time display of the anemometer must be available to the hoisting machine operator at the operator's station.
 - (ii) Anemometer at the site. An anemometer located at a high point of the site approximate to the height and location of the crane or derrick boom/jib, freely exposed to the wind, and calibrated in accordance with ASTM D5096-02. The anemometer must measure a 3-second gust wind. A real time display of the anemometer must be available to the hoisting machine operator at the operator's station, or a person designated by the hoisting machine operator must be provided to monitor the display and alert the hoisting machine operator when measurements near, meet, or exceed the thresholds specified in the approved wind action plan.
 - (iii) Nearest weather station. The most recent gust wind speed reported at the nearest National Weather Service weather station. The equipment user must establish a system to ensure the hoisting machine operator is notified when reported wind gusts near, meet, or exceed the thresholds specified in the approved wind action plan. An acceptable system may include engaging a metrological service to provide a text or similar alert to a person designated by the equipment user when wind thresholds are neared, met, or exceeded, and have such designated person notify the hoisting machine operator.
 - (iv) Anemometer as operational aid. The anemometer required by subparagraphs (i) and (ii) of this paragraph is to be considered an operational aid and must be checked prior to each shift as part of the frequent inspection required by paragraph (1) of subdivision (k) of this section.
- (u) **Documents to be maintained at the site.** Where this section requires construction or submittal documents, drawings, plans, calculations, inspection or meeting records, manufacturer specifications, or similar documents, copies of such must be maintained at the site, including in an electronic format acceptable to the commissioner, for the duration of the job and made available to the commissioner upon request.
- (1) **Plans to be available to hoisting machine operators.** The equipment user must ensure that a copy of the approved crane or derrick notice plan, the approved assembly/disassembly plan, and the approved wind action plan are kept in the hoisting machine cab or at the operator's station at all times, easily accessible to the hoisting machine operator.
 - (2) **Plans to be available to the lift director and the assembly/disassembly director.** The equipment user must ensure that a copy of the approved crane or derrick notice plan, the approved assembly/disassembly plan, and the approved wind action plan are separately kept at the site at all times, easily accessible to the lift director and the assembly/disassembly director, as appropriate.
- (v) **Reserved.**
- (w) **Enforcement.** See Chapter 2 of Title 28 of the New York City Administrative Code.
- (x) **Waiver or modifications.** Variations to the provisions of this section may be granted by the commissioner in accordance with the requirements of 28-103.3 of the Administrative Code.
- (y) **Referenced standards.** The standards referenced in this section are considered part of the requirements of this section to the prescribed extent of each such reference. Where differences occur between provisions of this section and referenced standards, the provisions of this section shall apply.

Standard	Name	Year
American Society of Civil Engineers (ASCE)		
ASCE 7	Minimum Design Loads for Buildings and Other Structures	2005
American Society of Mechanical Engineers (ASME)		
ASME B30.3	Tower Cranes	2004, 2009, 2012, & 2016
ASME B30.5	Mobile Cranes	1968, 1982, 1989, 1994, 2000, 2004, 2007, 2011, & 2014

ASME B30.6	Derricks	2003, 2010, & 2015
ASME B30.22	Articulating Boom Cranes	2005, 2010, & 2016
ASME B30.29	Self-Erecting Tower Cranes	2012
European Standards (EN)		
EN 996	Piling Equipment	2009 & 2014
EN 13000	Mobile Cranes	2004, 2010, & 2014
EN 14439	Tower Cranes	2006 & 2009
EN 16228	Drilling and foundation equipment	2014
American Society for the Testing of Materials		
ASTM D5096-02	Standard Test Method for Determining the Performance of a Cup Anemometer or Propeller Anemometer	2011
International Organization for Standardization (ISO)		
ISO 9001		2008
SAE International (SAE)		
SAE J765	Crane Load Stability Test Code	1990
SAE J987	Lattice Boom Cranes-Method of Test	1967 & 2003
SAE J1063	Cantilevered Boom Crane Structures - Method of Test	1993