

FILE NAME: New York State & NY Times (NY)

DATE: 1967

DOC#: NY079

DOCUMENT DESCRIPTION: NY Dept of Labor Industrial Code Part 23 [As Amended]

regular intervals not exceeding three months for fitness to continue work in compressed air. The record of each such examination shall be made on form no 22-B entitled "Physical Examination" and a copy shall be kept on the job.

(d) *Resumption of work.* Every compressed air worker who has been absent from the job 10 days or more shall be examined by the physician before resuming work. The physician's findings shall be submitted in writing to the person in charge and shall be kept on the job.

(e) *Physical fitness.* (1) Persons engaged for manual labor in compressed air for the first time shall not be over 40 years of age.

(2) Only persons who are able to readily equalize the pressure in their ears shall be accepted for work in compressed air.

(3) Persons having chronic alcoholism shall not be permitted to work in compressed air.

(4) Persons having any chronic systemic disease or any impairing physical deformity or abnormality including excessive obesity shall not be engaged for work in compressed air.

(5) Persons having any disease of the ear or any systemic disease including skeletal, cardio-vascular, respiratory, genito-urinary or gastro-intestinal, which may be aggravated by work in compressed air or which may prevent safe performance of such work, shall not be permitted to work in compressed air.

Historical Note

Sec. added by renumbering former sec. 1967.
22.24, filed Jan. 12, 1967 to be eff. Jan. 16,

22.28 Preservation of medical records. (a) All records pertinent to medical examinations, employment dates and decompressions shall be promptly delivered to and placed in the custody of the owner. The owner shall cause such records to be preserved and properly filed within the State until they are transferred to the commissioner.

(b) The owner may voluntarily transfer such records to the commissioner at any time and shall so transfer them within 10 years after cessation of the operations in the course of which they were made.

(c) If for any reason the owner is or becomes unable so to preserve and file such records he shall transfer them to the commissioner.

(d) All such records in the custody of the owner shall be made available to the commissioner on demand. They shall be transferred to the custody of the commissioner if the commissioner at any time finds that such transfer is necessary for their preservation and orders that they be transferred to him.

(e) No person shall maliciously alter, mutilate, destroy or remove any such record.

Historical Note

Sec. added by renumbering former sec. 1967.
22.26, filed Jan. 12, 1967 to be eff. Jan. 16,

22.29 Severability. If any provision of this Part or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this Part which can be given effect without the invalid provisions or applications and to this end the provisions of this Part are declared to be severable.

Historical Note

Sec. added by renumbering former sec. 1967.
22.26, filed Jan. 12, 1967 to be eff. Jan. 16,

PART 23**PROTECTION IN CONSTRUCTION, DEMOLITION AND EXCAVATION OPERATIONS**

(Statutory authority: Labor Law, §§ 27-a, 28, 29)

- Subpart 23-1 General Provisions
- Subpart 23-2 Construction Operations
- Subpart 23-3 Demolition Operations
- Subpart 23-4 Excavation Operations
- Subpart 23-5 Scaffolding
- Subpart 23-6 Material Hoisting
- Subpart 23-7 Personnel Hoists
- Subpart 23-8 Mobile Cranes, Tower Cranes and Derricks
- Subpart 23-9 Power-Operated Equipment
- Subpart 23-10 Exhaust Gases from Internal Combustion Engines
- Subpart 23-11 Use of Explosives

Historical Note

Part repealed, new Part (Subparts 23-1—23-11) filed May 30, 1972 eff. June 1, 1972.

Section 23.0 — 23.63**Historical Note**

Secs. repealed, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-1**GENERAL PROVISIONS**

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| 23-1.14 | Temporary combustion devices | 23-1.34 | Severability |
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| 23-1.16 | Safety belts, harnesses, tail lines and lifelines | | |
| 23-1.17 | Life nets | | |
| 23-1.18 | Sidewalk sheds and barricades | | |
| 23-1.19 | Catch platforms | | |
| 23-1.20 | Chutes | | |

Historical Note

Subpart (§§ 23-1.1—23-1.33) added, filed May 30, 1972 eff. June 1, 1972.

Section 23-1.1 Title and citation. Within and for the purposes of the New York State Department of Labor, this Part (rule) may be known as "Industrial Code Rule No. 23" relating to "Protection in Construction, Demolition and Excavation Operations" and may be cited as "Rule 23" as an alternative and without preju-

dice to its designation and citation established by the Secretary of State of the State of New York.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.2 Finding of fact. The board finds that the trades and occupations of persons employed in construction, demolition and excavation operations involve such elements of danger to the lives, health and safety of such persons and of persons lawfully frequenting the areas of such activities as to require special regulations for their protection in that such persons are exposed to the following:

- (a) The hazards of falling and of falling objects and materials.
- (b) The hazards associated with the operation of vehicles and of construction, demolition and excavation machinery and equipment.
- (c) The hazards of fire, explosion and electricity.
- (d) The hazards of injury from the use of and contact with dangerous tools, machines and materials.
- (e) The hazards incidental to the handling and movement of heavy materials.
- (f) The hazards of exposure to the elements and air contaminants.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.3 Application. This Part (rule) applies to persons employed in construction, demolition and excavation operations, to their employers and to the owners, contractors and their agents obligated by the Labor Law to provide such persons with safe working conditions and safe places to work. This Part (rule) also applies to persons lawfully frequenting the areas of construction, demolition and excavation operations. This Part (rule) applies exclusively throughout the State of New York notwithstanding any other law or regulation, local or general.

Notes: (1) See, however, section 23-1.13 of this Part (rule) relating to electrical hazards.

- (2) Section 23-1.33 of this Part (rule) does not apply to any city in the State having a population of one million or more persons.

Historical Note

Sec. filed May 30, 1972; amd. filed Jan. 31, 1975 eff. Feb. 1, 1975.

23-1.4 Definitions. (a) *General descriptive terms.* As used in this Part (rule), such general terms as *adequate, effective, equal, equivalent, firm, necessary, proper, safe, secure, substantial, sufficient, suitable* and other similar terms when used to describe materials, devices, structures, methods and procedures required by this Part (rule) shall mean that such materials, devices, structures, methods and procedures shall be of such kind and quality as a reasonable and prudent man experienced in construction, demolition and excavation operations would require in order to provide safe working conditions for himself in the performance of such work.

(b) *Specific terms.* As used herein or in connection with this Part (rule) the following terms mean:

- (1) *Acceptable.* Acceptable to the commissioner.
- (2) *Aerial basket.* A vehicle-mounted, power-operated device with an articulating or telescoping work platform designed for use at elevated working positions.
- (3) *Approved.* In respect to a device, material or method: in compliance with a subsisting resolution of approval adopted by the board. In respect to action by the board: made the subject of a resolution of approval. There are two kinds of approval granted by the board as follows:

- (i) *General approval.* An approval, either required or voluntary, which is effective throughout the State of New York.
- (ii) *Special approval.* An approval, either required or voluntary, which is granted for a particular device, material or method to be used or operated only at the specific location stated in the resolution of special approval.
- (4) *Area.* Any space, either private or public, including a road, street or sidewalk, which may be affected by or subject to hazards from construction, demolition or excavation operations.
- (5) *Beamer.* A horizontal member of a scaffold which supports the platform.
- (6) *Blasting area.* An area near any blasting operation in which concussion or flying material or debris resulting from a blast of explosives can reasonably be expected to cause injury to any person therein.
- (7) *Board.* The Board of Standards and Appeals of the State of New York.
- (8) *Boutswain's chair.* A seat supported by rope slings attached to a block and tackle or supported by a powered hoisting unit designed to accommodate one person in a sitting position for vertical travel.
- (9) *Bricklayer's square scaffold.* A scaffold the platform of which is composed of planks supported on built-up squares secured to each other by diagonal bracing.
- (10) *Catch platform.* A structure fabricated and mounted on an exterior vertical wall of any building or other structure and designed to catch and hold falling objects or material from upper working levels.
- (11) *Commissioner.* The Industrial Commissioner of the State of New York or his duly authorized representative.
- (12) *Competent.* Qualified by training and/or experience to perform a particular task or duty.
- (13) *Construction work.* All work of the types performed in the construction, erection, alteration, repair, maintenance, painting or moving of buildings or other structures, whether or not such work is performed in proximate relation to a specific building or other structure and includes, by way of illustration but not by way of limitation, the work of hoisting, land clearing, earth moving, grading, excavating, trenching, pipe and conduit laying, road and bridge construction, concreting, cleaning of the exterior surfaces including windows of any building or other structure under construction, equipment installation and the structural installation of wood, metal, glass, plastic, masonry and other building materials in any form or for any purpose.
- (14) *Dangerous air contaminants.* Air contaminants in quantities tending to injure the health of any person. Air contaminants in quantities greater than 25 percent of the lower explosive level of any substance, mixture or compound which they may form.
- (15) *Dead load.* The load imposed on a structure by the weight of all component parts which make up such structure.
- (16) *Demolition work.* The work incidental to or associated with the total or partial dismantling or razing of a building or other structure including the removing or dismantling of machinery or other equipment.
- (17) *Designated person.* A person selected and directed by an employer or his authorized agent to perform a specific task or duty.
- (18) *Excavating machine.* A power-driven vehicle equipped to excavate, push, grade or elevate earth, rock or other material.
- (19) *Excavation work.* The removal of earth, rock or other material in connection with construction or demolition operations.
- (20) *Excavation, area-type.* An excavation having a bottom width equal to or greater than twice the depth of such excavation.

(21) *Excavation, trench-type.* An excavation having a bottom width less than twice the depth of such excavation.

(22) *Extension ladder.* A nonself-supporting portable ladder adjustable in length which consists of two or more sliding sections traveling in guides or brackets.

(23) *Extension trestle ladder.* A self-supporting trestle ladder provided with an adjustable vertical sliding single ladder section having parallel sides or rails.

(24) *Heavy duty scaffold.* A scaffold designed and constructed to carry a maximum live load of 75 pounds per square foot, such as one intended for stone masons and required to support heavy materials in addition to the workmen.

(25) *Independent pole scaffold.* A scaffold supported from the ground, floor or equivalent surface by a double row of vertical poles, independent of support from the walls of a building or other structure, and which consists of poles, ledgers, diagonal bracing, horizontal platform bearers and a platform.

(26) *Job site.* The site of a project involving construction, demolition or excavation operations.

(27) *Ladder jack scaffold.* A scaffold the platform of which is supported by brackets or jacks attached to the side rails of ladders.

(28) *Ledger.* A horizontal scaffold member extending to and forming a tie between the vertical posts and which supports the putlogs or bearers.

(29) *Life net.* An approved life net made and used in compliance with the provisions of this Part (rule).

(30) *Light duty scaffold.* A scaffold designed and constructed to carry a maximum live load of 25 pounds per square foot, such as one intended for carpenters or painters and required to support no load other than a small weight of material or tools in addition to the workmen.

(31) *Live load.* The load imposed on a structure consisting of the total weight of all loads supported by such structure.

(32) *Manually propelled mobile scaffold.* A portable rolling scaffold supported by casters.

(33) *Material platform hoist.* A power- or manually-operated suspended platform operating in guide rails attached to a tower or similar structure used for raising or lowering material exclusively and operated and controlled from a point outside the conveyance.

(34) *Medium duty scaffold.* A scaffold designed and constructed to carry a maximum live load of 50 pounds per square foot, such as one intended for bricklayers or plasterers and required to support no load other than a moderate weight of material in addition to the workmen.

(35) *Multiple-point suspension scaffold.* A scaffold with a continuous platform supported by three or more beams or bearers the ends of which are so suspended by wire rope from an overhead support as to permit the raising or lowering of the platform to a desired position by manual or powered means.

(36) *Needle beam scaffold.* A scaffold consisting of a plank platform supported by parallel horizontal beams which are suspended by ropes.

(37) *Outrigger scaffold.* A scaffold the platform of which is built upon outriggers or thrust-outs projecting from the wall or exterior face of a building or other structure with the inboard ends of such supports secured inside the building or other structure.

(38) *Personnel hoist.* A power-operated elevator the car of which operates in guide rails supported by an exterior tower or similar structure or by an interior hoistway within a building or other structure and used primarily to carry persons to elevated work areas during construction or demolition operations.

(39) *Persons lawfully frequenting.* Any person exercising a lawful right of presence or passage in any area, including persons on a public sidewalk, street or highway.

(40) *Power buggy.* A small self-powered vehicle operated by one person and used solely for the movement of materials on or about construction, demolition or excavation sites.

(41) *Putlog.* A horizontal member of a single-pole scaffold supported on one end by a ledger and on the other end by the wall of a building or other structure and which supports the scaffold platform.

(42) *Roofing bracket.* A bracket used in sloped roof construction and having sharp points of other means for securely fastening the bracket to the roof in order to prevent any person from slipping.

(43) *Runner.* A horizontal member of a scaffold extending the entire length of the scaffold.

(44) *Safety belt.* An approved safety belt provided and used in accordance with the provisions of this Part (rule).

(45) *Scaffold.* A temporary elevated working platform and its supporting structure including all components.

(46) *Sectional ladder.* A ladder consisting of two or more individual sections so constructed that the sections can be connected and combined end to end to function as a single ladder.

(47) *Shall.* The word *shall* is always mandatory.

(48) *Shoring, concrete.* A system of temporary supports, either wood or metal, used to support the weight of forms and uncured concrete.

(49) *Shoring, excavation.* Temporary bracing used to support the sides of an excavation to prevent their collapse.

(50) *Single ladder.* A nonself-supporting portable ladder, nonadjustable in length, consisting of but one section.

(51) *Single pole scaffold.* A scaffold the platform of which rests on putlogs or cross-beams, the outer ends of which are supported on ledgers secured to a single row of vertical posts or uprights while the inboard ends are supported on the top of a wall or other structure or by means of openings in a wall or other structure.

(52) *Soil.* (i) *Stiff cohesive soil.* Soil which does not crumble and which shows only slight indentations with moderate finger pressure. Such soils are generally stiff silts and clays or glacial tills with a relatively high content of plastic fines.

(ii) *Noncohesive soil.* Soil which crumbles by itself or under slight finger pressure. Such soils are generally silts, sands, gravels or mixtures of these with little or no plastic fines present.

(iii) *Soft cohesive or wet-flowing soils.* Wet sticky soil which can be molded with slight finger pressure or wet fine-grained granular soil which flows under its own weight. Such soils are either soft silts, clays, organic soils or wet loose sands and/or silts.

(53) *Stepladder.* A self-supporting portable ladder, nonadjustable in length, having flat steps or heavy duty rungs and a hinged back.

(54) *Stilts.* A pair of devices with foot and leg attachments which are used to elevate a person above a floor or equivalent surface in order to perform work on walls and ceilings.

(55) *Tower crane.* A crane design which utilizes a mast or tower in a fixed vertical position for supporting the operating boom. The three elements of a tower crane are a revolving superstructure, a base mounting and a boom attach-

ment and such elements are varied for each tower crane application.

