## SUBCHAPTER 19
## SAFETY OF PUBLIC AND PROPERTY DURING CONSTRUCTION OPERATIONS

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## ARTICLE 1 GENERAL

**§[C26-1900.1] 27-1007 Scope.-**The provisions of this subchapter shall govern the conduct of all construction operations with regard to the safety of the public and property. For the purposes of this subchapter, construction operations shall include excavation, erection, alteration, repair, removal and demolition as related to buildings. For regulations relating to the safety of persons employed in such construction operations, the provisions of subchapter ten of the labor law as implemented by the industrial code of the state of New York, rule no. 23, shall apply.

**§[C26-1900.2] 27-1008 Definitions.-**For definitions to be used in the interpretation of this subchapter, see subchapter two of this chapter.

**§[C26-1900.3] 27-1009 General requirements.-**
(a) A contractor engaged in building work shall institute and maintain safety measures and provide all equipment or temporary construction necessary to safeguard all persons and property affected by such contractor's operations.
(b) No structure, device, or construction equipment, whether permanent or temporary, including all partly or fully completed elements or sections of the building, shall be loaded in excess of its design capacity.
(c) At a height of no more than twelve feet above ground and on each perimeter of a construction site fronting on a public thoroughfare, a sign shall be erected no more than twenty-five square feet in size which shall bear in letters no less than six inches high, the name, address and telephone number of the owner of the property, and the name, address and telephone number of the general contractor.
(d) A construction site safety coordinator must be designated and present on a construction site in accordance with department rules and regulations.

**§[C26-1900.4] 27-1010 Inspection.-** Except for the installation of underpinning and the construction of temporary retaining structures (see section 27-724 of article thirteen of subchapter eleven of this chapter) and for other operations specifically required by the provisions of this subchapter to be inspected by an engineer or an architect, inspection of operations for compliance with the provisions of this subchapter may be performed by, or under, the authority of the person superintending the work. Unless required by the provisions of this subchapter, inspection and test reports relating to operations within the scope of this subchapter need not be filed.

**§[C26-1900.5] 27-1011 Sizes and stresses of materials.-**
**(a) Sizes**.-All sizes and dimensions prescribed in this subchapter are minimum requirements. Lumber sizes are nominal or commercial except where stated otherwise.
**(b) Stresses**.-Except where sizes are specifically prescribed in this subchapter, temporary equipment and constructions shall be designed so that the allowable stress values prescribed in subchapter ten of this subchapter are not exceeded.

**§[C26-1900.6] 27-1012 Inspection.-** Any construction equipment or device, except hand tools, that would affect the public safety when operated shall be inspected by the person superintending the work or by his or her designated representative before using the equipment or device on a specific job. Such inspection shall be carefully made, and every defect or unsafe condition shall be corrected before use is permitted. Any unsafe equipment or device shall be made safe immediately or removed from the site. Periodic inspection procedures

shall be instituted during construction operations, and a record of inspections shall be kept at the site for the duration of the work.

**§[C26-1900.7] 27-1013 Utilities.-**
**(a) Existing services**.-The location of all existing utilities and service lines shall be determined and adequate measures taken, or devices provided, to safeguard the public and property before such utilities are disturbed. If any utility is to be removed, relocated, or have its service interrupted, the utility company or city agency affected shall be notified at least seventy-two hours in advance.
**(b) Maintaining essential services**.-Fire preventive, sanitary, or other facilities that have been provided for the protection of life, health, and property shall be continuously maintained and protected unless authorization is obtained from the agency having jurisdiction to temporarily or permanently disconnect such facility.
**(c) Electrical work**.-All temporary electrical equipment and wiring shall meet the requirements of the electrical code of the city of New York, and shall be maintained to meet such requirements. Portions of permanent electrical installations may be used for temporary operations provided the requirements of the electrical code are met. At least seventy-two hours before work is begun that may affect a power line, above or below ground, the person superintending the work shall notify the utility company affected.

**§[C26-1900.8] 27-1014 Fire protection.-** Fire fighting equipment at the construction site and the conduct of all construction operations affecting fire prevention and fire fighting shall meet the requirements of the fire department.
**(a) Temporary elevator**.-Whenever in the course of building construction the work is at a height greater than seventy-five feet, at least one elevator meeting the requirements of subchapter eighteen of this chapter shall be kept in readiness at all times for fire department use.
**(b) Standpipe systems**.-Standpipe systems during construction operations shall comply with the following:
(1) If in the course of erection or alteration for which a standpipe system will be required the work reaches a height greater than seventy-five feet a permanent or temporary standpipe meeting the requirements of subchapter seventeen of this chapter shall be kept in readiness at all times for fire department use. The system shall be a dry system when freezing conditions may be encountered.
(2) In structures undergoing demolition which have existing standpipe systems, such systems shall be maintained as dry standpipes. When demolition is started, the standpipe risers shall be capped above the outlet on the floor immediately below the floor being demolished so as to maintain the standpipe system on all lower floors for fire department use. Standpipe hose, nozzles and spanners are not required to be maintained and may be removed at any time. Siamese hose connections shall be kept free from obstruction and shall be marked by a metal sign reading, "Standpipe Siamese Connection" and by a red light at night.
(3) The standpipe system may be used for water supply necessary to demolition operations. In freezing weather such standpipe system shall be completely drained after use to prevent freezing. Existing standpipe systems shall not be utilized to convey compressed air unless the standpipe consists of two or more risers in which event one of the risers may be used to convey compressed air to any floor or portion of the premises upon application to and permission from the fire department.
(4) In structures undergoing demolition which have existing sprinkler systems with siamese hose connections, such system shall be maintained as a non-automatic sprinkler system. When demolition starts, the sprinkler risers shall be capped immediately below the floor being demolished so as to maintain the sprinkler system on all lower floors for fire department use. Siamese hose connections shall be kept free from obstruction and shall be marked by a metal sign reading "Sprinkler Siamese Connection" and by a red light at night.

**§[C26-1900.9] 27-1015 Design**.-Whenever design is required by the provisions of this subchapter, such design shall be executed by, or under, the supervision of an engineer or an architect who shall cause his or her seal and signature to be affixed to any drawings or specifications that may be required for the work. All such documents shall be kept at the site for inspection by the commissioner for the duration of the job.

**§[C26-1900.10] 27-1016 Alternate details and procedures**.-Whenever "alternate" or "equivalent" details, materials or procedures are specified in this subchapter, they shall be permitted as provided in section 27-133 of article seven of subchapter one of this chapter. In the absence of specific criteria, the degree of structural safety shall be deemed to require a factor of safety against structural failure consistent with the requirements of subchapter ten of this chapter.

## ARTICLE 2 MAINTENANCE OF SITE AND ADJACENT AREAS

**§[C26-1901.1] 27-1017 Construction equipment.-**
**(a) Machinery**.-All exposed, electrically charged, moving or otherwise dangerous parts of machines and construction equipment shall be located, guarded, shielded, or barricaded so as to prevent contact by the public.
**(b) Services* lines and conduits**.-Hose lines, wires, ropes, pipes, chains, etc., shall be located so that they

will not constitute a tripping hazard. Where it is necessary to carry such lines across sidewalks, or any public way, either they shall be suspended at least eight feet above the walks or suitable chamfered planks or a pedestrian bridge shall be provided.

**(c) Contractors sheds**.-Contractors sheds and offices located within thirty-feet of new construction or existing buildings shall be made of metal or other noncombustible material. Fire retardant treated wood may be used when protected from the weather.

* *As enacted but "Service" probably intended.*

**** §[C26-1901.2] 27-1018 Housekeeping**.-

(a) All areas used by the public shall be maintained free from ice, snow, grease, debris, equipment, materials, projections, tools, or other item, substance, or condition that may constitute a slipping, tripping, or other hazard.

****Local Law 61-1987.***

(b) When not being used, materials, equipment, and tools that might fall from levels above areas used by the public shall be kept away from edges or openings. When exterior walls are not in place, material piles shall be kept at least ten feet back from the perimeter of the building.

(c) Material may be stored within two feet of the edge of a building provided however that such material is stored not more than two stories below the stripping operation on concrete structures or the uppermost concrete floor on steel frame structures. Such material shall be secured against accidental movement. Storage of material on all other floors shall conform to paragraph (b) of this section and shall be secured when not being used.

(d) Waste dumpsters, debris boxes and skip boxes shall be secured and those containing material or debris shall be covered at the end of each work day. Such waste dumpsters, debris,*** boxes and skip boxes shall not be placed at the edge of the building at any time except when being moved from the floor or building.

(e) Sufficient containers of metal or other material acceptable to the commissioner shall be available for the storage of all garbage and debris. The containers shall be of three-quarter cubic yard minimum capacity.

*** *As enacted but comma probably intended to be omitted.*

**§[C26-1901.3] 27-1019 Removal and storage of material.-**

**(a) Removal of waste material**.-Combustible waste material or combustible debris shall not be permitted to accumulate, and shall be removed from the site at reasonable intervals, in accordance with the requirements of the fire department. No material shall be dropped or thrown outside the exterior walls of a building. Precautions shall be taken to prevent concrete or mortar washings, sand, grit, or any other material that would cause clogging from entering a sewer or drain. Provisions of the air pollution control code concerning precautions to prevent particulate matter from becoming airborne shall apply.

**(b) Chutes**.-When chutes are used for removal of material, they shall meet the following requirements:

(1) ENCLOSURE.-

a. Material chutes that are at an angle of more than forty-five degrees with the horizontal shall be entirely enclosed on all sides, except for openings at the floor levels for the receiving of materials. Such openings shall not exceed forty-eight inches in height, measured along the wall of the chute, and all openings, except the top opening, shall be closed and secured when not in use.

b. Chutes at an angle of less than forty-five degrees with the horizontal may be open on the upper side.

(2) CONSTRUCTION.-

a. Every chute used to convey waste material from a building shall be rigidly supported and braced throughout its height. Chutes less than twenty-four inches in maximum dimension shall be constructed of not less than one inch (nominal) wood or one-eighth inch thick steel. Chutes more than twenty-four inches in maximum dimensions shall be constructed of not less than two inch (nominal) wood or three-sixteenths inch thick steel.

b. Chutes shall be provided with a metal impact plate where material is forced to change direction while falling.

c. A gate shall be provided at the lower end of every chute to control the loading of material into trucks and to close the chute at all other times. Splashboards or baffles shall be erected to prevent materials from rebounding into the street or under the sidewalk shed.

d. A bumper or curb at least four inches by four inches in section shall be provided at each chute opening where such opening is level with, or below, the floor or platform. Every space between the chute and the edge of the opening in the floor or platform shall be solidly planked.

(3) FIRE RETARDANT CONSTRUCTION.-All chutes, constructed of combustible material shall be covered on the exterior with corrugated steel sheeting having a minimum thickness of 24 gage [*sic*] through their entire height or shall be constructed of non-combustible material when used in the following applications:

a. Chutes exceeding seventy-five feet in height.

b. Alteration, repair or partial demolition of buildings classified in occupancy groups H1 and H2.

(4) SUPPORTS.-All structural supports of material chutes shall be of noncombustible material.

**(c) Storage of combustible material and equipment**.-Storage of combustible material and other material and equipment that present a fire hazard shall meet the requirements of the fire department.

**§[C26-1901.4] 27-1020 Obstruction of sidewalks and streets**.-The requirements of the department of transportation shall apply with regard to the closing of streets or to the obstruction of any part thereof, except as hereinafter provided. Building department personnel are authorized to consider failure to display a current department of transportation permit for any street or sidewalk closing or obstruction not authorized by this code as a violation of this section; and to direct removal thereof**.**

**§[C26-1901.5] 27-1021 Protection of sidewalks.-** Unless the street is officially closed to the public during construction operations, the following minimum safeguards shall be provided for the protection of the public:

**(a) Types of safeguards and when required**.-

* (1) a. A sidewalk shed shall be erected when a structure higher than forty feet is to be constructed or a structure higher than twenty-five feet is to be demolished and the horizontal distance from the structure being built or demolished to the inside edge of the permanent or temporary walkway is equal to one-half or less of the height of the structure. No sidewalk shed shall be erected unless and until a special permit therefor has been issued by the department. Each applicant for a sidewalk shed permit shall state the reason the sidewalk shed is needed. The term of the sidewalk shed permit shall be one year, or upon the expiration of the contractor's insurance, if such time period is less than one year. No renewals of shed permits, except for new buildings under construction, will be given unless an architect or engineer conducts a thorough examination of that part of the premises on which work is being conducted and submits a report acceptable to the commissioner, which clearly documents the condition of the applicable part of the premises and the scope of work that has been performed thereon, and estimates the time needed to complete the work. To renew a shed permit for a new building under construction, each applicant shall file an application with the commissioner. All renewal applications shall include the name and address of the owner of the premises.

*_Local Law 93-1996;Local Law 33-1991._

b. Following the receipt of a permit to erect a sidewalk shed, the permit holder shall post a sign on the sidewalk shed. Such sign shall include the name, address, telephone number, and permit number of the permit holder. The sign shall also include the date that the permit expires. The sign shall measure twenty-five square feet.

(2) A sidewalk shed shall be erected regardless of the height of the structure or the horizontal distance between the structure and the sidewalk when material or debris is to be moved by a hoist, crane, derrick, or chute over a sidewalk or temporary sidewalk that is not closed to the public.

(3) A fence, in lieu of a sidewalk shed, may be constructed along the inside edge of the walkway or temporary walkway when a structure higher than forty feet is to be constructed or a structure higher than twenty-five feet is to be demolished and the horizontal distance from the structure being built or demolished to the inside edge of the permanent or temporary walkway is between one-half and three-quarters of the height of the structure. If permission to close the sidewalk has been obtained from the department of transportation, such fence may be erected along the curb or outside of the curb to such extent as may be approved by the department of transportation. The fence shall be returned at its ends to the extent necessary to effectively close off the site.

(4) For cases that do not fall within the circumstances described in paragraphs one through three of this subdivision, a standard guard rail (section 27-1050 of article eight of subchapter nineteen of this chapter), in lieu of a sidewalk shed or fence, may be constructed along the inside edge of such walkway or temporary walkway. If permission to close the sidewalk has been obtained from the department of transportation, the railing may be constructed along the curb or outside of the curb to such extent as may be approved by the department [*sic*] of transportation. The railing shall be returned at its ends to the extent necessary to effectively close off the site.

*(5) A sidewalk shed shall be erected when a portion of a facade over forty feet above curb level is being altered or repaired and the horizontal distance from the portion of the structure being altered or repaired to the inside edge of the temporary or permanent walkway is less than one-half the height of the structure being altered or repaired. Applications for sidewalk shed permits shall meet the requirements listed in paragraph one of this subdivision. Where a sidewalk shed is erected in conjunction with the repair of an unsafe condition of a facade, or for the repair of any other violation issued by the department, and such repairs have not been made, and the sidewalk shed has not been removed within two years from the date of issuance of the original sidewalk shed permit, in addition to any of the penalties provided for in section 27-129 of this code, the owner of the building shall be liable for a civil penalty in the amount of two hundred fifty dollars per month for every month or part thereof during which such sidewalk shed is not removed, unless such owner has submitted a report in compliance with section 26-252 of this code and the commissioner determines that the unsafe condition could not be repaired within such two-year period. Provided, however, that nothing in this paragraph shall be construed to prevent the commissioner, prior to the end of such two-year period, from taking action against the owner of a building for failure to repair an unsafe

condition pursuant to section 27-129 of this code or any rules and regulations promulgated thereunder.

*Local Law 33-1991.

**(6) Horizontal safety netting shall be provided on the sides of a structure more than six stories or seventy-five feet in height above the adjoining ground or adjoining roof level, whichever is applicable, when, while under construction, the facade of such structure is not enclosed and there is exposure to the public or adjacent property as determined in rules and regulations promulgated by the Commissioner. Vertical safety netting or screening shall be provided at the sides of a structure more than six stories or seventy-five feet in height above the adjoining ground or adjoining roof level, whichever is applicable, when, while under construction, the facade of such structure is not enclosed and is exposed to the public or adjacent property as determined by rules and regulations promulgated by the commissioner. In addition, safety netting shall be provided as required by section 27-1022.

**Local Law 61-1987.

**(b) Sidewalk sheds**.-

(1) Every sidewalk shed deck shall be designed and constructed to carry a live load of at least three hundred psf. However, a live load of one hundred fifty psf may be permitted for buildings less than one hundred feet in height provided there is no storage thereon. The members of the sidewalk shed shall be adequately braced and connected to prevent displacement or distortion of the framework. Where posts supporting the shed deck are placed beyond the curb, such posts shall be protected against displacement by vehicles.

(2) The deck of the sidewalk shed shall consist of planking closely laid, and made tight.

(3) Steel, or other materials having equivalent strength and suitability may be used in lieu of wood to construct sidewalk sheds.

(4) Where deemed necessary by the commissioner, the deck shall cover the entire width of the sidewalk, except for reasonably small clearances at the building line and the curb.

(5) Except as authorized by paragraph seven, sidewalk sheds shall extend at least the entire length of the property line of the structure unless constructed solely to comply with paragraph two of subdivision (a) of this section, and may extend beyond the curb to such extent as may be approved by the department of transportation.

(6) The outer side and ends of the deck of the shed shall be provided with a substantial enclosure at least three feet six inches high. Such enclosure may be vertical or inclined outward at approximately forty-five degrees, and shall consist of boards laid close together and secured to braced uprights, of galvanized wire screen not less than no. 16 steel wire gage with a one-half inch mesh, of corrugated metal, or of solid plywood. Temporary removal of portions of the enclosure shall be permitted for handling material.

(7) a. For all buildings one hundred feet or more in height, the deck and protective guards of the sidewalk shed shall be extended parallel with the curb at least twenty feet beyond the ends of all faces of the structure [regardless of whether such extensions are in front of the property being developed or in front of adjacent]*** property. Extensions of sidewalk sheds complying with the foregoing shall be constructed so as not to unreasonably obstruct, either visually or physically, entrances, egress, driveways and show windows of adjacent properties.

***Copy in brackets not enacted but probably intended.

b. All sidewalk sheds shall provide a protection for the full width of the shed extending upward at an angle of forty-five degrees from the ends of the deck and outward a horizontal distance of at least five feet beyond the ends of the shed. Such sloping end protection shall be constructed to meet the requirements of paragraph one of this subdivision with substantial outriggers bearing on and securely attached to, the deck.

(8) The passageway shall be wide enough to accommodate pedestrian traffic normal for that location without causing congestion; but in no case shall the width be less than four feet. The passageway shall have a minimum clear ceiling height of eight feet.

(9) Unless the top deck of the sidewalk shed is built solidly against the face of the structure in such a manner that no material can fall onto the sidewalk, the side of the shed toward the structure shall be solidly sealed with wood or other suitable material for the full height of the shed. Solid sliding or in swinging [*sic*] gates may be provided as necessary for the proper prosecution of the work.

*(10) The underside of the sidewalk sheds shall be lighted at all times either by natural or artificial light. The level of illumination shall be the equivalent of that produced by two hundred watt, thirty-four hundred lumen minimum, standard incandescent lamps enclosed in vandal-proof fixtures and spaced fifteen feet apart and eight feet above the floor level. Artificial lighting units shall be inspected nightly; and burned out or inoperative units shall be replaced or repaired immediately.

*Local Law 33-1991.

(11) When a sidewalk shed is required for the erection of a structure, construction of the structure shall stop at a height of forty feet unless, and until, the sidewalk shed has been completed. Such shed shall remain in place until the structure is enclosed, all exterior work completed and the sash is glazed above the second story, exterior of the facade is cleaned down, and all outside handling of material, equipment and machinery, and all dismantling of a material hoist, or climber or tower crane or the use of a derrick in their removal,

above the second story is completed.
(12) When a sidewalk shed is required for the demolition of a structure, the sidewalk shed shall be completed before any demolition work is performed. Such shed shall remain in place until the structure has been razed to the height of the shed and as long as necessary to meet the requirements of paragraph two of subdivision (a) of this section .
**(c) Fences**.-Fences shall be at least eight feet high, and constructed of wood or other suitable material. They shall be built solid for their entire length, except for openings with solid sliding or in swinging *sic*] gates as are required for the proper prosecution of the work, and for viewing panels, which shall be blocked with plexiglass or equivalent nonfrangible material.
**(d) Openings in sidewalk sheds, fences, and railings**.-Openings in sidewalk sheds, fences, and railings for loading purposes shall be kept closed at all times except during actual loading operations.
**(e) Temporary walkways**.-Where permission has been granted by the department of transportation to locate a temporary walkway beyond the curb line, such temporary walkway shall be provided with a standard guard rail (section 27-1050 of article eight of subchapter nineteen of this chapter) on the traffic side. All temporary walkways shall be illuminated at all times as required in paragraph ten of subdivision (b) of this section.
**(f) Foot bridges**.-
(1) When a temporary foot bridge is used as a sidewalk in front of a structure during construction work, the bridge shall be wide enough to accommodate normal traffic without congestion; but in no case shall it be less than four feet. The bridge, and steps or ramps, shall be designed and constructed to carry a live load of one hundred fifty psf. The walkway on such bridge shall be provided with standard guard rails for its entire length and shall be provided with steps at both ends or with inclined ramps at a maximum slope of one in four. Ramps shall have cleats to prevent slipping.
(2) Where planks are used to pave the walkway, they shall be laid close and securely fastened to prevent displacement. Planks shall be of uniform thickness, and all exposed ends on ramps shall be provided with beveled fillers to eliminate tripping hazards.
(3) Foot bridges shall be illuminated at all times as required in paragraph ten of subdivision (b) of this section.
****(g) Safety netting.-**
(1) When required to be installed horizontally, safety netting shall include a structural mesh lined with a fine mesh of a size and strength sufficient to catch falling tools and materials.
(2) When required to be installed vertically, safety netting or its equivalent shall include a fine mesh of a size and strength sufficient to contain falling tools and materials. Such netting shall be secured and kept closed at all times except during actual loading operations or perimeter construction operations.
(3) In addition to the requirements set forth in paragraphs one and two of this subdivision, required safety netting and its supports shall comply with reference standard RS 19-4 and all applicable rules and regulations promulgated by the commissioner. Scaffolding, screening or its equivalent shall comply with rules and regulations promulgated by the commissioner.
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***Local Law 61-1987.***

****§[C26-1901.6] 27-1022 Safety netting and scaffolding.-**
**(a) When required**.-
(1) When demolishing the exterior walls or the roof of a structure more than six stories or seventy-five feet above the adjoining ground or adjoining roof level, whichever is applicable, horizontal safety netting shall be provided on the sides of a structure where there is exposure to the public or adjacent property as determined by rules and regulations promulgated by the Commissioner unless an exterior built-up scaffold providing equivalent protection has been erected. The horizontal safety netting or scaffolding shall be required in addition to the sidewalk sheds, fences, or railing required under section 27-1021 of this article, and shall be constructed and maintained not more than two stories or thirty feet below the story from which the exterior walls and roof are being removed until such demolition has progressed to within six stories or seventy-five feet of the ground level.
(2) When exterior walls are being constructed more than six stories or seventy-five feet above the adjoining ground or adjoining roof level, whichever is applicable horizontal safety netting shall be provided on the sides of the structure where the facade of such structure is not enclosed and is exposed to the public or adjacent property as determined by rules and regulations promulgated by the commissioner. Such safety netting shall be maintained at a level not more than two stories or thirty feet below the stripping operation on concrete structures or the uppermost concrete floor on steel frame structures and in addition, on such lower stories as required pursuant to rules and regulations promulgated by the commissioner.
**(b)** Debris shall be removed at least daily from safety netting provided in accordance with the requirements of this section.
**(c) Storage of material.-** Safety netting shall not be used for storing materials.
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***Local Law 61-1987.***

**§[C26-1901.7] 27-1023 Warning signs and lights.-**
**(a) Obstructions and openings**.-Where a material pile or other obstruction, or an excavation, opening, or other hazard is located in, or adjacent to, a way open for use by persons other than workmen, such hazard shall be indicated by red flags or signs during daylight hours, and by red lanterns, red lights, oil flares, flashing beacons, lighted signs, or equivalent devices from sunset to sunrise. Such warning devices shall be located no more than thirty feet apart.
**(b) Dangerous areas**.-In areas where special danger to the public exists, such as at vehicle entrances and exits, hoisting areas, points of storage of explosives or highly flammable material, or discharge ends of chutes, descriptive warning signs shall be provided. Such warning signs shall contain the word "danger" in prominent letters and, where in, or adjacent to, a public way, shall be illuminated from sunset to sunrise. Barricades and/or designated personnel shall be provided to the extent necessary to keep the public away from such areas or to guide them around the areas.
**(c) Vehicular traffic**.-Whenever any work is being performed over, on, or in close proximity to a highway, street, or similar public way, control and protection of traffic shall be provided by barricades, signals, signs, flagmen, or other devices, equipment, and personnel in accordance with the requirements and standards of the department of transportation.

*§[C26-1901.8] 27-1024 Watchmen and flagmen.-
**(a) Watchmen**.-Where a building being constructed or demolished occupies a ground area of more than five thousand square feet, and up to forty thousand square feet, a competent watchman shall be on duty at the site during all hours when operations are not in progress. Where the construction or demolition area occupies a ground area of more than forty thousand square feet at least one additional watchman shall be on duty for each additional forty thousand square feet of construction or demolition area, or fraction thereof. Watchmen shall be familiar with the location of street fire alarm boxes and the location and use of fire fighting equipment required to be on the job site.
**(b) Flagmen**.-A flagman shall be provided whenever intermittent operations are conducted on, or across, areas open to use by persons other than workmen, or when dangerous operations, such as blasting, may affect such areas.
* *As enacted but nonsexist terms probably intended.*

**§[C26-1901.9] 27-1025 Escape hatches required.-**
(a) Where salamanders or other heating equipment are used to provide temporary heating during the placing of concrete for a floor, an escape hatch shall be provided from the floor where the concrete is being placed, which shall extend through at least one story immediately below such floor. The escape hatch shall be located as near to the center of the building as shall be practical.
(b) The escape hatch shall be constructed with at least two ladders enclosed in a metal shield. The ladders shall extend from a distance of three feet above the floor under construction to at least two stories below unless such floor is less than two stories above the lowest floor. The metal shield shall enclose the ladders on all sides from the top of the floor where the concrete is being placed to at least the top of the floor next below.
(c) The inside dimensions between faces of the shield shall be not less than three feet eight inches.
(d) The space between the shield and the perimeter of the opening in the floor under construction and also between the shield and the perimeter of the opening in the floor next below, shall be decked over with two inch or heavier planking covered with plywood or sheet metal so as to make the decking smoke tight. At the termination of the ladders the opening in the floor shall be covered completely with two inch planking or other material of equivalent strength.

## ARTICLE 3 PROTECTION OF ADJOINING PROPERTY

**§[C26-1902.1] 27-1026 General.-**
**(a) License to enter adjoining premises**.-The provisions of chapter one of title twenty-six of the administrative code, as amended, shall apply.
**(b) Physical examination**.-
(1) When permission to enter upon adjoining property has been obtained, a physical examination of such property shall be conducted by the person initiating the construction or demolition operations prior to the commencement of the operations and at reasonable periods during the progress of the work.
(2) During demolition operations, the provisions of section 27-1037 of article six of this subchapter shall also apply.
**(c) Adjoining walls**.-When any construction operation exposes or breaches an adjoining wall, the contractor shall maintain the structural integrity of such wall and maintain all required fire exits and passageways or provide substitutions meeting the requirements of this code. Portions of the wall exposed by construction operations shall be protected against the elements, and shall be restored or left permanently protected after completion of operations.
**(d) Weatherproof integrity of adjoining buildings**.-Where the weatherproof integrity of an adjoining building is impaired by construction operations, the flashing shall be restored, copings replaced, or other necessary measures taken to restore the weatherproof integrity of such adjoining buildings. See paragraph three of subdivision (a) of section 27-1037 of article six of this subchapter.

**§[C26-1902.2] 27-1027 Abandoned and discontinued operations.-**

**(a) Fencing**.-If any construction operation is abandoned, discontinued or interrupted, a solid fence at least eight feet high shall be provided to protect the public from potential hazards on the site.

**(b) Filing** and grading**.-If an excavation has been completed or partly completed and discontinued or interrupted, and the required permit has expired under the provisions of section 27-196 of article nineteen of subchapter one of this chapter and a permit for a proposed building has not been issued within six months after the completion of such operations, the lot shall be filled and graded to eliminate all steep slopes, holes, obstructions, or similar sources of hazard. Fill shall consist of clean, noncombustible material. The final surface shall be graded in such a manner as to drain the lot, eliminate pockets in the fill, and prevent the accumulation of water, without damaging any foundations on the premises or on adjoining property.

** *As enacted but "filling" probably intended.*

**§[C26-1902.3] 27-1028 Excavation or filling operations affecting adjoining property**.-Whenever an excavation or fill is to be made that will affect safety, stability, or usability of adjoining properties or buildings, the adjoining properties or buildings shall be protected as required by the provisions of article four of this subchapter.

**§[C26-1902.4] 27-1029 Foundation operations affecting adjacent properties**.-Whenever subsurface operations are conducted that may impose loads or movements on adjoining property, such as driving of piles, compaction of soils, or soil solidification, the effects of such operations on adjoining property and structures shall be considered. The owner of the property that may be affected shall be given forty-eight hours written notice of the intention to perform such operations. Where construction operations will cause changes in the ground water level under adjacent buildings, the effects of such changes on the stability and settlement of the adjacent foundations shall be investigated and provision made to prevent damage to such buildings. When in the opinion of the commissioner a potential hazard exists, elevations of the adjacent buildings shall be recorded by an architect or engineer at intervals of twenty-four hours or less as determined by the commissioner to ascertain if movement has occurred.