(56) *Trestle ladder.* A self-supporting portable ladder, nonadjustable in length, consisting of two sections which are hinged together at the top to form equal angles with the base.

(57) *Tube and coupler scaffold.* A self-supporting scaffold constructed of individual pieces of tubular metal, pipe or other material of equivalent strength forming vertical posts, runners, bearers and diagonal bracing and with all junction points fastened together by means of approved couplers or approved locking devices.

(58) *Two-point suspension scaffold.* A scaffold of the type commonly known as a painter's scaffold or swing staging having a platform supported by stirrups or hangers at two points near the ends and which is so suspended from overhead supports as to permit the raising or lowering of the platform to a desired position either manually or by means of power.

(59) *Window jack.* A working platform for one person which is supported by a bracket or jack which projects through a window opening.

(60) *Zone of demolition.* Any area in the immediate vicinity of a demolition site where persons may be injured from falling material or debris or from the operation of demolition machinery or equipment.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

Decisions

1. Term "scaffold" construed

A platform under a bridge which was being worked on, placed there to catch materials falling from the bridge and to provide a work platform, is a "scaffold" as de-

fined in the Industrial Code (12 NYCRR 23-1.4[b][45]) and is within the purview of section 240 of the Labor Law. *Rocha v. State of New York*, 45 AD 2d 638 (1974).

23-1.5 General responsibility of employers. These general provisions shall not be construed or applied in contravention of any specific provisions of this Part (rule).

(a) *Health and safety protection required.* All places where employees are suffered or permitted to perform work of any kind in construction, demolition or excavation operations shall be so constructed, equipped, arranged, operated and conducted as to provide reasonable and adequate protection for the lives, health and safety of such persons as well as of persons lawfully frequenting the area of such activity. To this end, all employers, owners, contractors and their agents and other persons obligated by law to provide safe working conditions, personal protective equipment and safe places to work for persons employed in construction, demolition or excavation operations and to protect persons lawfully frequenting the areas of such activity shall provide or cause to be provided the working conditions, safety devices, types of construction, methods of demolition and of excavation and the materials, means, methods and procedures required by this Part (rule). No employer shall suffer or permit an employee to work under working conditions which are not in compliance with the provisions of this Part (rule), or to perform any act prohibited by any provision of this Part (rule).

(b) *General requirement of competency.* For the performance of work required by this Part (rule) to be done by or under the supervision of a designated person, an employer shall designate as such person only such an employee as a reasonable and prudent man experienced in construction, demolition or excavation work would consider competent to perform such work.

(c) *Condition of equipment and safeguards.* (1) No employer shall suffer or permit an employee to use any machinery or equipment which is not in good repair and in safe working condition.

(2) All load carrying equipment shall be designed, constructed and maintained throughout to safely support the loads intended to be imposed thereon.

(3) All safety devices, safeguards and equipment in use shall be kept sound and operable, and shall be immediately repaired or restored or immediately removed from the job site if damaged.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.6 Responsibility of employees. Every employee shall observe all the provisions of this Part (rule) which directly concern or affect his conduct. He shall use the safety devices provided for his personal protection and he shall not tamper with or render ineffective any safety device, safeguard or personal protective equipment.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.7 Protection from general hazards. (a) *Overhead hazards.* (1) Every place where persons are required to work or pass that is normally exposed to falling material or objects shall be provided with suitable overhead protection. Such overhead protection shall consist of tightly laid sound planks at least two inches thick full size, tightly laid three-quarter inch exterior grade plywood or other material of equivalent strength. Such overhead protection shall be provided with a supporting structure capable of supporting a loading of 100 pounds per square foot.

(2) Where persons are lawfully frequenting areas exposed to falling material or objects but wherein employees are not required to work or pass, such exposed areas shall be provided with barricades, fencing or the equivalent in compliance with this Part (rule) to prevent inadvertent entry into such areas.

X (b) *Falling hazards.* (1) *Hazardous openings.* (i) Every hazardous opening into which a person may step or fall shall be guarded by a substantial cover fastened in place or by a safety railing constructed and installed in compliance with this Part (rule).

(ii) Where free access into such an opening is required by work in progress, a barrier or safety railing constructed and installed in compliance with this Part (rule) shall guard such opening and the means of free access to the opening shall be a substantial gate. Such gate shall swing in a direction away from the opening and shall be kept latched except for entry and exit.

(iii) Where employees are required to work close to the edge of such an opening, such employees shall be protected as follows:

(a) Two-inch planking, full size, or material of equivalent strength installed not more than one floor or 15 feet, whichever is less, beneath the opening; or

(b) An approved life net installed not more than five feet beneath the opening; or

(c) An approved safety belt with attached lifeline which is properly secured to a substantial fixed anchorage.

(2) *Bridge or highway overpass construction.* (i) Approved safety belts shall be provided for and used by persons employed at elevations greater than 30 feet above land or water during bridge or highway overpass construction or at any elevation during structural or construction work performed over highways or railroads open to public traffic.

(ii) Scaffolds, platforms or approved life nets may be provided as alterna-

tives to approved safety belts. When used, such alternatives shall be installed not more than five feet below the lower edge of the structural members on or above which the persons to be protected are working. Such scaffolds, platforms or life nets shall be installed and maintained at all times when persons are working except when such safety protection would interfere with the placement of structural members or assemblies, in which case approved safety belts shall be worn.

(c) *Drowning hazards.* Where any person is exposed to the hazard of falling into water beneath his work location in which he might drown, equipment for the prompt rescue of such person from the water shall be provided. Such equipment shall consist of a manned boat of a size suitable for the existing water conditions and area. Such boat shall be equipped with oars, with United States Coast Guard approved life preservers, with a life ring fastened to a line not less than 50 feet in length and with a boat hook. Such boat shall continuously patrol the area beneath the work location at all times when any person is exposed to the falling and drowning hazard.

(d) *Slipping hazards.* Employers shall not suffer or permit any employee to use a floor, passageway, walkway, scaffold, platform or other elevated working surface which is in a slippery condition. Ice, snow, water, grease and any other foreign substance which may cause slippery footing shall be removed, sanded or covered to provide safe footing.

(e) *Tripping and other hazards.* (1) *Passageways.* All passageways shall be kept free from accumulations of dirt and debris and from any other obstructions or conditions which could cause tripping. Sharp projections which could cut or puncture any person shall be removed or covered.

(2) *Working areas.* The parts of floors, platforms and similar areas where persons work or pass shall be kept free from accumulations of dirt and debris and from scattered tools and materials and from sharp projections insofar as may be consistent with the work being performed.

(f) *Vertical passage.* Stairways, ramps or runways shall be provided as the means of access to working levels above or below ground except where the nature or the progress of the work prevents their installation in which case ladders or other safe means of access shall be provided.

(g) *Air contaminated or oxygen deficient work areas.* The atmosphere of any unventilated confined area including but not limited to a sewer, pit, tank or chimney where dangerous air contaminants may be present or where there may not be sufficient oxygen to support life shall be tested by the employer, his authorized agent or by a designated person before any person is suffered or permitted to work in such area. Such testing shall be in accordance with the provisions of Industrial Code Part (rule) 12 relating to the "Control of Air Contaminants" and such areas shall be subject to the other pertinent provisions of Industrial Code Part (rule) 12 and of Industrial Code Part (rule) 18 relating to "Exhaust Systems".

(h) *Corrosive substances.* All corrosive substances and chemicals shall be so stored and used as not to endanger any person. Protective equipment for the use of such corrosive substances and chemicals shall be provided by the employer.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

Decisions

1. Applicability

Held that the overhead protection requirements of the Industrial Code (12 NYCRR 23.3[h] [cf. 23-1.7(a)]) could not be

followed in the construction of a power plant without rendering performance of the construction contract impossible. The owner is required to provide a safe place to work

23-1.11 Lumber and nail fastenings. (a) The lumber used in the construction of equipment or temporary structures required by this Part (rule) shall be sound and shall not contain any defects such as ring shakes, large or loose knots or other defects which may impair the strength of such lumber for the purpose for which it is to be used.

(b) The lumber dimensions specified in this Part (rule) are nominal or trade size except as otherwise specifically stated with the words "full size" and except in the case of ladders.

(c) All nails shall be driven full length and shall be of the proper size, type, length and number to provide the required strength at all joints. Only double-headed or screw-type nails shall be used in the construction of scaffolds.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1973.

23-1.12 Guarding of power-driven machinery. (a) *General.* Power-driven machines not specifically considered in this Part (rule) shall be guarded in accordance with the requirements of Industrial Code Part (Rule No.) 19 relating to "Guarding of Dangerous Machinery, Vats and Pans."

(b) *Keys, set screws and similar projections.* All keys, set screws, bolts and similar projections on shafts, pulleys, gears, collars and couplings and other revolving members, where such projections are not countersunk or protected by location from accidental contact by persons, shall be guarded by smooth, cylindrical safety sleeves constructed of wood or metal which completely surrounds each such projection, or each such projection shall be guarded by a stationary enclosure of sheet metal, wire mesh, expanded metal or other suitable material. Any openings in such enclosures shall reject a ball one-half inch in diameter.

(c) *Power-driven saws.* (1) Every portable, power-driven, hand-operated saw which is not provided with a saw table, except chain saws and circular brush saws, shall be equipped with a fixed guard above the base plate which will completely protect the operator from contact with the saw blade when the saw is operating and with a movable self-adjusting guard below the base plate which will completely cover the saw blade to the depth of the teeth when such saw blade is removed from the cut.

Note: Electrically-driven portable saws are also subject to the provisions of section 23-1.10 of this Part (rule).

(2) Every power-driven saw, other than a portable saw, shall be equipped with a guard which covers the saw blade to such an extent as will prevent contact with the teeth. In operation, such guard shall rise automatically by pressure from the material being cut or shall be so adjusted that as the saw cuts the material, the distance from the material to the underside of the guard does not exceed one-half inch. The exposed teeth of the saw blade beneath the table shall be effectively guarded. Every such saw shall be provided with a cut-off switch within easy reach of the operator without his leaving the operating position.

Exception: Any arm saw whose upper blade half is enclosed and which is provided with a front blocking bar or rod is not required to be guarded by the automatic rising pressure guard.

(3) Every table circular saw used for ripping shall be provided with a spreader securely fastened in position and with an effective device to prevent material kickback.

(d) *Sprockets and gears.* Sprockets and gears which are not protected by location or design from accidental contact by persons shall be completely enclosed

or shall be provided with band guards which cover the periphery and which have side flanges which extend below the roots of the teeth.

(e) *Belts, pulleys and flywheels.* All belts except conveyor belts and all pulleys and flywheels which are less than seven feet above the ground, floor, working platform, runway or equivalent surface where persons work or pass and which are not protected by location from accidental contact by persons, shall have all moving parts guarded by substantial enclosures or by safety railings constructed and installed in compliance with this Part (rule) which will prevent persons from approaching within a horizontal distance of 18 inches. Enclosures required by this Part (rule) may be temporarily removed when starting a machine or for machine adjustment or maintenance, but shall be replaced immediately thereafter.

(f) *Friction-disc drives.* Friction-disc drives which are not guarded by design or location from accidental contact with any person shall be completely enclosed or shall be provided with band guards with side flanges.

(g) *Wire rope.* The nip points between power winches or sheaves and wire ropes shall be guarded by substantial enclosures or by safety railings constructed and installed in compliance with this Part (rule).

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.13 Electrical hazards. (a) *Operations subject to the jurisdiction of the Public Service Commission.* None of the provisions of this section shall apply to or in connection with operations conducted by employers, owners, contractors and their agents subject to the jurisdiction of the Public Service Commission.

(b) *General.* (1) *Precautions.* All power lines and power facilities around or near construction, demolition and excavation sites shall be considered as energized until assurance has been given that they are otherwise by qualified representatives of the owners of such power lines or power facilities.

(2) *Determination of voltages.* Before work is begun at any construction, demolition or excavation site, the employer shall determine the voltage levels of all energized power lines and power facilities around or near such site. Where two or more voltages are available at a job site, all electrical equipment and circuits shall be appropriately identified. Such identification shall include voltage level and phase.

(3) *Investigation and warning.* Before work is begun the employer shall ascertain by inquiry or direct observation, or by instruments, whether any part of an electric power circuit, exposed or concealed, is so located that the performance of the work may bring any person, tool or machine into physical or electrical contact therewith. The employer shall post and maintain proper warning signs where such a circuit exists. He shall advise his employees of the locations of such lines, the hazards involved and the protective measures to be taken.

(4) *Protection of employees.* No employer shall suffer or permit an employee to work in such proximity to any part of an electric power circuit that he may contact such circuit in the course of his work unless the employee is protected against electric shock by de-energizing the circuit and grounding it or by guarding such circuit by effective insulation or other means. In work areas where the exact locations of underground electric power lines are unknown, persons using jack hammers, bars or other hand tools which may contact such power lines shall be provided with insulated protective gloves, body aprons and footwear.

(5) *Guarding of switches or other circuit interrupting devices.* If protection for employees consists of de-energizing circuits, employers shall cause open

switches or other circuit interrupting devices to be guarded against inadvertent closing until such employees are no longer exposed.

(6) *Notifying utility company.* At least five normal working days before work is begun within 10 feet of any live overhead power line or before any excavation work is performed which might contact or disturb a live underground power line, the employer shall notify in writing the utility whose power line may be affected.

(7) *Generators.* Portable electric power generators on any construction, demolition or excavation job site shall have the frames and one pole of the electrical outputs grounded.

(8) *Defective insulation.* Any wiring found to have cracked insulation or insulation deteriorated in any other way shall be immediately removed from service and discarded.

(c) *Temporary electric power circuits at construction, demolition or excavation job sites.*

(1) *Temporary electric wiring.* (i) All temporary wiring shall be supported on proper insulators and not looped over nails or brackets. No bare wires or other unprotected current-carrying parts shall be located within eight feet above any surface where persons may work or pass unless completely guarded by a fence or other barrier.

Exception: Where qualified persons must make adjustments or measurements on an electrical device or circuit.

(ii) Electrical systems and current-carrying equipment shall be properly grounded except as provided for blasting circuits in this Part (rule). Where it is necessary to lay electrical wiring on the ground, such wiring shall be of the weather-proof type and heavy enough to withstand the wear and abuse to which it may be subjected. No conductor shall be used to carry a higher voltage than the manufacturer's rating.

(iii) Elevated power lines shall have sufficient vertical clearance where they cross highways, access roads or areas traveled by trucks, cranes, shovels or other similar equipment. In no case shall such vertical clearance be less than 18 feet.

(iv) Fuses and other automatic cut-outs shall not exceed a size that will cause open circuits at points lower than the carrying capacities of the protected conductors or equipment or their insulation.