**§[C26-1902.5] 27-1030 Protection of trees**.-No trees outside the street line shall be disturbed or removed without the permission of the commissioner of parks and recreation. Protection meeting the requirements of the department of parks and recreation shall be provided around the trunks of all such trees, and written notification shall also be made to the department of parks and recreation at least forty-eight hours prior to commencement of such work. No deleterious, caustic, or acid materials shall be dumped or mixed within ten feet of any such tree, nor shall salt for the removal of ice or snow be applied when runoff will drain to a tree.

## ARTICLE 4 EXCAVATION OPERATIONS

**§[C26-1903.1] 27-1031 General requirements**.-The provisions of this section shall apply to all excavations, including those made for the purposes of taking earth, sand, gravel, or other material as well as for purposes of construction. The provisions of article three of this subchapter as applicable shall apply. The provisions of subchapter seven of chapter one of title twenty-six of the administrative code, as amended, shall also apply.

**(a) Support of adjoining ground**.-

(1) RETAINING STRUCTURE REQUIRED.-When the regulation of a lot requires the ground on such lot to be raised or lowered and kept higher than the ground of an adjoining lot, provided the ground of such adjoining lot is not maintained at a grade lower than in conformity with the street or streets on which it is situated, or where an excavation has been made or a fill placed on any lot meeting the curb level requirements, and the adjoining land is maintained at a grade in conformity with or lower than the street or streets on which it is situated, and is without permanent structures other than frame sheds or similar structures, a retaining structure shall be constructed as required for the safe support of the adjoining ground and unless the bank between the adjoining properties is maintained at a safe angle of repose. Any necessary retaining wall shall be built and maintained jointly by the owners on each side, unless otherwise agreed to by both owners.

(2) SURPLUS RETAINING STRUCTURE.-Where any owner shall insist on maintaining his or her ground either higher or lower than the legal regulation prescribed in the administrative code, the surplus retaining structure that may be necessary to support such height or provide for such excavation shall be made and maintained at the sole expense of such owner, and any additional thickness that may be required shall be built on the land of such owner.

(3) REMOVAL OF RETAINING STRUCTURES-Any retaining structure erected as provided under paragraphs one and two of this subdivision, standing partly on the land of each owner, may be removed by either owner when the original reason for the erection of such retaining structure ceases to exist.

**(b) Support of adjoining structures**.-

(1) EXCAVATION DEPTH MORE THAN TEN FEET.-When an excavation is carried to a depth more than ten feet below the legally established curb level the person who causes such excavation to be made shall, at all times and at his or her own expense, preserve and

protect from injury any adjoining structures, the safety of which may be affected by such part of the excavation as exceeds ten feet below the legally established curb level provided such person in afforded a license to enter and inspect the adjoining buildings and property.

a. Such person shall support the vertical load of the adjoining structure by proper foundations, underpinning, or other equivalent means where the level of the foundations of the adjoining structure is at or above the level of the bottom of the new excavation.

b. Where the existing adjoining structure is below the level of the new construction, provision shall be made to support any increased vertical or lateral load on the existing adjoining structure caused by the new construction.

c. Where the new construction will result in a decrease in the frost protection for an existing foundation below the minimums established in subchapter eleven of this chapter, the existing foundation shall be modified as necessary to restore the required frost protection.

(2) EXCAVATION DEPTH TEN FEET OR LESS.- Where an excavation is carried to a depth of ten feet or less below the legally established curb level, the owner of the adjoining structure shall preserve and protect the safety of his or her structure provided such owner is afforded a license to enter and inspect the property where the excavation is to be made.

**(c) Support of party walls**.-Where a party wall will be affected by excavation, regardless of the depth, the person who causes the excavation to be made shall preserve such party wall at his or her own expense so that it shall be, and shall remain, in a safe condition.

**(d) Drainage**.-All excavations shall be drained and the drainage maintained as long as the excavation continues or remains. Where necessary, pumping shall be used. No condition shall be created as a result of construction operations that will interfere with natural surface drainage. Water courses, drainage ditches, etc., shall not be obstructed by refuse, waste building materials, earth, stones, tree stumps, branches, or other debris that may interfere with surface drainage or cause the impoundment of surface waters.

**(e) Access**.-Every excavation shall be provided with safe means of ingress and egress kept available at all times.

**§[C26-1903.2] 27-1032 Protection of sides of excavations.-**

**(a) Shoring and bracing and sheeting**.-With the exception of rock cuts, the sides of all excavations, including related or resulting embankments, five feet or greater in depth or height measured from the level of the adjacent ground surface to the deepest point of the excavation, shall be protected and maintained by shoring, bracing and sheeting, sheet piling, or by other retaining structures. Alternatively, excavated slopes may be inclined not steeper than forty-five degrees or stepped so that the average slope is not steeper than forty-five degrees with no step more than five feet high, provided such slope does not endanger any structure, including subsurface structures. All sides or slopes of excavations or embankments shall be inspected after rainstorms, or any other hazard-increasing event, and safe conditions shall be restored. Sheet piling and bracing used in trench excavations shall be at least equivalent in strength to that specified in tables 19-1 and 19-2.

**(b) Guard rail**.-In addition to the requirements of section 27-1021 of article two of this subchapter, a standard guard rail or a solid enclosure at least three feet six inches high shall be provided along the open sides of excavations, except that such guard rail or solid enclosure may be omitted from a side or sides when access to the adjoining area is precluded, or where side slopes are one vertical to three horizontal or flatter.

**(c) Placing of construction material**.-Excavated material and superimposed loads such as equipment, trucks, etc., shall not be placed closer to the edge of the excavation than a distance equal to one and one-half times the depth of such excavation, unless the excavation is in rock or unless the sides of the excavation have been sloped or sheet piled (or sheeted) and shored to withstand the lateral force imposed by such superimposed loads. When sheet piling is used, it shall extend at least six inches above the natural level of the ground. In the case of open excavations with side slopes, the edge of excavation shall be taken as the toe of the slope.

**(d) Mechanical diggers**.-Where trenching more than five feet in depth is done by a mechanical digger, the required protection shall follow the boom as closely as practical.

## ARTICLE 5 ERECTION OPERATIONS

**§[C26-1904.1] 27-1033 Protection of sidewalks.-**The provisions of section 27-1021 of article two of this subchapter as applicable shall apply.

**§[C26-1904.2] 27-1034 Structural steel assembly.-**

**(a) Placing of structural members**.-

(1) During the placing of a structural member, the load shall not be released from the hoisting rope until the member is securely supported.

(2) Open web steel joists that are hoisted singly shall be transferred from their place of storage directly to their permanent location and safely secured. No load shall be placed on open web steel joists until they are permanently fastened in place.

**(b) Tag lines**.-While structural members or assemblies are being hoisted, tag lines shall be used to prevent uncontrolled movement.

**(c) Erection of trusses**.-All trusses shall be laterally braced or guyed as necessary for the safety of the structure.

**(d) Erection of frames**.-All structural frames shall be properly braced with shores or guyed cables and turnbuckles as necessary for the safety of the structure.

**TABLE 19-1 MINIMUM SIZES OF TIMBER BRACING AND TIMBER SHEET PILING FOR TRENCHES FOUR FEET WIDE OR LESS[a]**

| Depth of Trench, (ft.) | Sheet Piling Size (in.) | Sheet Piling Horizontal Spacing (ft.) | Stringers Size (in.) | Stringers Vertical Spacing (ft.) | Cross Bracing Size (in.) | Cross Bracing Horizontal Spacing (ft.) |
|---|---|---|---|---|---|---|
| | | | Hard and solid soil | | | |
| 5-10…… | 2 x 6 | 6 | 2 x 6 | 6 | 2 x 6 | 6 |
| 10-15……... | 2 x 6 | 4 | 2 x 6 | 6 | 2 x 6 | 4 |
| More than 15... | 2 x 6 | tight | 4 x 8 | 4 | 4 x 8 | 6 |
| | | | Soil likely to crack or crumble | | | |
| 5-10…… | 2 x 6 | 3 | 2 x 6 | 5 | 2 x 6 | 5 |
| 10-15……... | 2 x 6 | 2 | 2 x 6 | 4 | 2 x 6 | 4 |
| More than 15... | 2 x 6 | tight | 4 x 10 | 4 | 4 x 10 | 6 |
| | | | Soft, sandy filled-in loose soil | | | |
| 5-10…… | 2 x 6 | tight | 4 x 6 | 6 | 4 x 6 | 6 |
| 10-15……... | 2 x 6 | tight | 4 x 6 | 5 | 4 x 6 | 6 |
| More than 15... | 2 x 6 | tight | 4 x 12 | 4 | 4 x 12 | 6 |
| | | | Where hydrostatic pressure exists | | | |
| To 10……... | 2 x 6 | tight | 6 x 8 | 4 | 6 x 8 | 6 |
| More than 10... | 3 x 6 | tight | 6 x 10 | 4 | 6 x 10 | 6 |

**Note for Table 19-1:**

[a]Steel sheet piling and bracing of equivalent strength may be substituted for wood sheet piling and timber bracing.

**TABLE 19-2 MINIMUM SIZES OF TIMBER BRACING AND TIMBER SHEET PILING FOR TRENCHES FOUR TO EIGHT FEET WIDE[a]**

| Depth of trench, (ft.) | Sheet Piling Size (in.) | Sheet Piling Horizontal Spacing (ft.) | Stringers Size (in.) | Stringers Vertical Spacing (ft.) | Cross Bracing Size (in.) | Cross Bracing Horizontal Spacing (ft.) |
|---|---|---|---|---|---|---|
| | | | Hard and solid soil | | | |
| 5-10…… | 2 X 6 | 6 | 4 X 6 | 4 | 4 X 6 | 6 |
| 10-20……... | 2 X 6 | tight | 6 X 6 | 4 | 6 X 6 | 6 |
| More than 20... | 2 X 6 | tight | 6 X 8 | 4 | 6 X 8 | 6 |
| | | | Soil likely to crack or crumble | | | |
| 5-10…… | 2 X 6 | 3 | 4 X 6 | 4 | 4 X 6 | 6 |
| 10-20……... | 2 X 6 | tight | 6 X 6 | 4 | 6 X 6 | 6 |
| More than 20... | 2 X 6 | tight | 6 X 8 | 4 | 6 X 8 | 6 |
| | | | Soft, sandy filled-in loose soil | | | |
| 5-10…… | 2 X 6 | tight | 4 X 6 | 4 | 4 X 6 | 6 |
| 10-20……... | 2 X 6 | tight | 6 X 6 | 4 | 6 X 6 | 6 |
| More than 20... | 2 X 6 | tight | 6 X 8 | 4 | 6 X 8 | 6 |
| | | | Where hydrostatic pressure exists | | | |
| To 10……... | 2 X 6 | tight | 6 X 8 | 4 | 6 X 8 | 6 |
| More than 10... | 3 X 6 | tight | 6 X 10 | 4 | 6 X 10 | 6 |

**Note for Table 19-2:**

[a]Steel sheet piling and bracing of equivalent strength may be substituted for wood sheet piling and timber bracing.

**§[C26-1904.3] 27-1035 Concrete formwork.-**

**(a) General requirements**.-

(1) Formwork, including all related braces, shoring, framing, and auxiliary construction shall be proportioned, erected, supported, braced, and maintained so that it will safely support all vertical and lateral loads that might be applied until such loads can be supported by the permanent construction.

(2) Vertical and lateral loads shall be carried to the ground by the formwork system, by the new construction after it has attained adequate strength for that purpose, or by existing structures.

(3) Forms shall be properly braced or tied together so as to maintain position and shape, and shall conform to the sizes and shapes of members as shown on the design drawings.
(4) Ramps and runways shall meet the requirements of article nine of this subchapter.
**(b) Inspection**.-
(1) Formwork, including shores, reshores, braces, and other supports, shall be inspected by an engineer or architect to verify the sizes of the concrete members being formed, as provided in article five of subchapter ten of this chapter. In addition, such forms shall be inspected for conformance with the form design drawings, when such drawings are required by the provisions of subdivision (c) of this section; and/or conformance with the provisions of this section. Such inspections may be made by the person superintending the work. Both such inspections shall be made prior to placement of reinforcing steel. Subsequently, inspections shall be made by the person superintending the work periodically during the placement of concrete to detect incipient problems.
(2) During and after concreting, the elevations, camber, and vertical alignment of formwork systems shall be checked using tell-tale devices.
(3) A record of all such inspections shall be kept at the site available to the commissioner, and the names of the persons doing the inspecting and the name of the foreman in charge of formwork shall be posted in the field office.
**(c) Design of concrete formwork**.-Wherever the shore height exceeds fourteen feet or the total load on the forms exceeds one hundred fifty psf, or wherever power buggies or two-stage shores are used, the forms, including shoring foundation, shall be designed as provided in section 27-1015 of article one of this subchapter, and shall be constructed in conformance with such design. Formwork drawings shall be prepared. The allowable stresses for design shall meet the requirements of subchapter ten of this chapter. A copy of the design drawings and any construction drawings and specifications shall be kept on the job available to the commissioner.
(1) VERTICAL LOADS.-Vertical loads shall include the total dead and live loads. Dead load shall include the weight of formwork plus the weight of the reinforcement and fresh concrete. Live load shall allow for the weight of workers and equipment, with allowance for impact, but in no case shall less than twenty psf be allowed.
(2) LATERAL CONCRETE PRESSURE.-Design of forms, ties, and bracing shall assume that minimum lateral pressures of fresh concrete are as shown in table 19-3.

**TABLE 19-3 MINIMUM LATERAL PRESSURES TO BE ASSUMED FOR FRESH CONCRETE WEIGHING 150 POUNDS PER CUBIC FOOT**

| Type of Work | Minimum Lateral Pressure Assumed (psf) | Limitations |
|---|---|---|
| Columns: Ordinary work with normal internal vibration | $p = 150 + \frac{9000R}{T}$ | Maximum 3,000 psf or 150h, whichever is less |
| Walls: Rate of placement at 7 ft. per hr. or less | $p = 150 + \frac{9000R}{T}$ | Maximum 2,000 psf or 150h, whichever is less |
| Walls: Rate of placement at greater than 7 feet per hr. | $p = 150 + \frac{43400}{T} + \frac{2800R}{T}$ | Maximum 2,000 psf or 150h, whichever is less |
| Slabs | $p = 150h$ | None |

Where:
R = rate of placement, ft. per hr.
T = temperature of concrete in the forms, deg. F.
h = height of fresh concrete above point considered, ft.

**Notes for Table 19-3:**

[a]Allowances for change in lateral pressure shall be made for concrete weighing [*sic*] other than one hundred fifty pcf; for concrete containing pozzolanic additions or cements other than type I, for concrete having slumps greater than six in., or for concrete consolidated by revibration or external vibration of forms.

[b]Where retarding admixtures are employed under hot weather conditions an effective value of temperature less than that of the concrete in the forms shall be used in the above formulae.

[c]If retarding admixtures are used in cold weather, the lateral pressure may be assumed as that exerted by a fluid weighing [*sic*] one hundred fifty pcf.