(d) *High-voltage power circuits (over 500 volts to ground) at construction, demolition and excavation sites.* (1) At any construction, demolition or excavation site where any person or equipment is required to approach nearer than 10 feet to any overhead energized high-voltage power line or power facility, such approach shall not be made unless or until the following procedure has been complied with:

(i) The owner of such power line or power facility shall be notified in writing by the employer that such an approach is to be made.

(ii) In not more than one normal working day following the receipt of such written notice, the owner of the high-voltage power line or power facility shall advise and make recommendations for the procedure to be followed in performing any work nearer than 10 feet to such power line or power facility.

Exception: In an emergency situation involving imminent danger to the life, health or safety of any person the employer is not required to comply with this provision.

(iii) The employer shall follow the procedure recommended by the owner

of the high-voltage power line or power facility in performing any work within 10 feet of such power line or power facility.

(2) The procedure outlined in subparagraphs (i), (ii) and (iii), above, shall be followed whenever any excavation work is to be performed in any area where underground high-voltage power circuits are known or expected to exist.

(3) Any equipment used on a construction, demolition or excavation site which could approach nearer than 10 feet of an energized electric power line or power facility, located overhead or underground, shall be effectively grounded as follows:

(i) Any such equipment shall be provided with a permanent clamp or other means for convenient and effective attachment to a grounding conductor.

(ii) The cable connecting the clamp to the ground shall be equivalent to a No. 1 AWG or larger single conductor, extraflexible, rope-stranded copper, with 600-volt covering for abrasive protection, and with terminal parts that insure a proper connection with hand-type screw clamps.

(iii) An effective ground for such equipment shall be one having a measured resistance of 25 ohms or less, or a connection to a continuous underground metallic water piping system.

(4) Any machinery or equipment used on a construction, demolition or excavation site which has a boom or similar moving extension shall be provided with a durable warning sign posted and maintained in such a location as to be clearly visible to the operator of such machinery or equipment from his operating position. Every such warning sign shall bear the following legend in black letters on a yellow background:

WARNING

(Letters to be at least one-half inch in height)

It is unlawful to operate this equipment closer than 10 feet of any energized high-voltage electric power circuit.

(Letters to be at least one-quarter inch in height)

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.14 Temporary combustion devices. (a) *General requirements.* (1) The use of an open salamander, coke burner or other device or receptacle of any kind in which charcoal, coal or any other fuel or combustible substance is burned for any purpose is prohibited in any enclosed area of any building or other structure unless sufficient ventilation is maintained in such enclosed area to assure a safe atmosphere for breathing and proper combustion.

(2) No tarpaulin or canvas covering shall be located nearer than 10 feet from a temporary combustion device unless such covering has been treated with flame retardant chemicals. Tarpaulins and canvas coverings which have been treated with flame-retardant chemicals may be located not less than four feet from a temporary combustion device. Tarpaulins and canvas coverings shall be securely fastened to prevent contact with any temporary combustion device.

(3) Temporary combustion devices shall not be placed on any combustible floor, platform or any other combustible surface unless such surface is protected or insulated for a minimum distance of six feet in a horizontal direction from the perimeter of the combustion device on all sides. The minimum overhead or side clearance from the combustion device to any combustible material shall be four feet.

Exception: The horizontal insulation protection on a scaffold platform may be limited to the width of the scaffold platform provided there are no combustible objects or materials within six feet horizontally in any direction from the combustion device and that the other pertinent provisions of this section are complied with.

(4) Temporary combustion devices shall be provided with suitable base supports or legs to prevent tipping.

(5) An approved fire extinguisher of a suitable type shall be located on the same floor or level and within 50 feet of every temporary combustion device being used. When a temporary combustion device is used on any scaffold platform, an approved fire extinguisher of a suitable type shall be located on such platform.

(6) Solid fuel heaters and oil-fired salamanders are prohibited from use in any building or other structure under construction or from use on any scaffold.

(b) *Temporary combustion devices using liquefied gas.* (1) *General.* (i) After June 1, 1972 all combustion devices used for temporary heating which use liquefied gas as fuel shall be approved.

(ii) Liquefied gas used as fuel in temporary combustion devices shall contain an agent which will give such gas a distinctive and detectable odor.

(iii) Areas in which temporary combustion devices fueled by liquefied gas are used shall have legible warning signs affixed to every entrance to such areas. Such signs shall be conspicuously located so as to be readily visible to persons approaching such areas. Such signs shall bear the words, "DANGER—FLAMMABLE GAS" in letters at least four inches in height on a contrasting background.

(iv) Temporary combustion devices manufactured after June 1, 1972 shall be provided with automatic cut-off devices which will shut off the fuel supply in the event of flame failure. Such cut-off devices shall be installed at the burners.

(v) A designated person shall be in attendance on the job site at all times when liquefied gas combustion devices are operating.

(2) *Liquefied gas cylinders and containers.* (i) Cylinders and containers of liquefied gas used as fuel for the heating of construction shanties, sanitary facilities, field offices or other temporary buildings or structures on construction, demolition or excavation sites shall be located outside such buildings or other structures.

Exception: Temporary combustion devices specifically designed to be attached to gas cylinders or containers.

(ii) The use of cylinders or containers of liquefied gas having stored capacities in excess of 1,000 pounds each is prohibited in the interior of any building or other structure. Where such capacity cylinders or containers are used, they shall be stored in central areas outside of any building or other structure. Such liquefied gas supply shall be located a distance of at least 25 feet from any building or other structure or from any combustible material and shall be protected from the sun and high temperatures.

(iii) Liquefied gas cylinders or containers not in use shall be stored or placed at a distance of at least 25 feet from any building or other structures or from any combustible material and shall be protected from the sun and high temperatures. Each storage location shall be provided with at least one approved portable fire extinguisher of a suitable type.

(iv) Liquefied gas cylinders or containers shall be raised or lowered only in suitable cradles. The use of ordinary slings for such purpose is prohibited.

No more than two cylinders or containers shall be handled in a cradle at one time.

(v) Liquefied gas cylinders or containers shall not be dropped or thrown from any height.

(vi) Liquefied gas cylinders or containers, whether full, partially full or empty, shall be securely fastened in place in an upright position and protected from any damage. Such cylinders shall not be supported in the areas of the valves or valve protectors.

Exception: In operations where such cylinders must be placed in a horizontal position, as in the extraction of liquid.

(vii) The control valve of any liquefied gas cylinder shall be located at the domed end of such cylinder. When not in use, such control valve shall be protected by its ring guard. A key, wrench or hand wheel shall be maintained on the spindle of every liquefied gas cylinder or container at all times during use. The use of a control valve at the combustion device as a sole means of turning off the fuel supply is prohibited.

(viii) Each liquefied gas cylinder or container shall be provided with a pressure regulator or an automatic pressure reducing device. Such regulator or reducing device shall be located between the cylinder or container and the combustion device or distribution manifold.

(ix) Valves, fittings, piping and other accessories connected to a liquefied gas cylinder or between a cylinder and a pressure reducing device shall be designed to withstand the maximum hydrostatic cylinder working pressure.

(3) *Central station distribution.* Where temporary combustion devices use liquefied gas supplied from a central station, the liquefied gas distribution shall be in accordance with the following:

(i) Liquefied gas shall be distributed throughout the building or other structure from the cylinder or container area to the combustion devices in the gaseous state by means of flexible or rigid piping suitable for such use at a pressure not exceeding 20 pounds per square inch gage.

(ii) Such flexible or rigid branch piping shall extend to a point not more than 10 feet nor less than six feet from any temporary combustion device.

(iii) Such piping shall be provided with shut-off valves at each floor or equivalent level take-off from the riser, at each branch take-off and at each final take-off.

(iv) The connections between the flexible or rigid piping and the temporary combustion devices shall be by means of armored flexible hose. Such hose shall be provided with metal screw connectors which shall be maintained in a tight condition.

(4) *Use of individual liquefied gas cylinders or containers.* Where each temporary combustion device is supplied with liquefied gas from an individual cylinder or container and a central station distribution system is not used, such use shall be in accordance with the following:

(i) Each liquefied gas cylinder or container shall be securely fastened in an upright position and protected from any damage. Such cylinder shall not be supported in the area of the valve or valve protector.

(ii) Each liquefied gas cylinder or container shall be located a minimum distance of six feet from any temporary combustion device.

Exception: Any temporary combustion device specifically designed to be attached to a gas cylinder or container.

(iii) Liquefied gas cylinders or containers shall be connected to temporary combustion devices by means of armored flexible hose not more than 10 feet nor less than six feet in length.

Exception: Any temporary combustion device specifically designed to be attached to a gas cylinder or container.

(iv) Such armored flexible hose connections shall be made by means of metal screw connectors which shall be maintained in a tight condition.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.15 Safety railing. Whenever required by this Part (rule), a safety railing shall consist as a minimum of an assembly constructed as follows:

(a) A two inch by four inch horizontal wooden hand rail, not less than 36 inches nor more than 42 inches above the walking level, securely supported by two inch by four inch vertical posts at intervals of not more than eight feet.

(b) A one inch by four inch horizontal midrail.

(c) A one inch by four inch toeboard except when such safety railing is installed at grade or ground level or is not adjacent to any opening, pit or other area which may be occupied by any person.

(d) The hand rail of every safety railing shall be smooth and free from splinters and protruding nails.

(e) Other material or construction may be used for safety railings required by this Part (rule) provided such assemblies have equivalent strength and assure equivalent safety.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.16 Safety belts, harnesses, tail lines and lifelines. (a) *Approval required.* Safety belts, harnesses and all special devices for attachment to hanging lifelines shall be approved.

(b) *Attachment required.* Every approved safety belt or harness provided or furnished to an employee for his personal safety shall be used by such employee in the performance of his work whenever required by this Part (rule) and whenever so directed by his employer. At all times during use such approved safety belt or harness shall be properly attached either to a securely anchored tail line, directly to a securely anchored hanging lifeline or to a tail line attached to a securely anchored hanging lifeline. Such attachments shall be so arranged that if the user should fall such fall shall not exceed five feet.

(c) *Instruction in use.* Every employee who is provided with an approved safety belt or harness shall be instructed prior to use in the proper method of wearing, using and attaching such safety belt or harness to the lifeline.

(d) *Tail lines.* The length of any tail line shall be the minimum required in order for an employee to perform his work, but in no case shall be longer than four feet. Such tail line shall be attached to a hanging lifeline or to a substantial structural member at a point no lower than two feet above the working platform or working level. Tail lines shall be first grade manila or synthetic fibre rope at least one-half inch in diameter with a breaking strength of not less than 4,000 pounds or shall be fabricated of other approved materials.

(e) *Lifelines.* Any hanging lifeline required by this Part (rule) shall be not more than 300 feet in length from the point of suspension to grade, building setback

or other surface. Every hanging lifeline shall be securely attached to a sufficient anchorage. Every hanging lifeline shall be provided with padding, wrapping, chafing gear or similar means of protection from contact with building edges or other objects which may cut or abrade such lifeline. Lifelines shall be fabricated of wire rope at least five-sixteenths inch in diameter or first grade manila or synthetic fibre rope at least one-half inch in diameter with a breaking strength of not less than 4,000 pounds.

(f) *Inspection and maintenance.* (1) Every safety belt, harness, tail line and lifeline shall be inspected by a designated person prior to each use. Employers shall not suffer or permit any employee to use any such equipment which shows any indication of mildew, broken fibre or fabric, excessive wear or any other damage or deterioration which could materially affect the strength of such safety belts, harnesses, tail lines or lifelines. Any such equipment found to be unsafe shall be removed from the job site.

(2) When not in use, safety belts, harnesses, tail lines and lifelines shall be stored in such areas and in such a manner as to prevent their deterioration and to protect them from being damaged.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.17 Life nets. (a) *Approval required.* Any life net used in construction or demolition operations shall be approved.

(b) *Materials and construction.* Approved life nets shall be made of first grade fibre cordage, woven fabric or synthetic fibre and all such materials shall be treated to render them fire resistant; or such approved life nets shall be constructed of wire rope. An approved life net shall have a mesh not exceeding four inches. The perimeter of every life net shall be reinforced with cloth-covered wire rope, manila rope or synthetic fibre rope and shall be equipped with properly sized padded thimbles, sockets or equivalent approved means of attachment to supports and anchorages.

(c) *Size, strength, location and attachment of life nets.* Every life net or combination of life nets shall be of sufficient size and strength to catch and hold any person for whose protection such net or combination of nets is being used in case of a fall. Such net or combination of nets shall be located so as to completely cover the area of possible fall. Every life net shall be attached to sufficient anchorages or supports outside of and beyond the area of possible fall and shall be supported at a height to prevent sagging which may cause the net to strike or touch any surface or object beneath when cushioning the fall of any person.

(d) *Maintenance.* Every life net in use shall be thoroughly dried before storage and shall be stored in a dry location which is protected from the elements. Every life net shall be protected against damage from mechanical devices, acid or other corrosive substances or from any other type of deterioration.

(e) *Inspection.* Every life net shall be thoroughly inspected by a designated qualified person before each installation. A daily visual inspection shall be made by a designated person of every life net in use. Employers shall not suffer or permit any installation or use of any life net which shows any indication of mildew, broken fibre or fabric, excessive wear or any other damage or deterioration which could materially affect the strength of any portion of such life net. Any life net found to be unsafe shall be immediately removed from the job site and not returned for reuse unless properly repaired.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.18 Sidewalk sheds and barricades. (a) *Sidewalk sheds.* A sidewalk shed constructed in accordance with the provisions of this section shall be required along any sidewalk or thoroughfare where the following conditions persist:

(1) Where any building or other structure exceeding 40 feet in height above and alongside of such sidewalk or thoroughfare is to be erected.

(2) Where any building or other structure exceeding 25 feet in height above such sidewalk or thoroughfare is to be demolished and the distance from such sidewalk or thoroughfare to the nearest point of such building or other structure is one-half or less of the height of such building or other structure.

(3) Where during construction or demolition operations, material or debris is to be transported over such sidewalk or thoroughfare, regardless of the height of the building or other structure being constructed or demolished.

(b) *Sidewalk shed construction.* (1) The deck and supporting structure of every sidewalk shed shall be constructed to sustain a live load of at least 150 pounds per square foot without breaking, and if material is to be stored thereon such deck and supporting structure shall be constructed to sustain a live load of not less than 300 pounds per square foot without breaking. Every sidewalk shed shall be so erected as to provide a vertical clearance of not less than seven and one-half feet at any point above the walkway surface. Every sidewalk shed shall have such width as to allow the unimpeded passage of pedestrians at all times but in no case shall any sidewalk shed be less than five feet wide.

(2) The outside edge and the ends of the deck of every sidewalk shed shall be provided with a substantial enclosure at least 42 inches in height, consisting of boards not less than one inch thick laid close, or of screening formed of not less than No. 16 U.S. gage steel wire mesh with openings which will reject a one and one-half inch diameter ball, or of corrugated metal sheet of not less than No. 22 U.S. gage or of exterior grade plywood not less than one-half inch thick.