(3) EXTERNAL LATERAL LOADS.-
a. Braces and shores shall be designed to resist all external lateral loads such as wind, cable tensions, inclined supports, dumping of concrete, and starting and stopping of equipment.
b. In no case shall the assumed value of lateral load due to wind, dumping of concrete, and equipment acting in any direction at each floorline be less than one hundred plf edge or two percent of total dead load of the floor, whichever is greater.
c. Except for foundation walls that are poured against a rigid backing, wall forms shall be designed for a minimum lateral load of ten psf, and bracing for wall forms shall be designed for a lateral load of at least one hundred plf of wall, applied at the top. The lateral load acting on walls greater than fourteen feet high shall be determined by analysis of conditions applicable to the site and building.
(4) SPECIAL LOADS.-The formwork shall be designed for any special conditions of construction likely to occur, such as unsymmetrical placement of concrete, impact of machine-delivered concrete, uplift, and concentrated loads.
(5) SHORING AND BRACING.-
a. When patented or commercial devices that are not susceptible to design are used for shoring, bracing, or splicing, they shall be approved.
b. Splices shall develop the full strength of the spliced members.
c. Where shore height exceeds ten feet, or when necessary to provide structural stability, diagonal bracing shall be provided. Struts, anchored into masonry or to panel joints of adjacent braced bays, may be used to prevent buckling of individual members not supported by the diagonal bracing; but, bracing an entire tier of shores with struts without diagonal bracing will not be permitted unless the system can be demonstrated to be braced by other rigid construction.
d. The unbraced length of shores shall not exceed the maximum length determined in accordance with the applicable reference standard in subchapter ten of this chapter for the structural material used.
(6) FOUNDATIONS.-Foundations for shores more than ten feet high and supported on the ground shall be designed.
(7) SETTLEMENT.-Falsework shall be so constructed that vertical adjustments can be made to compensate for take-up and settlements. Wedges, jacks, or other positive means shall be provided for this purpose.
(8) POWER BUGGIES.-For special requirements for runways, ramps, and platforms used by power buggies, see section 27-1053 of article nine of this subchapter.

**(d) Construction.-**

(1) Field constructed lap splices, other than approved devices, shall not be used more often than for every other shore under slabs or for every third shore under beams, and shall develop the full strength of the members. Such spliced shores shall be uniformly distributed throughout the work. Splices shall not be located near the midheight of the shores unless lateral support is provided, nor midway between points of lateral support.
(2) Vertical shores for multifloor forms shall be set plumb and in alignment with lower tiers so that loads from upper tiers are transferred directly to the lower tiers, or adequate transfer members shall be provided. Provision shall be made to transfer the lateral loads to the ground or to completed construction of adequate strength.
(3) Vertical shores shall be so erected that they cannot tilt, and shall have firm bearing. Inclined shores and the bearing ends of all shores shall be braced against slipping or sliding. The bearing surfaces shall be cut square and have a tight fit at splices.
(4) Runways for moving equipment shall be provided with struts or legs as required, and shall be supported directly on the formwork or structural member and not on the reinforcement.
(5) Any unsafe condition or necessary adjustment revealed by inspection shall be remedied immediately. If, during construction, any weakness develops and the falsework shows any undue settlement or distortion, the work shall be stopped, the affected construction removed if permanently damaged, and the falsework strengthened.

**(e) Removal of forms and shoring**.-

(1) Forms shall be removed in such a manner as to assure the complete safety of the structure.
(2) Where the structure as a whole is supported on shores, then beam and girder sides, columns, and similar vertical forms may be removed after twenty-four hours provided the concrete is sufficiently hard to withstand damage thereby. In no case shall the supporting forms or shoring be removed until the members have acquired sufficient strength to support safely their weight and the load thereon.
(3) The results of control tests, including concrete cylinder specimens prepared in accordance with reference standard RS 10-52, cast-in-place cores, or other device which will produce test specimens representative of the condition of the concrete in place, of suitable size and proportions, and approved by the architect or engineer shall be deemed evidence that the concrete has attained sufficient strength or such strength as may be specified on the drawings. The contractor may submit alternate methods of stripping, reshoring, and strength control for approval by the architect or engineer and subject to review by the commissioner.

**(f) Reshoring**.-Reshoring shall be provided to support the construction where forms and shores are stripped before the concrete has gained adequate strength to support the superimposed loads due to construction above.

*(1) INSTALLATION LIMITATIONS.-Reshores of wood or metal shall be screw adjusted or jacked and locked or wedged. Wedges shall not be used within ten feet of the facade or at such other locations as determined by rules and regulations promulgated by the commissioner. Reshores shall not be jacked or screwed so tight that they preload the floor below or remove the normal deflection of the slab above. In no case shall shores be so located as to significantly alter the pattern of stresses determined in the original structural analysis or to induce tensile stresses where reinforcing bars are not provided. Reshores within ten feet of the facade shall be secured.

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(2) BRACING. - Lateral bracing shall be provided during reshoring operations, and reshores shall be located as close as practical to the same position on each floor to provide continuous support from floor to floor.

(3) RESHORING BEAM AND GIRDER CONSTRUCTION.- Where reshoring of beam and girder construction is required, the forms shall not be removed from more than one girder at a time, and the girder shall be reshored before any other supports are removed. After the supporting girders are reshored, the form shall be removed from one beam with its adjacent slabs and the beam shall be reshored before any other supports are removed. Slabs spanning ten feet or more shall be reshored along the center line of the span.

(4) RESHORING FLAT SLABS.-Where reshoring of flat slab construction is required, the shores for the area within the intersection of the middle strips of each panel shall be left in place at all times until the concrete has attained sufficient strength to support the loading to which it will be subjected. After the other shores in each panel have been removed, reshores shall be placed on the column lines at [*sic*] the mid-points between columns, before the next panel is stripped.

**(g) Slip form construction**.-

(1) The applicable provisions of subdivision (c) of section 27-1035 of this article shall apply.

(2) All slip forms shall be designed, and the construction and sliding operations shall be carried out under the personal supervision of the person superintending the work or his or her designated representative.

(3) Lateral and diagonal bracing for forms shall be provided to insure that the shape of the structure will not be unduly distorted during the sliding operation.

(4) Jacks shall be spaced, anchored, and operated in such a manner that the vertical load on all jacks is approximately equal and does not exceed the capacity of any jack. Jacks shall be provided with automatic holding devices.

(5) Forms shall be leveled before and after they are filled, and shall be maintained level throughout the slide. Drifting of the forms from alignment or designed dimensions, and torsional movement shall be prevented. Horizontal and vertical alignment of structure shall be checked at least once during every twenty-four hours that the slide is in operation.

**(h) Lift method construction**.-

(1) The casting bed and supporting construction shall be designed to carry the dead load of the stacked slabs and any live load that may be imposed.

(2) Slabs shall not be lifted until the concrete has attained adequate strength to support its own weight and any superimposed loads without exceeding the stress values established in subchapter ten of this chapter.

(3) Lifting of all parts of the slab shall be approximately simultaneous and at a uniform rate. The lifting equipment shall be constantly engaged to prevent slippage or retrogression of the slab during lifting operations.

(4) Care shall be taken to insure that collar keyholes or other lifting attachment openings are in direct vertical alignment for all slabs. Wedges shall be inserted between the collar opening and column to maintain clearance on all sides of the column. Blockouts shall be provided to prevent concrete from entering space between collar and column as well as the lifting attachment openings.

(5) Temporary bracing for lateral support of columns shall be provided during lifting operations and shall remain in place until its function can be assumed by permanent connections of slabs to columns, permanent bracing walls, or other means of lateral support, unless it can be shown that all columns, their base connections to footings, the footings, and soil are adequate as a cantilever system to resist all prescribed lateral forces.

(6) The assumed value of lateral forces in lift slab construction due to unsymmetrical loads, lifting reactions, or wind shall be at least fifty plf of floor edge or one percent of the total load lifted, whichever is greater.

(7) No person shall be allowed to enter the area immediately under slabs during the actual movement of lifting nor shall any construction operations be commenced in this area, other than fixing the connections of slabs to columns or providing other positive supports, until such connections or supports are completed and the load of all lifted slabs has been transferred from lifting equipment thereto.

**(i) Prestressed construction**.-Solid safety shields shall be provided at end anchorages of prestressing beds, or where necessary, for protection against breakage of prestressing strands, cables, or other assemblies during prestressing or casting operations.

## ARTICLE 6 DEMOLITION OPERATIONS

**§[C26-1905.1] 27-1036 Preparations.-**

**(a) Utilities and service lines**.-The provisions of section 27-1013 of article one of this subchapter and article fourteen of subchapter one of this chapter shall apply.

**(b) Condition of structure**.-Where a structure to be demolished has been partially wrecked or weakened by fire, flood, explosion, age, or other causes, it shall be shored or braced to the extent necessary to permit orderly demolition without collapse. The necessary measures shall be determined by the contractor subject to approval by the commissioner.

**(c) Hazards to be removed**.-

(1) Before commencement of actual demolition, all glass in windows, doors, skylights, and fixtures shall be removed.

(2) In any structure more than twenty-five feet high, any window or other exterior wall opening that is within twenty-feet of a floor opening used for the passage of debris from floors above shall be solidly boarded up or otherwise substantially covered, unless such window or opening is so located as to preclude the possibility of any person being injured by material that may fall from such window or opening. See section 27-1022 of article two of this subchapter.

(3) Before demolition is started, the cellar and all floors shall be thoroughly cleaned of combustible materials and debris. All fixtures and equipment that would cause voids in the fill shall be removed. If the cellar is to be filled to grade, the first floor construction shall be removed and the existing cellar floor shall be broken up to the extent necessary to provide ground drainage and prevent accumulation of water. If the cellar is not to be filled, positive cellar drainage shall be provided.

(d) Examination and procedure.-Before any material is stored on any floor, the existing flooring adjacent to the bearing walls shall be removed and ends of floor beams in the bearing walls shall be carefully examined to ascertain their condition and the amount of bearing on the bearing wall. If they are found to be in poor condition or to have insufficient bearing, no material shall be deposited on the floor until these beams are shored from the cellar floor through each successive floor. No bearing partition shall be removed from any floor until the floor beams on the floor above have been removed and lowered. All header beams and headers at stair openings and chimneys shall be carefully examined, and where required shall be shored from the cellar floor through successive floors. All operations shall be continually inspected as the work progresses to detect any hazards that may develop.

**§[C26-1905.2] 27-1037 Protection of adjacent structures**.-The applicable provisions of article three of this subchapter shall apply.

**(a) Adjoining walls**.-

(1) All beams in party walls shall be cut off close to the walls, stub ends removed without weakening existing masonry, and beam pockets cleaned of loose mortar. The owner of the demolished structure shall, at his or her own expense, bend over all wall anchors at the beam ends in the standing wall and shall brick-up all open beam holes with sound brick and cement mortar.

(2) The stability and condition of the remaining walls shall be investigated and all necessary steps taken to protect same. Where the floor beams of the adjacent building bear on the party wall, the person causing the demolition to be made shall ascertain that such beams are anchored into the wall and, where such anchorage is lacking, shall provide anchorage or otherwise brace the standing wall.

(3) Roofing material of adjoining buildings shall be bent over and flashed. All door or other openings in party walls shall be sealed and weatherproofed. Cornices, where cut, shall be properly sealed. Parapets and any walls that have been disturbed shall be pointed up and made weathertight. All exposed furring, lath, and plaster on party walls shall be removed, and any loose wall material shall be firmly anchored or removed and replaced.

(4) All unnecessary chimney breasts, projections and any other debris exposed on party walls shall be removed by the person causing the demolition of the structure and all openings shall be bricked up flush on the exterior side of the party wall. All masonry which is in poor condition shall be pointed and patched.

(b) Party wall exits.-No party wall balcony or horizontal fire exit shall be demolished, removed, or obstructed in any manner that would destroy the full effectiveness of such fire exit as means of egress, unless a substitute means of egress meeting the requirements of this code has been provided.

**§[C26-1905.3] 27-1038 Protection of sidewalks**.-The provisions of section 27-1021 of article two of this subchapter as applicable shall apply.

**§[C26-1905.4] 27-1039 Demolition operations.-**

**(a) Walls**.-

(1) Demolition of walls and partitions shall proceed in a systematic manner, and all work above each tier of floor beams shall be completed before any of the supporting structural members are disturbed.

(2) Sections of masonry walls shall not be loosened or permitted to fall in such masses as to affect the carrying capacity of floors or the stability of structural supports.

(3) No wall, chimney, or other structural part shall be left in such condition that it may collapse or be toppled by wind, vibration or any other cause.

(4) No section of wall with a height more than twenty-two times its thickness shall be permitted to stand without bracing.

(5) Where brick or masonry chimneys cannot be safely toppled or dropped, all materials shall be dropped down on the inside of such chimneys.

(6) All enclosed vertical shafts and stairs shall be maintained enclosed at all floors except the uppermost floor being demolished, and all work on the uppermost floor shall be completed before stair and shaft enclosures on the floor below are disturbed. All hand rails and banisters

shall be left in place until actual demolition of such floor is in progress.

**(b) Structural steel and heavy timbers**.-

(1) Steel and heavy timber construction shall be demolished column length-by-column length and tier-by-tier. Any structural member that is being dismembered shall not be supporting any load other than its own weight, and such member shall be chained or lashed in place to prevent any uncontrolled swing or drop.

(2) Structural members shall not be thrown or dropped from the building, but shall be slowly and carefully lowered by hoists equipped with adequate brakes and non-reversing safety devices.

**(c) Use of derricks**.-Where a derrick is used for demolition, an investigation of the floor on which the derrick rests shall be made by an engineer or architect to determine its adequacy for the loading to be imposed; strengthening shall be designed and added as required to limit the imposed stresses to the values permitted by the provisions of subchapter ten of this chapter. A report summarizing such investigation and design shall be prepared and kept at the site available to the commissioner.

**(d) Mechanical methods of demolition**.-The mechanical method of demolition, whereby the wrecking of a building or part thereof is accomplished by smashing the walls or floors with a heavy weight suspended by a cable, or whereby the walls are collapsed by the use of a power shovel, tractor, or other mechanical contrivance, shall be permitted only upon issuance of a special permit by the department and in accordance with the following requirements:

(1) The building or structure, or remaining portion thereof, shall not be more than eighty feet in height.

(2) A safety zone, as determined by the commissioner, shall be provided around the demolition area. Fences constructed as required in section 27-1021 of article two of this subchapter shall be erected to prevent persons other than workers from entering such safety zone.

(3) Unless permitted by the commissioner, the mechanical method of demolition shall not be used where any building, or portion thereof, occupied by one or more persons is located within the safety zone.

(4) Where a swinging weight is used, two or more separate cable slings shall be used to attach the ball to a safety or moused hook and the supporting cable shall be of such length or so restrained that it is not possible for the weight to swing against any structure other than the structure being demolished.

(5) Where mechanical demolition operations may involve a street, the requirements of the department of transportation shall be met.

**(e) Removal and storage of material**.-

(1) PHYSICAL REMOVAL.-Debris, bricks, and similar material shall be removed by means of chutes, buckets, or hoists or through openings in the floors of the structure. Openings in any floor shall not aggregate more than twenty-five percent of the area of that floor unless it can be shown to the satisfaction of the commissioner that larger openings will not impair the stability of the structure.

a. Every opening used for the removal of debris in every floor except the top or working floor, shall be provided with a tight enclosure from floor to floor, equivalent to that afforded by planking not less than two inches in thickness. As an alternative in buildings when not more than six stories in height, such openings may be protected by a tight temporary covering equivalent to that afforded by planks not less than two inches in thickness and laid close. Wherever such covering has been temporarily removed to permit debris removal floor openings shall be protected by standard guard rails or railings. Such covering shall be promptly replaced in position upon the ceasing of such work at the end of each work day.

b. Every opening not used for the removal of debris in any floor shall be solidly planked over.

(2) STORAGE OF MATERIAL.-

a. Material shall not be stored on catch platforms, working platforms, floors, or stairways of any structure except that any one floor of a building to be demolished may be used for the temporary storage of material when such floor can be shown to be of adequate strength to support one and one-half times the load to be superimposed.

b. Storage spaces shall not interfere with access to any stairway or passageway, and suitable barricades shall be provided so as to prevent material from sliding or rebounding into any space accessible to the public. All material shall be safely piled in such storage locations in a manner that will not overload any part of the structure or create any hazard.

c. In buildings of noncombustible construction, floor slabs to an elevation of not more than twenty-five feet above the legally established curb level may be removed to provide temporary storage for debris, provided that: (1) the stored debris is piled with sufficient uniformity to prevent lateral displacement of interior walls or columns; (2) the height of the piled material will not burst the exterior walls due to accumulated pressure; and (3) the operation does not otherwise endanger the stability of the structure.

d. Debris stored in the cellar shall not be piled above the level of the adjacent exterior grade unless the contractor provides sheet-piling, shoring, bracing, or such other means necessary to insure the stability of the walls and to prevent any wall from collapsing due to the pressure of accumulated material.

**(f) Dust**.-Dust producing operations shall be wetted down to the extent necessary to lay the dust.

**(g) Use of explosives**.-The use of explosives in demolition operations shall conform to the requirements and limitations imposed by the fire department. The toppling of buildings by the use of explosives is prohibited except where such procedure is permitted by the commissioner.

**(h) Temporary elevators**.-Whenever, in the course of

building demolition, the work is at a height greater than seventy-five feet, at least one elevator meeting the requirements of subchapter eighteen of this chapter shall be kept in readiness at all times for fire department use.

**§[C26-1905.5] 27-1040 Completed demolitions**.-At the completion of demolition operations, unless new construction is to follow within a period of thirty calendar days, the site shall be graded, drained, or otherwise protected as provided in section 27-1027 of article three of this subchapter.

## ARTICLE 7 REPAIR AND ALTERATION OPERATIONS

**§[C26-1906.1] 27-1041 General requirements**.-Building repair or alteration operations shall be considered as construction operations and shall be governed by the regulations established in this subchapter. Where alterations are conducted in occupied buildings, barricades, signs, drop cloths, etc., shall be erected as required to provide reasonable protection for the occupants against hazard and nuisance.

## ARTICLE 8 SCAFFOLDS

**§[C26-1907.1] 27-1042 General provisions for all scaffolds**.-All scaffolds shall be erected and maintained so that the safety of public and property will not be impaired by falling material, tools or debris or by collapse of the scaffold.

**(a) Materials and construction**.-

(1) All lumber used in scaffolds or their supports shall be at least equal in strength and quality to construction grade Douglas fir.

**TABLE 19-4 SIZE AND NUMBER OF NAILS REQUIRED FOR SCAFFOLD CONSTRUCTION**

| Thickness of Smaller Member (in.) | Trade Size of Nail | Length of Nail (in.) |
|---|---|---|
| 1 | 8d | 2 ½ |
| 2 | 20d | 4 |
| 3 | 60d | 6 |
| 4 | — | 8 |

| Width of Smaller Member (in.) | Minimum Number of Nails Required |
|---|---|
| 4 | 2 |
| 6 | 3 |
| 8 | 4 |
| 10 | 5 |
| 12 | 5 |

**(b) Loading and design**.-

(1) DESIGN REQUIRED.-All exterior pole scaffolds over seventy-five feet high and all multiple-point suspension scaffolds, including all supports, fastenings, connections, and details, shall be designed. Design drawings shall be prepared and kept at the site available to the commissioner. The construction shall be executed in accordance with such design. All other scaffolding shall be constructed of sizes and numbers of members as hereinafter required or, in the absence of such requirements shall be demonstrated to be capable of supporting, without collapse, not less than four times the maximum weight required to be suspended therefrom or placed thereon when in use.

(2) LOADING.-No standard scaffold as defined herein, shall be loaded in excess of the maximum load for which it is designated in paragraph three of this subdivision. Loads shall not be concentrated so as to cause stresses in excess of the allowable values designated in subchapter ten of this chapter.

(3) STANDARD SCAFFOLD DESIGNATIONS.-

a. Light duty scaffold.-The light duty scaffold is to be used for loads up to twenty-five psf, and is intended for use by carpenters, painters, or others of similar trades. It shall not be used to support loads more severe than those imposed by such workers and a minimum amount of lightweight materials.

b. Medium duty scaffold.-The medium [duty]* scaffold is to be used for loads up to fifty psf, and is intended for use by bricklayers or plasterers. It shall not be used to support loads more severe than those imposed by such workers and a moderate amount of their materials.

***Copy in brackets not enacted but probably intended.***

c. Heavy duty scaffold.-The heavy duty scaffold is to be used for loads up to seventy-five psf, and is intended for use by stone masons. It shall not be used to support loads more severe than those imposed by such workers and a reasonable supply of their materials.

(4) FOOTINGS AND ANCHORAGE.-The footings and anchorage for every scaffold shall be sound and rigid, capable of carrying the maximum load without settlement or deformation, and secure against movement in any direction. Supports such as barrels, boxes, loose brick, loose stone, or other unstable constructions shall not be used.

**(c) Planking**.-

(1) The minimum width of every planked platform shall be eighteen inches, except as otherwise noted hereinafter. Unless otherwise indicated, the sizes in this subchapter for load-bearing planks shall denote undressed lumber, full thickness.

(2) Except as otherwise indicated in this section, planks shall overhang their end supports at least six inches, or they shall be securely fastened to prevent dislodgment. In no case shall the overhang exceed eighteen inches. Planks shall be laid tight, and inclined planking shall be fastened in place.

(3) The maximum permissible spans for two inch plank shall be as shown in table 19-5.

(4) The maximum permissible span for one and one-

quarter inch plank of full thickness shall be six feet. The maximum permissible working load shall be fifty psf.

**(d) Erection and removal**.-Only workers with experience in erecting or removing scaffolds shall be employed. They shall work under the supervision of a designated superintendent or foreman who shall enforce such measures as necessary for the protection of public and property.

**TABLE 19-5 MAXIMUM PERMISSIBLE SPANS FOR TWO-INCH PLANK USED ON SCAFFOLDS**

| Material | Full Thickness Undressed Lumber | | | Lumber of Nominal Thickness | | |
|---|---|---|---|---|---|---|
| Working Load (psf)….. | 25 | 50 | 75 | 25 | 50 | 75 |
| Permissible Span (ft.)… | 10 | 8 | 6 | 8 | 6 | 5 |

**(e) Maintenance and repair**.-All scaffolds shall be maintained in safe condition. No scaffold shall be altered, removed, or partially dismantled while it is in active use. Every damaged or weakened scaffold shall be immediately repaired and shall not be used until such repairs have been completed, and, in the case of suspended scaffolds, tested as required under subdivision (b) of section 27-1045 of this article.

**(f) Fire retardant construction**.-With the exception of the planking, all scaffolds shall be noncombustible material when used in the following applications:

(1) Exterior scaffolds exceeding seventy-five feet in height.

(2) Interior scaffolds exceeding twenty-one feet in height.

(3) All scaffolds used in the alteration, repair, or partial demolition of buildings in occupancy groups H-1 and H-2.

**(g) Guard rails and toeboards**.-

(1) Except for scaffold platforms ten feet or less above the ground or for scaffolds used on the interior of a building at a height ten feet or less above a floor, the open sides and ends of every scaffold platform shall be provided with a standard guard rail and toeboard as described in section 27-1050 of this article, unless otherwise specified for the particular type of scaffold.

(2) Where it is possible for the public to pass under, or next to a scaffold, the space between the top rail and toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum one-half inch mesh.

(3) Toeboards shall be installed so that no open space exists between the platform and the toeboard.

**§[C26-1907.2] 27-1043 Pole scaffolds.-**

**(a) Poles**.-Scaffold poles shall be plumb and the foot ends shall be secured against lateral movement. Where wood poles are spliced, the squared end of the upper section shall bear uniformly on the squared end of the lower section, and the two ends shall be rigidly fastened together with two or more wood splice plates, each at least four feet in length. The plates shall be placed at right angles to each other, shall overlap the abutting ends of the pole equally, and shall have a combined sectional area not less than fifty percent of the cross sectional area of the pole. Splicing of adjacent poles shall be staggered. Splices shall be close to ledgers, but so located as not to interfere with the fastenings.

**(b) Bracing**.-Pole scaffolds shall be braced and stayed to prevent movement away from the building. Diagonal or equivalent bracing shall be provided to prevent the poles from moving in a direction parallel to the building face, and shall be so installed that every spliced section of every pole is braced to adjacent poles.

**(c) Planking**.-

(1) Where planks are butted end to end, parallel putlogs or bearers shall be provided not more than eight inches apart so that butted ends rest on separate putlogs or bearers. Ends shall be nailed or cleated.

(2) Where platform planks are used with overlapping ends, the ends of both the upper and lower planks shall overlap the putlog or bearer by a[t]* least six inches.

***Copy in brackets not enacted but probably intended.***

(3) Planks shall be laid close together and shall be of sufficient length to extend over three bearers.

**(d) Connections**.-

(1) Ledgers shall not be spliced between poles but shall overlap the poles at each end by at least four inches. Where ledgers lap each other, bearing-blocks attached to the pole shall be provided to support the ledger.

(2) The ends of all wooden braces shall overlap the nailed fastenings an amount sufficient to prevent the ends of the braces from splitting.

**(e) Putlogs for single pole scaffolds**.-All putlogs shall be set with the greater dimension vertical and shall be long enough to project beyond the outer edge of the poles by at least twelve inches. Putlogs shall be supported on the ledger and located against the side of the poles and fastened to either the pole or the ledger. The other end of the putlog shall rest in the wall of the building, with at least four inch bearing, and shall not be notched or cut down, except for light duty scaffolds, which may be notched or cut down to fit into a space made by the removal of a brick. In such cases, the notch shall be made on the top of the putlog just deep enough to permit it to be inserted in the hole in the wall.

**(f) Bearers for independent pole scaffolds**-.Bearers shall be set with their greater dimensions vertical, and shall be long enough to project over the ledgers beyond the outer row of poles by at least twelve inches and beyond the inner row of poles by at least two inches.

Bearers shall be supported on the ledgers, and located against the sides of the poles and fastened to them.

**(g) Free standing scaffolds**.-Unless guyed, free standing scaffolds shall have a minimum base dimension of at least twenty-five percent of the height of the scaffold.

**(h) Erection and removal**.-When a new working level is desired, the existing planks shall be left undisturbed until the new working level is framed. As the platform level is abandoned with the progress of the work, all members other than the planking, railing, and toeboards shall be left intact. When removing a scaffold, the sequence of removing the members shall be the reverse of that used in erection.

**(i) Standard designs**.-All wood pole scaffolds seventy-five feet high or less shall be constructed in accordance with the minimum nominal sizes and maximum spacings shown in tables 19-6 through 19-11. For pole scaffolds more than seventy-five feet high, see paragraph one of subdivision (b) of section 27-1042 of this article.

**TABLE 19-6 MINIMUM SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE LIGHT DUTY SCAFFOLDS**

| Uniformly Distributed Load | | | | | Not to Exceed 25 psf |
|---|---|---|---|---|---|
| Max. height of scaffold…… | 20' | 40' | 60' | | 75' |
| | | | | Top 60' | Lower Sect. |
| Poles or uprights (min.)……... | 2" x 4" | 3" x 4" | 4" x 4" | 4" x 4" | 4" x 6" |
| Pole foundation (min.)……. | | | 2" x 9" | | |
| Max. pole spacing (longitudinal). | | | 10' – 0" | | |
| Max. width of scaffold…… | | | 5' – 0" | | |
| Bearers or putlogs (min.)……. | | | 3" x 4" or 2" x 6" (on edge) | | |
| Ledgers (minimum): | | | | | |
| With 6'-0" pole space…… | | | 1" x 6" (on edge) | | |
| With 10'-0" pole space…… | | | 1 1/4" x 9" (on edge) | | |
| Vertical spacing of ledgers (max.) | | | 7'-0" | | |
| Non-supporting stringers……. | | | 1" x 4" | | |
| Tie-ins……... | | | 1" x 4" | | |
| Bracing…… | | | 1" x 4" | | |
| Planking: | | | | | |
| Not more than 6' span…….. | | | 1 1/4" x 9" | | |
| Up to 10' span……... | | | 2" x 9" | | |
| Toeboards…… | | | 1" x 6" | | |
| Guard rails……... | | | 2" x 4" | | |

**§[C26-1907.3] 27-1044 Outrigger scaffolds**.-

Outrigger scaffolds shall not be used for loading in excess of fifty psf (medium duty).

**(a) Outrigger beams**.-Outrigger beams shall not extend more than six feet beyond the face of the building. The inboard end of outrigger beams, measured from the fulcrum point to the extreme point of support, shall be at least one and one-half times the outboard end in length. The fulcrum point of the beam shall rest on a secure bearing at least six inches in each horizontal dimension. The beam shall be secured against movement and shall be securely braced against tipping at both fulcrum point and inboard end. Outriggers shall not be less than three inches by ten inches set on edge, plumb, and spaced not to exceed six feet on centers for light and medium duty scaffolds.

**(b) Inboard supports**.-The inboard ends of outrigger beams shall be securely fixed to resist all vertical, horizontal, and torsional forces.

**(c) Platform**.-The platform shall be constructed of at least two inch by nine inch planks, securely fastened to the outriggers, and laid tight to within three inch[es]* of the face of the building.

**(d) Guard rail and toeboard**.-The railing posts for the required standard guard rail and toeboard shall be securely braced to the outriggers.

***Copy in brackets not enacted but probably intended.***

**(e) Superstructures**.-Supports for superstructures placed on outrigger scaffolds shall be set directly over the outrigger beams and shall be secured in place. Such structures shall not exceed six feet in height. Horses shall not be used as supports for such superstructures.

**§[C26-1907.4] 27-1045 General provisions for suspended scaffolds.-**

**(a) Installation and use**.-Suspended scaffolds shall be erected and operated in such a manner that suspension elements are vertical and in a plane parallel to the wall at all times. The installation or change of position of any suspended scaffold shall be performed under the supervision of a designated superintendent or foreman who shall enforce such measures as may be required for the safe execution of such operation.