(3) The deck of every sidewalk shed shall consist of planks not less than two inches thick full size laid tight. Unless such deck is constructed solidly against the face of the building or other structure in such manner that no material, debris or other objects can fall on the sidewalk or other walkway surface, the side of the shed toward the building or other structure shall be solidly fenced with a barricade for its full height. Solid sliding or swinging gates or doors may be provided for the movement of men and materials.

(4) Metal or other materials of equivalent strength and suitability may be used in lieu of wood in the construction of sidewalk sheds.

(5) Sidewalk sheds shall be provided with illumination having an intensity of not less than five-foot candles measured at the walkway level to insure the safe movement of persons.

(c) *Barricades.* (1) Along every sidewalk or pedestrian thoroughfare where a building or other structure is to be constructed or demolished and where a sidewalk shed is not required by this Part (rule), there shall be erected a substantial barricade to prevent unauthorized persons from entering the site of such operations.

(2) Such barricade shall be a fence or equivalent barrier not less than six feet in height. Such barricade shall be of solid construction for its entire height and length except for such openings, provided with solid doors, as may be necessary for the proper performance of the work.

(3) Where the height of the building or other structure to be constructed or demolished is not more than 25 feet above the ground, grade or equivalent surface and where the distance from the sidewalk or pedestrian thoroughfare to the nearest point of such building or other structure is more than one half of the height of the building or other structure, a substantial safety railing constructed

in compliance with this Part (rule) may be installed at the inside edge of such sidewalk or pedestrian thoroughfare in lieu of such solid barricade.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.19 Catch platforms. (a) *General.* Catch platforms shall not be used as working platforms, walkways or for the storage of material.

(b) *Catch platform construction.* Catch platforms where required by this Part (rule) shall comply with the following:

(1) Every catch platform shall be at least five feet wide and so inclined that the outer edge is six inches higher than the inner edge.

(2) If the supports of a catch platform consist of outriggers, such outriggers shall be at least two inches by 10 inches in size, set on edge and spaced not more than eight feet apart. Such outriggers shall be placed and anchored in compliance with this Part (rule).

(3) The planking used in the construction of catch platforms shall be at least two inches thick full size and shall be laid tight and nailed. Each such plank shall lap its end supports by at least 12 inches. Other materials of equivalent strength may be used in lieu of such planking.

(c) *Catch platform enclosures.* Except as otherwise permitted by this Part (rule), the open sides of catch platforms shall be provided with a barricade or fence of tight planking at least two inches thick, exterior grade plywood at least three-quarters inch thick or of No. 18 U.S. gage wire screen mesh with openings that will reject a ball one-half inch in diameter. Every such enclosure shall be at least 48 inches in height above the platform with no opening between the bottom of the enclosure and the platform. Supports for a wood enclosure shall be at least two inches by six inches in cross-section and shall be spaced not more than 10 feet apart, center to center.

(d) *Catch platform installation.* Every catch platform shall be so installed that the inner edge of such catch platform is flush with the wall of the building or other structure on which it is installed.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.20 Chutes. (a) *Chute enclosures.* Wooden or metal chutes used for the removal of material and debris from elevated levels of a building or other structure and which are at an angle of more than 45 degrees from the horizontal shall be entirely enclosed on all sides and the top, except for openings used for the receiving and discharging of material and debris. Such necessary openings shall not exceed 48 inches in height, measured along the wall of the chute, and all openings shall be covered when not in use. Chutes which are at an angle of 45 degrees or less from the horizontal may be open on the upper side.

(b) *Chute construction.* Every chute more than 24 inches in maximum inside dimension shall be constructed of planking at least two inches thick full size, exterior grade plywood at least three-quarters inch thick or sheet metal at least three-sixteenths inch thick. Every chute shall have a metal bottom where the material or debris strikes the chute and every chute shall be rigidly supported throughout its height. A substantial gate shall be constructed and installed at the lower end of every loading chute to control the loading of material or debris into trucks and to cover the chute opening at all other times. Splash boards or baffles shall be installed on every chute to prevent materials or debris from rebounding

onto the street, sidewalk shed or any other area adjacent to the discharge end of the chute.

(c) *Protection at chute openings.* A bumper or curb not less than four inches by four inches in section shall be provided at each chute opening where such opening is level with or below the level of the floor or platform. Every space between the chute and the edge of the opening in a floor or platform shall be solidly planked.

(d) *Danger signs.* A sign reading, "DANGER", shall be placed in a conspicuous location at the discharge end of every chute to warn persons employed in or lawfully frequenting the area of the chute of the potential overhead danger. Lettering on such signs shall be not less than six inches in height with letter strokes not less than three-quarters inch in width and shall be of such color as will contrast with the background.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.21 Ladders and ladderways. (a) *Approval required.* Any metal or fiberglass ladder which is 10 feet or more in length shall be approved. Any other ladder not named or described in this Part (rule) shall not be used unless approved.

(b) *General requirements for ladders.* (1) *Strength.* Every ladder shall be capable of sustaining without breakage, dislodgment or loosening of any component at least four times the maximum load intended to be placed thereon.

(2) *Opaque protective coatings prohibited.* The use of an opaque protective coating on any ladder is prohibited.

(3) *Maintenance and replacement.* All ladders shall be maintained in good condition. A ladder shall not be used if any of the following conditions exist:

- (i) If it has a broken member or part.
 - (ii) If it has any insecure joints between members or parts.
 - (iii) If it has any wooden rung or step that is worn down to three-quarters or less of its original thickness.
 - (iv) If it has any flaw or defect of material that may cause ladder failure.
- (4) *Installation and use.* (i) Any portable ladder used as a regular means of access between floors or other levels in any building or other structure shall be nailed or otherwise securely fastened in place. Such a ladder shall extend at least 36 inches above the upper floor, level or landing or handholds shall be provided at such upper levels to afford safe means of access to or egress from the ladder. Such a ladder shall be inclined a maximum of three inches for each foot of rise.

(ii) All ladder footings shall be firm. Slippery surfaces and insecure objects such as bricks and boxes shall not be used as ladder footings.

(iii) A leaning ladder shall be rigid enough to prevent excessive sag under expected maximum loading conditions.

(iv) When work is being performed from ladder rungs between six and 10 feet above the ladder footing, a leaning ladder shall be held in place by a person stationed at the foot of such ladder unless the upper end of such ladder is secured against side slip by its position or by mechanical means. When work is being performed from rungs higher than 10 feet above the ladder footing, mechanical means for securing the upper end of such ladder against side slip are required and the lower end of such ladder shall be held in place by a person unless such lower end is tied to a secure anchorage or safety feet are used.

(v) The upper end of any ladder which is leaning against a slippery sur-

face shall be mechanically secured against side slip while work is being performed from such ladder.

(5) *Wooden ladder rungs.* (i) Round ladder rungs shall be not less than one and one-eighth inches in diameter and oval rungs shall be of equal strength. The tenons of rungs shall be not less than seven-eighths inch in diameter. All tenons shall fit tightly into holes which shall either extend through the side rails or be bored so as to give at least thirteen-sixteenths inch of bearing to the tenons. In through-bore construction, the tenons shall be flush with the outside rail surface of the ladder. All tenon holes shall be located on the center lines of the wide faces of the side rails. The shoulders of each rung shall fit firmly against the side rails and the tenons secured in place with nails or the equivalent to prevent the tenons from turning.

(ii) Rung spacing shall be uniform and shall be not less than 12 inches nor more than 14 inches, center to center.

(6) *Ladder splicing.* Ladders shall not be spliced to increase their length except that extension pieces may be spliced to the upper ends of ladders for use as handholds. Such extension pieces shall not bear against the ladder supporting object or structure.