**TABLE 19-7 MINIMUM SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE MEDIUM DUTY SCAFFOLDS**

| Uniformly Distributed Load | | | | | Not to exceed 50 psf |
|---|---|---|---|---|---|
| Max. height of scaffold…….. | 20' | 40' | 60' | | 75' |
| | | | | Top 60' | Lower Sect. |
| Poles or uprights (min.)…….. | 3" x 4" or 2" x 6" | 4" x 4" | 4" x 6" | 4" x 6" | 4" x 6" |
| Pole foundation (min.)…… | | | 2" x 9" | | |
| Max. pole spacing (longitudinal)… | | | 8' – 0" | | |
| Max. width of scaffold…… | | 5' – 0" | | 8' – 0' | |
| Bearers or putlogs (min.)…… | | 3" x 4" or 2" x 8" (on edge) | | 3" x 5" or 2" x 9" (on edge) | |
| Max. spacing of bearers or putlogs. | | | 8' – 0" | | |
| Ledgers (minimum)……. | | | 2" x 9" (on edge) | | |
| Vertical spacing of ledgers (max.).. | | | 7'— 0" | | |
| Non-supporting stringers…… | | | 1" x 6" or 1 1/4" x 4" | | |
| Tie-ins……. | | | 1" x 6" | | |
| Bracing…… | | | 1" x 6" | | |
| Planking: | | | | | |
| Not more than 6' span……. | | | 1 1/4" x 9" | | |
| Up to 8' span……. | | | 2" x 9" | | |
| Toeboards…… | | | 2" x 9" | | |
| Guard rails……... | | | 2" x 4" | | |

***As enacted but 6" x 6" probably intended .*

**TABLE 19-8 MINIMUM SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE HEAVY DUTY SCAFFOLDS**

| Uniformly Distributed Load | | | | | Not to exceed 75 psf |
|---|---|---|---|---|---|
| Max. height of scaffold…….. | 20' | 40' | 60' | | 75' |
| | | | | Top 60' | Lower Sect. |
| Poles or uprights (min.)…….. | 3" x 4" or 2" x 6" | 4" x 4" | 4" x 6" | 4" x 6"' | 6" x 6" |
| Pole foundation (min.)…… | | | 2" x 9" | | |
| Max. pole spacing (longitudinal)… | | | 6' – 0" | | |
| Max. width of scaffold…… | | 5' – 0" | | 8' – 0" | |
| Bearers or putlogs (min.)…… | | 3" x 5" | | 3" x 6" or 2" x 9" | |
| Max. spacing of bearers or putlogs. | | | 6' – 0" | | |
| Ledgers (minimum)……. | | | 2" x 9" (on edge) | | |
| Vertical spacing of ledgers (max.).. | | | 7' —0" | | |
| Non-supporting stringers…… | | | 2" x 4" | | |
| Tie-ins……. | | | 1" x 6" | | |
| Bracing…… | | | 1" x 6" | | |
| Planking…….. | | | 2" x 9" | | |
| Toeboards…… | | | 2" x 9" | | |
| Guard rails……... | | | 2" x 4" | | |

**(b) Tests and inspections required**.-All suspended scaffolds shall be inspected daily by the user before use. A record of such inspections shall be kept and maintained at the field office of the user. Upon delivery of the scaffold equipment to the site, the supplier of such equipment shall furnish a certificate from an independent testing laboratory or a licensed professional engineer stating that physical tests of a prototype of the equipment were conducted and that such equipment is capable of withstanding at least four times the maximum allowable live loads. Such certificates shall be kept at the field office of the user and shall be available for inspection by a representative of the department of buildings. This section, however, shall

not be construed to reduce the factors of safety specified elsewhere in this code for various appurtenances to this equipment. In addition, tests prescribed in section 27-998 of article three of subchapter eighteen shall be performed with the full rated live load on the scaffold at the test intervals specified therein and at such other intervals as the commissioner may require.

**(c) Tie-ins**.-Scaffolds shall be tied into the building or structure, and means therefor shall be provided. Window cleaners anchors, window frames, millions*, or similar elements shall not be used as tie-in anchors or brace-back points.

**(d) Wire rope**.-Wire rope used for support of suspended scaffolds shall be capable of supporting six times the actual applied load without failure, but shall not be less than five-sixteenths of an inch in diameter for use with light duty platforms or one-half inch in diameter for use with medium or heavy duty platforms. Wire rope shall be rigged to blocks of proper size or to other approved devices. For other provisions concerning wire rope, see section 27-1055 of article ten of this subchapter.

****As enacted but "mullions" probably intended.***

**TABLE 19-9 MINIMUM SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE LIGHT DUTY SCAFFOLDS**

| Uniformly Distributed Load | | | | Not to exceed 25 psf | |
|---|---|---|---|---|---|
| Max. height of scaffold……. | 20' | 40' | 60' | Top 60' | 75' Lower Sect. |
| Poles or uprights (min.)……. | 2" x 4" | 3" x 4" or 2" x 6" | 4" x 4" | 4" x 4" | 4" x 6" |
| Pole foundation (min.)……... | | | 2" x 9" | | |
| Max. pole spacing (longitudinal): | | | | | |
| With 1 1/4" x 9" ledgers……. | | | 6' – 0" | | |
| With 2" x 9" ledgers……... | | | 10' – 0" | | |
| Max. pole spacing (transverse)….. | | | 10' – 0"[a] | | |
| Ledgers (minimum)……... | | | 1 1/4" x 9" (on edge) or 2" x 9" | | |
| Vertical spacing of ledgers (max.) | | | 7'— 0" | | |
| Bearers (minimum)…… | | | 1 1/4" x 9" (on edge) | | |
| Non-supporting stringers…….. | | | 1" x 4" | | |
| Bracing…….. | | | 1" x 4" | | |
| Planking: | | | | | |
| Not more than 6' span…… | | | 1 1/4" x 9" | | |
| Up to 10' span…… | | | 2" x 9" | | |
| Toeboards…….. | | | 1" x 6" | | |
| Guard rails……. | | | 2" x 4" | | |

**Note for Table 19-9:**

[a] Total base dimension in both directions to be at least 25 per cent of height.

**§[C26-1907.5] 27-1046 Two-point suspension scaffolds.-**

**(a) Width and support**.-Two-point suspension platforms shall be at least twenty inches but not more than thirty inches in width. Each end of the platform shall be supported by an approved stirrup or hanger, and the platform shall be securely fastened thereto. Not more than two hangers or stirrups shall be used to support one scaffold.

**(b) Hangers**-Hangers or stirrups shall be of steel or wrought iron. Each such hanger shall be formed to properly fit the platform, and shall be provided with a loop or eye at the top for securing the supporting hook on the block, and with loops or equivalent means to support the top rail and midrail. The hanger or stirrup shall be placed at least six inches but not more than eighteen inches from the end of the platform.

**(c) Roof irons**.-Roof irons or hooks shall be of steel or wrought iron not less than seven-eighths of an inch in diameter or other size of equivalent strength and shall be securely anchored. Where the upper block hook does not directly engage the roof iron, the connection shall be made with wire rope of required strength but in no case shall the wire rope be less than one-half inch in diameter.

**(d) Fibre rope**.-

(1) The use of fibre rope shall be limited to light duty two-point suspension scaffolds. Fibre rope shall be at least equivalent in strength and suitability to three-quarter inch first quality unspliced manila rope.

(2) Fibre rope shall not be permitted for or near any work involving the use of corrosive substances or where the upper block is more than one hundred feet

above the platform.
(3) All blocks shall fit the size of rope they carry, and shall be so constructed as not to chafe the rope.
**(e) Use**.-
(1) Needle beam scaffolds shall not be used over areas used by the public.
(2) Two or more two-point suspension scaffolds shall not be combined into one by bridging the distance between them or by any form of connection.
(3) Not more than two workers shall be permitted to work on one scaffold at one time.
(4) Every two-point suspension scaffold shall be equipped with an approved device to raise, lower, and hold the scaffold in position.
**(f) Platforms**.-The platforms of every two-point suspension scaffold shall be one of the following types, or an approved equivalent.
(1) LADDER TYPE PLATFORM.-consisting of boards upon a horizontal ladder, the sides of which are parallel. The ladder shall be capable of sustaining, without failure in any part, at least four times the maximum load allowed to be placed thereon, and rungs shall be at least one and one-eighth inches in diameter with seven-eighths inch tenons mortised into the side stringers at least seven-eighths of an inch and spaced at not more than eighteen inches. Stringers shall be tied together with metal rods at least one-quarter inch in diameter located not more than five feet apart and which pass through the stringers and are riveted up tight against washers at both ends. The platform shall consist of at least one-half inch by three inch planks, shall fill the space between the sides of the hangers, and shall be securely fastened to the hangers by U-bolts passing around the hangers and bolted up tight on the inside face of the stringers.
(2) PLANK TYPE PLATFORM.-consisting of planks supported on stirrups or hangers. The planks shall have a uniform thickness of at least two inches and a width of at least nine inches. The planks shall extend at least six inches but not more than eighteen inches beyond the supporting hangers, and a bar shall be nailed across the platform on the underside at each end to prevent the platform from slipping off the hanger. Where two or more planks are used, they shall be fastened together by cleats not less than one inch by six inches nailed on the underside at intervals of four feet or less. Planks shall not be spliced.
(3) BEAM TYPE PLATFORM.-consisting of longitudinal side stringers with cross beams on which longitudinal platform planks are laid. Beam platforms shall have side stringers not less than two inches by eight inches. The stringers shall be supported on the hangers, located to fill the full width of the hangers, and the clear span between hangers shall not exceed twenty-four feet. The ends of the stringers shall extend at least six inches but not more than eighteen inches beyond the hangers, and shall be fastened to the hangers by U-bolts passing around the hangers and bolted up tight on the inside face of the stringers. The platform shall be supported on two inch by six inch cross beams, on edge, set between the side stringers, securely nailed thereto, and spaced not more than four feet on centers. The platform boards shall consist of material not less than one inch by six inches, nailed tight together, and extended to the outside face of the stringers. The ends of all platform boards shall rest on the cross beams and shall be nailed securely thereto.
**(g) Guard rail and toeboard**.-The outside edge of the platform, and the open ends (when stirrups do not afford adequate protection) shall be provided with a two-rail guard rail and a toeboard securely fastened at intervals not exceeding ten feet. Where there is a space between the scaffold and the structure greater than six inches, a similar guard rail shall be provided at the inside of the platform.
**§[C26-1907.6] 27-1047 Multiple-point suspension scaffolds.-**
**(a) General**.-
(1) All multiple-point suspension scaffolds shall be supported by wire ropes. The use of fibre ropes is not permitted.
(2) Provision shall be made to prevent supports from slipping off the ends of outrigger beams.
(3) Outrigger beams and platform bearers shall be of metal.
**(b) Outrigger beams**.-
(1) The overhang of outrigger beams shall not exceed that specified by the design, and the inboard length of beam shall be at least one and one-half times the outboard length.
(2) Outrigger beams shall be anchored and braced at both fulcrum point and inboard end to resist all vertical, horizontal, and torsional forces.
(3) Supporting points for outrigger beams shall be level, smooth, and of sufficient area (at least six inches by six inches) to provide a firm seat.
(4) The wire rope suspenders shall be securely fastened to the outrigger beams by steel shackles or equivalent means. The shackles and outrigger beams shall be so located that the ropes will hang vertically.
(5) Outrigger beams shall be of the sizes required for the design, but shall be at least equivalent in strength to a standard 7 I 15.3 [*sic*] steel I-beam, and shall be spaced not more than ten feet center-to-center.
**(c) Hoisting machines**.-
(1) Suspended scaffolds shall be provided with an approved hoisting machine of either the platform or overhead type.
(2) At least four turns of rope shall at all times remain on the hoisting drum, and the end of the rope shall be properly secured to the drum.
(3) The hoisting rope shall be inspected regularly,

maintained, and lubricated.

**(d) Platform**.-

(1) Platform widths shall be limited to eight feet.

(2) Platform planking shall be laid tight and securely fastened to the bearers, shall overlap the supporting bearers at each end of the scaffold at least six inches but not more than eighteen inches, and shall not be supported across more than two bearers.

(3) Platform bearers shall be at least the equivalent of a pair of two and one-half inch by two and one-half inch by one-quarter inch standard angles.

**TABLE 19-10 MINIMUM SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE MEDIUM DUTY SCAFFOLDS**

| Uniformly Distributed Load | | | | | Not to exceed 50 psf |
|---|---|---|---|---|---|
| Max. height of scaffold……. | 20' | 40' | 60' | | 75' |
| | | | | Top 60' | Lower Sect. |
| Poles or uprights (min.)……. | 3" x 4" or 2" x 6" | 4" x 4" | 4" x 6" | 4" x 6" | 6" x 6" |
| Pole foundation (min.)……... | | | 2" x 9" | | |
| Max. pole spacing (longitudinal)... | | | 8' – 0" | | |
| Max. pole spacing (transverse)….. | | | 10' –0"[a] | | |
| Ledgers (minimum)……... | | | 2" x 9" (on edge) | | |
| Vertical spacing of ledgers (max.) | | | 6'— 0" | | |
| Bearers (minimum)…… | | | 2" x 9" (on edge) | | |
| Non-supporting stringers…….. | | | 1 1/4" x 4" or 1" x 6" | | |
| Bracing…….. | | | 1" x 6" | | |
| Planking: | | | | | |
| Not more than 6' span…… | | | 1 1/4" x 9" | | |
| More than 6' span…….. | | | 2" x 9" | | |
| Toeboards…….. | | | 2" x 9" | | |
| Guard rails……. | | | 2" x 4" | | |

**Note for Table 19-10:**

[a] Total base dimension in both directions to be at least 25 per cent of height.

**TABLE 19-11 MINIMUM SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE HEAVY DUTY SCAFFOLDS**

| Uniformly Distributed Load | | | | | Not to exceed 75 psf |
|---|---|---|---|---|---|
| Max. height of scaffold…….. | 20' | 40' | 60' | | 75' |
| | | | | Top 60' | Lower Sect. |
| Poles or uprights (min.)……. | 4" x 4" | 4" x 4" | 4" x 6" | 4" x 6" | 6" x 6" |
| Pole foundation (min.)……..….. | | | 2" x 9" | | |
| Max. pole spacing (longitudinal)... | | | 6' – 0"[a] | | |
| Max. pole spacing (transverse)….. | | | 10' –0"[a] | | |
| Ledgers (minimum)……... | | | 2" x 9" (on edge) | | |
| Vertical spacing of ledgers (max.) | | | 5'-0" | | |
| Bearers (minimum)…… | | | 2" x 9" (on edge) | | |
| Non-supporting stringers…….. | | | 1 1/4" x 9" | | |
| Bracing…….. | | | 1" x 6" | | |
| Planking……. | | | 2" x 9" | | |
| Toeboards…….. | | | 2" x 9" | | |
| Guard rails……. | | | 2" x 4" | | |

**Note for Table 19-11:**

[a] Total base dimension in both directions to be at least 25 per cent of height.

**(e) Guard rail and toeboard**.-The outside edge of the platform and open ends shall be provided with a

standard guard rail and toeboard (section 27-1050 of this article) except that spacing of the vertical supports may be increased to not more than ten feet. Where there is a space between the scaffold and the structure in excess of six inches, a similar guard rail shall be provided at the inside edge of the platform.

**(f) Erection and removal**.-

(1) Multiple-point suspension scaffolds shall be installed, relocated, and raised or lowered under the supervision of a designated superintendent or foreman who shall enforce such measures as may be required for the safe execution of such operations.

(2) During raising or lowering, the levels of the various sections of the scaffolds shall be kept uniform and the differential height between sections minimized.

**§[C26-1907.7] 27-1048 Manually-propelled free standing scaffolds**. - All manually propelled free standing scaffolds shall meet the following requirements and shall be approved:

(1) Work platforms shall be tightly planked for the full width of the scaffold except for necessary entrance openings. Planks shall be secured in place.

(2) Platforms shall have a guard railing.

(3) Where a ladder is used to approach a platform, the ladder shall be secured to the scaffold.

(4) Handholds shall be provided for safe passage from the ladder to the platform.

(5) Unless temporarily braced to adjacent structure, the ratio of the platform height to the least base dimension shall be such as to assure stability, but in no case shall such height be more than four times the least base dimension.

(6) Provision shall be made to prevent the scaffold from falling during movement from one location to another.

(7) While the scaffold is in use by any person, it shall rest upon a stable footing and shall stand plumb. The casters or wheels shall be locked in position.

(8) While the scaffold is being moved, no person shall be suffered or permitted to ride, and all tools, equipment, and material shall be removed.

**§[C26-1907.8] 27-1049 Power operated free standing scaffolds**.-Records of the inspection, servicing, and maintenance of all power operated free standing scaffolds shall be kept by the user. These records are to be submitted on forms furnished by the commissioner and are to be made available whenever called for by the commissioner. All power operated scaffolds whether free standing or suspended shall meet the applicable requirements of subchapter eighteen of this chapter.

**§[C26-1907.9] 27-1050 Standard guard rail and toeboard.-**

**(a) Standard guard rail**.-

(1) GENERAL REQUIREMENTS.-A standard guard rail shall consist of a two inch by four inch wood top rail (S4S) not less than three feet nor more than three feet six inches above the platform and a one inch by four inch wood intermediate rail (S4S) midway between the top rail and the floor or toeboard, both supported by two inch by four inch wood posts (S4S) spaced not more than eight feet apart.

(2) ALTERNATE METAL RAILING.-In lieu of wood construction, posts and rails may be constructed of at least one and one-quarter inch diameter standard pipe or of at least two inch by two inch by one-quarter inch angles. Spacing of rails and posts shall be as required in paragraph one of this subdivision.

(3) REMOVABLE SECTIONS OF RAILING.-To provide necessary openings for intermittent operations, one or more sections of a required railing may be hinged or supported in sockets. When supported in sockets, rails shall be so constructed that they cannot be jolted out. A button or hook may be used to hold the rail in fixed position. Substantial chains or ropes may be used to guard such openings in standard railings. Where so used, the chains or ropes shall be taut at the same height as the rails of the standard railing.

**(b) Standard toeboard**.-A standard toeboard shall be at least five and one-half inches high and constructed of metal, wood, or other substantial material. It shall be installed, where required, along the edge of any floor, opening, platform, ramp, or runway. Such toeboard shall be securely fastened to the posts and so installed that no open space exists between the floor and the toeboard.

## ARTICLE 9 STRUCTURAL RAMPS, RUNWAYS, AND PLATFORMS

**§[C26-1908.1] 27-1051 Ramps and runways (including elevated walkways).-**

**(a) Construction**.-All runways and ramps shall be constructed, braced and supported to resist lateral displacement and all vertical loads, including impact.

**(b) For motor vehicle use**.-Runways and ramps for the use of motor vehicles may consist of an earthfill or may be structurally supported. They shall have a clear width of not less than twelve feet with timber curbs at least eight inches by eight inches placed parallel to, and secured to, the sides of the runway or ramp. The flooring of structurally supported ramps shall consist of no smaller than three inch planking full size, undressed, or equivalent material, with spans designed for the loads to be imposed.

**(c) For use of workers only**.-Runways and ramps for the use of workers shall be at least one foot six inches in clear width. Where used for wheelbarrows, hand-

carts, or hand-trucks, runways and ramps shall be at least three feet in clear width. Flooring shall consist of at least two inch planking spanning as permitted by table 19-5, laid close, butt-joined, and securely fastened.

**(d) Slope limitations**.-Ramps shall have a slope not steeper than one in four. If the slope is steeper than one in eight, the ramp shall be provided with cleats spaced not more than fourteen inches apart and securely fastened to the planking to afford a foothold. Spaces in the cleats may be provided for the passage of the wheels of vehicles. The total rise of a continuous ramp used by workers carrying material or using wheelbarrows, hand-carts, or hand-trucks shall not exceed twelve feet unless broken by horizontal landings at least four feet in length.

**(e) Guard rail required**.-

(1) All runways and ramps located more than five feet above the ground or floor shall be provided with a standard guard rail and toeboard (section 27-1050 of article eight of this subchapter) on open sides.

(2) Where it is possible for the public to pass under, or next to, runways or ramps, the space between the top rail and the toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum one-half inch mesh.

**§[C26-1908.2] 27-1052 Platforms.-**

**(a) Planking**. -Platforms used as working areas, or for the unloading of wheelbarrows, hand-trucks, or carts shall have a floor consisting of at least two inch planking spanning as permitted by table 19-5. Platforms for the use of motor trucks shall have a floor of at least three inch planking, full size, undressed or equivalent materials with spans designed for the loads to be imposed. Planking shall be laid close and shall be butt-joined and securely fastened.

**(b) Guard rail required**.-

(1) Every platform more than five feet above the ground or above a floor shall be provided with a standard guard rail and toeboard (section 27-1050 of article eight of this subchapter), except that the side of the platform used for the loading or unloading of vehicles may be protected by a timber curb at least eight inches by eight inches for motor trucks or four inches by four inches for wheelbarrows and hand-trucks in lieu of the standard guard rail and toeboard.

(2) Where it is possible for the public to pass under, or next to, platforms, the space between the top rail and the toeboard shall be enclosed with a wire screen composed of not less than no. 18 steel wire gage with a maximum one-half inch mesh.

**§[C26-1908.3] 27-1053 Special requirements where power buggies are used**.-Runways, ramps, platforms, and other surfaces upon which power buggies are operated shall meet the following minimum requirements:

(1) They shall be designed.

(2) They shall be able to sustain, without failure, at least four times the maximum live load for which they are intended.

(3) The minimum width, inside of curbs, for any ramp, runway, or platform shall be two feet wider than the outside width of any power buggy operated thereon without passing, and three feet wider than twice such buggy width in the places where passing occurs.

(4) All runways shall be essentially level transversely.

(5) Curbs shall be furnished along all buggy traffic paths that are nearer than ten feet horizontally to any unenclosed area, shaft, or other open space into which or through which, a fall of more than twelve inches from such surface is possible, except as set forth in subdivision seven of this section.

(6) Where curbs are not required because the buggy is operated on a surface not over twelve inches above another surface, the lower surface shall be strong enough to sustain the loaded vehicle in the event of a fall thereon.

(7) Curbs may be omitted at actual dumping points more than twelve inches above other surfaces if the edge over which dumping occurs is provided with bumpers or other means that will effectively stop the buggy from running over the edge while dumping.

(8) Curbs must be at least seven inches high, securely fastened, and capable of resisting side impact, and shall be equivalent to at least two inch by eight inch plank set on edge against uprights securely fastened and braced at not more than four foot intervals.

## ARTICLE 10 MATERIAL HANDLING AND HOISTING EQUIPMENT

**§[C26-1909.1] 27-1054 General requirements**.-Material handling and hoisting equipment shall be installed, operated, and maintained to eliminate hazard to the public or to property. It shall be unlawful to operate any such equipment which is not provided with a positive means for preventing the unauthorized operation of such machine. The means whereby such machines may be made inoperative shall be determined by the commissioner.

**(a) Operation**.-Only operators designated by the person causing such machinery to be used shall operate hoisting or material handling machinery. Operators and signalmen shall be experienced at the operation they perform. Riggers and hoisting machine operators shall be licensed as required under chapter one of title twenty-six of the administrative code. The operator shall be responsible for making the machine inoperative before he or she leaves the machine.

**(b) Loading**.-Material handling and hoisting equipment shall not be loaded in excess of the rated load specified

by the manufacturer, except for power operated cranes and derricks where the provisions of section 27-1057 of this article are controlling. Except for power operated cranes and derricks if such data are not available, the safe loads and, where applicable, charts of reach vs. capacity, shall be established by an engineer or architect. All loads shall be properly trimmed to prevent the dislodgement of any part during raising, lowering, swinging or transit. Suspended loads shall be securely slung and properly balanced before they are set in motion. Rated load capacities and required charts shall be conspicuously posted on all material handling and hoisting machinery or on the job site and shall be available to the commissioner at all times.

**(c) Refueling**.-Open lights, flames, or spark-producing devices shall be kept at a safe distance while refueling an internal combustion engine, and no person shall smoke or carry lighted smoking material in the immediate vicinity of the refueling area. The engine shall be stopped during refueling. Fuel shall be kept in containers that meet the requirements of the fire department. "No smoking" signs shall be conspicuously posted in all fueling or fuel storage areas.

**§[C26-1909.2] 27-1055 Rigging, rope, chains, and their appurtenances and fittings.-**

**(a) Hoisting line**.-Only wire rope shall be used with power driven hoisting machinery, except that either wire or fibre rope may be used on winchheads or capstan hoists.

**(b) Wire rope or cable**.-

(1) All hoisting cable shall be at least one-half inch diameter plow steel grade.

(2) Wire cable shall not be used under the following conditions:

a. When it is knotted or kinked.

b. When more than ten percent of the total wires are broken in any lay, a lay being that distance measured along the cable in which one strand makes a complete revolution around the cable axis.

c. When the wires on the crown of the strands are worn down or rusted to less than sixty percent of their original cross-sectional area.

d. When any combination of broken wires, rust, or abrasion has reduced the strength of the cable to eighty percent or less of its original strength.

(3) At least four turns of the cable shall remain on the hoist drum at all times.

(4) Wire cable fastenings shall conform to the provisions of article eleven of subchapter ten of this chapter, and shall consist of zinc-filled sockets, wedge sockets with at least one cable clip above the socket, thimble and splice connections, or thimble and cable slips*.

(5) Where cable clips are used, the minimum number shall conform to the following:

| Diameter of wire rope | No. of clips |
|---|---|
| Up to and incl. 3/4 in…..…….. | 3 |
| From 3/4 in. up to and incl. 1 in…….. | 4 |
| From 1 in. up to and incl. 1 1/4 in…… | 5 |
| From 1 1/4 in. up to and incl. 2 1/2 in.. | 6 |

(6) Clip spacing shall be at least six times the diameter of the cable, and the "U" part of the clip shall be placed over the short end of the cable. After the rope is in service and while it is under tension, the nuts on the clips shall be retightened.

(7) Cables and blocks used to change the direction of cables shall not be located in any area used by the public.

**(c) Fibre rope**.-

(1) Fibre rope shall be equal in strength, durability and quality to long fibered manila hemp rope, and shall be used and maintained in accordance with the recommendations of the manufacturer.

(2) Before rope is used it shall be carefully inspected for abrasions and severe wear. Rope that has been exposed to acid shall be destroyed and not used.

(3) Frozen rope shall be thawed out and inspected before being used.

(4) Rope shall not be made fast to sharp objects or surfaces, and sharp bends shall be avoided.

(5) Rope shall be stored in a dry place and protected.

**(d) Sheaves**.-

(1) Load-bearing sheaves shall be of diameter and grooving as recommended by the manufacturer to accommodate the particular rope under the proposed conditions of use.

(2) Sheaves and blocks that are worn, chipped, or otherwise damaged shall not be used.

(3) Sheaves and blocks intended for use with fibre rope shall not be used for wire rope.

**(e) Fittings**.-

(1) All wire rope fittings, including sockets, thimbles, clips, blocks, shackles, etc. shall be of the standard size, diameter, and grooving to fit the size of and to develop the breaking load capacity of the rope on which they are to be installed.

(2) Hooks, shackles, or other fittings deformed due to wear, over-stress, or other cause shall not be used.

(3) Safety hooks or open type hooks with wire mousings shall be used where loads may be accidentally unhooked.

**(f) Chains**.-

(1) Chains having deformed links or links that are stretched from their original length shall not be used. Defective links or portions of the chain shall be replaced only by links or sections furnished by the manufacturer for the particular chain involved, unless a substitute link can be shown to be equivalent in strength and suitability. All repairs to chains shall be made by an experienced blacksmith or chainwright, except that alloy steel chains shall be repaired only by the

***As enacted but "clips" probably intended.***

manufacturer of such chains.
(2) When in constant use, steel chains should be normalized and wrought iron chains should be annealed at intervals not to exceed six months. The annealing or normalizing shall be done by the manufacturer or in strict accordance with such manufacturers specifications.
(3) Chains shall not be used as slings in hoisting operations. Chains shall not be knotted, nor shall they be shortened or spliced, by the use of nails or bolts.
**(g) Slings**.-
(1) Blocks or heavy padding shall be used at corners of the load to protect the sling from sharp bending.
(2) When lifting a load with multiple slings, the slings shall be so arranged as to equalize the load between the slings.
(3) The ends of slings made of wire or fibre shall be properly spliced to form the eyes. Eyes for wire rope shall be formed using thimbles.
(4) Wire rope slings shall be frequently inspected and lubricated.
***(h) Accidents. -** The owner or person directly in charge of any rigging equipment shall immediately notify the commissioner following any accident involving such equipment. When an accident involves the failure or destruction of any part of the rigging equipment, no person shall use or operate such equipment or any part thereof or remove such equipment or any part thereof from the immediate area of the job site without the permission of the commisioner.
****Local Law 15-1993.***

**§[C26-1909.3] 27-1056 Material platform hoists and bucket hoists**.-As used in this section, a material platform or bucket hoist means a power or manually operated suspended platform or bucket contained by guide rails and used for raising or lowering material exclusively, and controlled from a point outside the conveyance.
**(a) Construction of material hoist towers**.-
(1) Where the design of material hoist towers utilizes standard manufactured elements the loading shall not exceed the rated values established by the manufacturer. If specifically designed for the given installation, the design shall be prepared by an engineer or architect, and the construction shall conform to that design. For all material hoist towers more than six stories high, whether of manufactured units or specifically designed for the site, plans showing the design, including the guying, bracing, and foundations shall be submitted to the commissioner for approval prior to construction. Approval of such plans is subject to the provisions established in article nine of subchapter one of this chapter for approval of plans for new construction.
(2) Standard guard rails and toeboards shall be placed on the open sides of runways connecting the tower to the structure.
(3) The provisions of subdivision (f) of section 27-1042 of article eight of this subchapter relating to fire retardant construction of scaffolds shall apply to the construction of hoist towers.
(4) An enclosure shall be installed around the hoistway below the lowest landing to prevent unauthorized access to the space under any hoist.
(5) Exterior hoist towers may be used with or without an enclosure on all sides. When a hoist tower is enclosed, except for entrance and exit openings, it shall be enclosed on all sides for the entire height, with a screen enclosure with one-half inch mesh, No. 18 U.S. gage [*sic*] wires. When a hoist tower is not enclosed, the hoist platform or car shall be totally enclosed on all four sides for the full height between the floor and the overhead protective covering with one-half inch mesh of No. 14 U.S. gage [*sic*] wire or the equivalent. The hoist platform enclosure shall include the required gates for loading and unloading.
**(b) Hoist cars**.-Platforms for material hoist cars shall have sufficient strength to support five times the rated capacity, and the wire rope supporting material hoist cars or bucket hoists shall be capable of supporting eight times the rated capacity. The rated capacity shall be conspicuously posted and maintained on the cross head or side members. On the top of every material hoist cage there shall be an overhead protective cover of two inch planking, three-quarters inch plywood or other material of equivalent strength.
**(c) Hoist machinery**.-
(1) The car and counterweight, if provided, shall be equipped with safety devices capable of stopping and sustaining the counterweight and/or sustaining the car with its capacity load in the event of breakage of the hoisting or counterweight ropes.
(2) A sign or plate giving the maximum load capacity shall be posted in a conspicuous place near every hoist engine.

**§[C26-1909.4] 27-1057 Testing inspection, approval and use of power operated cranes, derricks and cableways**.-No owner or other person shall authorize or permit the operation of any power operated crane or derrick without a certificate of approval, a certificate of operation and a certificate of on-site inspection. No owner or other person shall authorize or permit the operation of any cableway without a certificate of on-site inspection.
**(a) Exceptions**.-
(1) The requirements of this section shall not apply to excavating or earth-moving equipment, except cranes used with clamshells.
(2) The requirements of this section shall not apply to cranes or derricks performing an emergency use pursuant to the lawful order of the head of any department.

(3) The requirements of this section shall not apply to truck cranes with telescopic, hydraulic or folding booms, including jibs and any other extensions to the boom, not exceeding one hundred thirty-five feet in length with a manufacturer's rated capacity of three tons or less, except that a certificate of operation, as provided for in this section and in reference standard RS 19-2 shall be required for such cranes with jibs and any other extensions to the boom exceeding fifty feet in length. The above requirement for a certificate of operation shall not apply to a crane used exclusively as a man basket.
(4) The requirements of this section shall not apply to a mobile crane with a boom, including jibs and any other extensions to the boom, not exceeding fifty feet in length with a rated capacity of three tons or less. The commissioner may, by rule and regulation, exempt other mobile cranes of limited size and capacity from any or all of the requirements of this section.
(5) The requirements of this section shall not apply to hoisting machines permanently mounted on the bed of material delivery trucks which are used exclusively for loading and unloading such trucks, provided that the length of boom does not exceed the length of the truck bed by more than five feet and that any material transported thereon shall not be raised more than two feet in the unloading process. Operators of such equipment shall be exempt from licensing requirements prescribed in section 26-166 of title twenty-six of the administrative code.

**(b) Certificate of approval**.-
(1) The owner of such crane or derrick shall file an application for a certificate of approval on a form prescribed by the department, together with such information as set forth in reference standard RS 19-2 and shall contain the various boom lengths and applicable load ratings for which approval is requested.
(2) Upon the approval by the department of information submitted pursuant to reference standard RS 19-2 and an inspection of the equipment, the department shall issue a certificate of approval for the equipment. Said equipment may be used with pile driving leads, mounted compressors, boilers, magnets, hammers, pile hammers, extractors, jetting equipment, augers, drills, vibrating hammers, mandrels, hoe rams and other similar attachments. A new certificate of approval shall be required when a crane is modified or altered to increase the boom length, jibs or any extensions to the boom beyond the maximum approval length or when the load ratings are increased.

**(c) Certificate of operation**.-
(1) Upon issuance of a certificate of approval, the department shall also issue the initial certificate of operation which shall expire one year from the date of issuance. The owner of such crane or derrick shall renew the certificate of operation each year.
(2) The commissioner shall approve the crane or derrick if he or she is satisfied after inspections and tests that said crane or derrick is in a safe operating condition.
(3) If the owner applies for renewal of a certificate of operation within not more than sixty or less than thirty days prior to the date of expiration of his or her certificate, such owner may continue to use his or her crane or derrick until the department grants or denies him or her a new certificate.
(4) No change in such crane or derrick not provided for in the certificate of operation may be made until the owner obtains a new certificate of operation.

**(d) Certificate of on-site inspection**.-
(1) The owner of the premises, building or structure, or his or her designated representative, shall obtain a certificate of on-site inspection for the use of any power operated crane, derrick or cableway used for construction purposes at each job site. Such owner or his or her designated representative shall file an application for a certificate of on-site inspection on a form prescribed by the department, and the fee for such application shall be as provided in section 26-215 of title twenty-six of the administrative code. The applicant shall specify the date when the equipment will be at the job site for use, which date shall be not less than three regular working days from the date of filing said application. Such application shall include the information as set forth in the applicable provisions of reference standards RS 19-2 and RS 19-3.
(2) Upon approval of the application, a copy of said approval shall be given to the applicant. It shall have noted thereon that the equipment shall not be operated prior to the date indicated, which date shall be not less than three regular working days from the filing of the application unless otherwise provided in the applicable provisions of reference standard RS 19-2. It shall be unlawful to operate the aforesaid equipment before the specified date, unless it has been inspected and found to be satisfactory by the department. If the equipment has not been inspected by the department on or before the said date, then the equipment may be operated, pending inspection, provided that the conditions and statements contained in the approved application are complied with. Upon inspection by the department and a finding of satisfactory compliance, the approval shall be deemed to be a certificate of on-site inspection.
(3) The certificate of on-site inspection is only valid if the conditions and statements contained in the approved application are complied with and the hoisting machine is operated in conformance with the provisions of this section and the rules and regulations applicable thereto.
(4) No certificate of on-site inspection shall be required where any article is hoisted or lowered on the outside of any completed building, or for the installation of boilers and tanks, or for the erection, maintenance or removal of signs or sign structures, under the supervision of a

master or special rigger or a master or special sign hanger in conformance with the provisions of chapter one of title twenty-six of the administrative code.

**(e) The commissioner shall inquire into the cause of any accident involving hoisting machinery**.-The owner or person directly in charge of any hoisting machinery shall immediately notify the administrator and the commissioner following any accident involving hoisting machinery. When an accident involves the failure or destruction of any part of a hoisting machine, no person shall do either of the following, without the permission of the commissioner:

(1) use such hoisting machine, or

(2) remove the hoisting machine or any part thereof from the area of the job site.

**(f) Any person who wilfully violates any provision** of this section shall be guilty of an offense and shall be subject to a fine not exceeding one thousand dollars.

**(g) The commissioner may issue temporary certificates of approval**, operation and on-site inspection for any power operated crane during the pendency of an application for certificates of approval and operation upon inspection and upon such analysis and testing as the commissioner may deem necessary. The commissioner may revoke such temporary certificates if the application is denied.

**(h) Special requirements for cranes and derricks**.-The construction, installation, inspection, maintenance and use of power operated cranes and derricks shall be in conformance with reference standard RS 19-2.

**(i) Special requirements for cableways**.-The construction, installation, inspection, maintenance and use of cableways shall be in conformance with reference standards RS 18-5 and RS 19-3.

**§[C26-1909.5] 27-1058 Conveyors and cableways.-**

**(a) Walkways**.-Walkways along belt conveyors or bucket conveyors shall be kept free of materials and, where five feet or more above the ground, shall be provided with a standard guard rail and toeboard along the outside of the walkway. The guard rail and toeboard may be omitted on the side toward the belt if the walkway is located adjacent to the conveyor.

**(b) Trippers**.-Where trippers are used to control discharge, a device for throwing the belt or bucket drive into neutral shall be installed at each end of the runway.

**(c) Spillage**.-Where conveyor belts cross any traveled way, trays shall be installed to catch spillage and overhead protection shall be provided for persons or traffic passing beneath.

**§[C26-1909.6] 27-1059 Trucks.-**

**(a) Maintenance**.-All parts and accessories of trucks shall be kept in repair. Brakes shall be so maintained that the vehicle with full load may be held on any grade that may be encountered on the job. Provision shall be made for the immediate application of wheel blocks to trucks traversing ramps steeper than one in ten.

**(b) Loading**.-Trucks shall not be loaded beyond the manufacturer's rated capacity, nor beyond the legal load limit, where applicable. The loads shall be trimmed before the truck is set in motion to prevent spillage. Loads that project beyond the sides of the truck, or that may be dislodged in transit, shall be removed or securely lashed in place.

**§[C26-1909.7] 27-1060 Power buggies**.-As used in this section, the term "power buggy" shall mean an automotive vehicle designed or used for the transportation of materials on or about construction sites. It shall not include automobiles, motor trucks, general purpose tractors, or excavating or material handling machinery.

**(a) Responsibility of employers and workers**.-

(1) Every person causing a power buggy to be used shall provide trained and competent operators and shall carry out or enforce all provisions of this section pertaining to the use, operation, and maintenance thereof.

(2) No person other than the operator assigned by the employer shall operate a power buggy. A power buggy shall be in charge and custody of the operator assigned, and no other person shall in any way interfere with or handle it, nor shall the operator cause or permit any other person to do so.

(3) No power buggy shall be operated unless it is in good operating condition and is so constructed that it is stable under conditions of normal use.

**(b) Operation and Construction**.-

(1) BRAKES.-Every power buggy shall be provided with brakes and tire surfaces capable of bringing it to a full stop within twenty-five feet on a level surface that is similar to the one on which it will be used and at full rated load and maximum design speed. Brakes shall be capable of being fixed in engagement to hold the full load stationary on a twenty-five percent grade.

(2) ACCIDENTAL STARTING.-All movement controls of every power buggy shall be so arranged or shielded that they cannot be inadvertently engaged or the buggy accidentally set in motion.

(3) PARKING ON GRADES.-No power buggy shall be left unattended on any grade sufficiently steep to cause it to coast if free of engine and brake resistance.

(4) USE ON RAMPS, RUNWAYS AND PLATFORMS.-Power buggies shall not be used on ramps, runways, or platforms that do not meet the requirements of section 27-1053 of article nine of this subchapter.

**§[C26-1909.8] 27-1061 Lift and fork trucks.-**

**(a) Load capacity**.-A metal plate with readily legible etched or stamped figures giving the capacity rating in pounds shall be attached to every lift or fork truck.

**(b) Maintenance**.-All parts and accessories of lift or fork trucks shall be kept in repair and with brakes adequate to maintain the fully loaded vehicle on any grade that may be encountered on the job.

**(c) Loading**.-No lift or fork truck shall be loaded beyond its capacity rating. No hand-operated pallet truck loaded so that any point on the load is at a greater

height than four feet six inches above the floor shall be moved by pushing unless handled by two persons.
**(d) Prohibited use**.-No lift or fork truck shall be in motion when the loaded forks are elevated higher than necessary to clear obstructions, except as may be required for positioning, picking up, or depositing the load.

**§[C26-1909.9] 27-1062 Hand propelled vehicles**.-Hand propelled vehicles shall be constructed and braked to withstand the loads to be carried and shall be maintained in repair. Vehicles with loose parts shall not be used.

**§[C26-1909.10] 27-1063 Mixing machines**.-Where the public may have access to the working area near charging skips, guard rails shall be erected to enclose the area under the raised skip and the mixing machine. Each time before raising or lowering the charging skip, the operator shall ascertain that no one is in the danger zone.

**§[C26-1909.11] 27-1064 Jacks.-**
**(a) Marking**.-The rated capacity of every jack shall be legibly marked in a prominent location on the jack by casting or stamping. The manufacturer shall designate the intended supporting point of the load and the maximum permissible length of lever and force applied.
**(b) Overtravel to be limited**.-Every jack shall, where practicable, be provided with a positive stop to prevent overtravel; otherwise an indicator to clearly show overtravel shall be provided on the jack.
**(c) Maintenance**.-Lubrication and operation of jacks shall be in accordance with the recommendations of the manufacturer.
**(d) Foundations**.-Jacks shall rest on a firm, level foundation adequate to support the load.
**(e) Blocking required.-**When the object has been lifted to the desired height, blocking or cribbing shall be immediately placed under it.

## ARTICLE 11 EXPLOSIVE POWERED AND PROJECTILE TOOLS

**§[C26-1910.1] 27-1065 General**.-All explosive powered and projectile tools shall be approved.

**§[C26-1910.2] 27-1066 Explosive powered tools.-**
(a) The provisions of reference standard RS 19-1 shall apply.
(b) The care and storage of explosives shall meet the requirements of the fire department.

**§[C26-1910.3] 27-1067 Projectile tools.-**
**(a) Basic requirements**.-
(1) Unless in a particular case the board shall otherwise determine, design and construction must be such as to retain safely all internal pressures which may occur during operation, the discharge mechanism shall be such that the projectile cannot [*sic*] be discharged by dropping the tool, the discharge mechanism shall be such that the discharge of each projectile shall be dependent on a separate and distinct act by the operator, and all safety features shall be durable.
(2) A tool shall have such other characteristics as the board may find necessary or proper to provide safety, alternative or in addition to the foregoing. Such other characteristics may include devices and materials external to the tool itself but associated with its function, and may also include in respect to high velocity projectile tools the basic requirements set forth above for explosive powered tools which discharge projectiles with comparable velocities.
**(b) Maintenance**.-Every projectile tool shall be properly maintained. No such tool shall be used if any part thereof necessary to retain internal pressures or to prevent accidental discharge of a projectile is not in sound and operable condition.
**(c) Operation**.-
(1) A projectile [tool]* shall be operated only by an authorized operator who shall be the owner, lessee, or other person having proprietary custody of the tool or any other person whom he or she may authorize to operate it.
(2) While a projectile tool is in the care and custody of an authorized operator, no other person shall handle or in any way molest it.
(3) No authorized operator of a projectile tool shall leave it unattended while it is in a condition to discharge a projectile.
(4) No person shall use a projectile tool for any purpose other than that for which it was manufactured, nor shall such person point it at another person or hold it at an angle permitting the projectile to fly free.
(5) No person shall use a projectile tool in such a way as to endanger persons who may be in the vicinity.
****Copy in brackets not enacted but probably intended.***

## ARTICLE 12 EXPLOSIVES AND BLASTING

**§[C26-1911.1] 27-1068 General**.-
All handling, transporting, and use of explosives shall meet the requirements of the fire department.

## ARTICLE 13 FLAMMABLE AND COMBUSTIBLE MIXTURES, COMPRESSED GASES, AND OTHER HAZARDOUS MATERIALS

**§[C26-1912.1] 27-1069 General.-**The transportation, handling, storage, and use of all volatile flammable oils, flammable and combustible mixtures, compressed gases, and other hazardous materials shall meet the requirements of the fire department. Also, see subdivision (b) of section 27-1023 of article two of this subchapter, warning signs and lights.