(7) *Limited use of metal ladders.* Metal ladders shall not be used or placed in any location where they may come into contact with any energized electric power line, power facility or any exposed electrical parts of apparatus or equipment.

(8) *Spreaders.* All ladders with spreading bases, such as step and trestle ladders, shall be equipped with locking type spreaders to hold such bases rigid when in the open position.

(9) *Placement of ladders in door openings.* Ladders shall not be placed in door openings unless the doors are securely fastened open, closed and locked or otherwise effectively guarded against swinging.

(10) *Prohibited types of ladders.* The use of single pole (scaling) ladders or rail type ladders where the rungs or cleats are attached across the pole or rail is prohibited.

(c) *Single ladders.* (1) *Length.* Rung or cleat type ladders consisting of a single section shall not exceed 30 feet in length.

(2) *Cleat type ladders.* (i) *Materials.* Wood used in the construction of cleat type ladders shall be thoroughly seasoned, free from sharp edges and splinters and shall be sound. The slope of the grain of side rails and cleats shall be no greater than one in 15. Wood containing knots which intersect the narrow faces of cleats and side rails shall not be used. Wood containing knots which intersect the wide faces of cleats may be used provided such knots are less than one-quarter inch in diameter. Wood containing knots which intersect the wide faces of side rails may be used providing such knots are less than one-half inch in diameter, are located at least one-half inch back from the edges of the rails and are not more frequent than one knot in every three feet of rail length.

(ii) *Construction.* (a) *Cleats.* The minimum size of cleats shall be three-quarter inch by three inches for cleat lengths up to and including 20 inches and three-quarter inch by three and three-quarter inches for cleat lengths up to and including 30 inches. Cleats shall not exceed 30 inches in length and the maximum vertical spacing between cleats measured along the side rails shall not be less than 12 inches nor greater than 14 inches, center to center. Cleats shall be set into the side rails one-half inch with a snug fit or they shall be braced by filler blocks between the cleats,

(b) *Side rails.* The minimum size of side rails shall be one and five-

eighths inches by three and five-eighths inches for ladders up to and including 19 feet in length and one and five-eighths inches by five and five-eighths inches for ladders greater than 19 feet in length.

(d) *Extension ladders and sectional ladders.* (1) *Length.* Extension ladders shall consist of not more than three sections and shall not exceed 60 feet in length when fully extended. The maximum working length from an extension ladder shall be the length of the ladder minus the minimum overlap. Minimum overlaps shall be as follows:

<i>Length of Ladder in Feet</i>	<i>Minimum Overlap in Feet</i>
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 60	5

(2) *Adjustment guides.* The adjustment guides of extension ladders shall be so attached to the rails as to prevent the upper sections from tipping or falling out while in use or during adjustment. Each upper section of any extension ladder when extended shall be locked in place by two automatic positive acting locks.

(e) *Stepladders.* (1) *Length.* Stepladders with side rails exceeding 20 feet in length shall not be used.

(2) *Bracing.* Such bracing as may be necessary for rigidity shall be provided for every stepladder. When in use every stepladder shall be opened to its full position and the spreader shall be locked.

(3) *Stepladder footing.* Standing stepladders shall be used only on firm, level footings. When work is being performed from a step of a stepladder 10 feet or more above the footing, such stepladder shall be steadied by a person stationed at the foot of the stepladder or such stepladder shall be secured against sway by mechanical means.

(4) *Prohibited use.* Stepladders shall not be used as supports for scaffold planking.

(5) *Stepladder construction.* (i) *Width.* The minimum clear width between side rails at the top step of a stepladder shall be 12 inches and such width shall increase a minimum of one inch per foot of length between the top and bottom of the rails.

(ii) *Tread depth.* The depth of the steps or treads of any stepladder shall be not less than three inches.

(iii) *Pail shelf.* A pail shelf, if provided on a stepladder, shall be designed to fold completely within the ladder.

(iv) *Metal ladder steps.* Metal ladder steps of any stepladder shall be corrugated, knurled, dimpled, coated with skid-resistant materials or otherwise constructed or treated to minimize slipping.

(f) *Ladderways.* After June 1, 1972, any ladderway exceeding 70 feet in height shall be equipped with rest platforms spaced at intervals not exceeding 35 feet. Where ladders are used in series and where a danger of falling material or debris exists, such ladders shall be staggered, offset or so located as to provide protection from such danger.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

Decisions

1. Rule cited
Rule (12 NYCRR 23-1.21[b][4]) cited in *Clayton v. Wilmont & Cassidy*, 44 AD 2d 564 (1974).

23-1.22 Structural runways, ramps and platforms. (a) *Application.* This section does not apply to ramps constructed of earth, gravel, stone or similar embankment material.

(b) *Runways and ramps.* (1) All runways and ramps shall be substantially constructed and securely braced and supported. Runways and ramps constructed for use by motor trucks or heavier vehicles shall be not less than 12 feet wide for single lane traffic or 24 feet wide for two lane traffic. Such runways and ramps shall be provided with timber curbs not less than 10 inches by 10 inches, full size timber, placed parallel to, and secured to the sides of such runways and ramps. The flooring of such runways and ramps shall be positively secured against movement and constructed of planking at least three inches thick full size or metal of equivalent strength.

(2) Runways and ramps constructed for the use of persons only shall be at least 18 inches in width and shall be constructed of planking at least two inches thick full size or metal of equivalent strength. Such surface shall be substantially supported and braced to prevent excessive spring or deflection. Where planking is used it shall be laid close, butt jointed and securely nailed.

(3) Runways and ramps constructed for the use of wheelbarrows, power buggies, hand carts or hand trucks shall be at least 48 inches in width. Such runways and ramps shall be constructed of planking at least two inches thick full size or metal of equivalent strength. Such runways and ramps shall be substantially supported and braced to prevent excessive spring or deflection. Where planking is used on such runways and ramps, it shall be laid close, butt jointed and securely nailed. Such runways and ramps shall be provided with timber curbs at least two inches by eight inches full size, set on edge and placed parallel to, and secured to, the sides of such runways and ramps. Bracing for such runways and ramps shall be installed at a maximum of four foot intervals.

(4) Any runway or ramp constructed for the use of persons only which is located at, or extends to, a height of more than four feet above the ground, grade, floor or equivalent surface shall be provided with a safety railing constructed and installed in compliance with this Part (rule) on every open side.

(c) *Platforms.* (1) Any platform used as a working area or used for the unloading of wheelbarrows, power buggies, hand carts or hand trucks shall be provided with a floor of planking at least two inches thick full size, exterior grade plywood at least three-quarters inch thick or metal of equivalent strength. Platforms used for motor trucks or heavier vehicles shall be provided with floors of planking at least three inches thick full size or metal of equivalent strength.

(2) Every platform more than seven feet above the ground, grade, floor or equivalent surface shall be provided with a safety railing constructed and installed in compliance with this Part (rule) on all sides except those used for loading and unloading. Such sides when used for the loading or unloading of motor trucks or heavier vehicles shall be protected by timber curbs at least 10 inches by 10 inches full size and when used for the loading or unloading of wheelbarrows, power buggies, hand carts or hand trucks such sides shall be protected by timber curbs at least two inches by eight inches full size set on edge and secured to platform.

Exception: The following platforms are exempt from the safety railing or curb requirements: platforms of needle beam scaffolds; floats and rivet heater platforms used by structural ironworkers; ladder jack scaffold platforms; and trestle and extension trestle ladder scaffold platforms.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.23 Earth ramps and runways. (a) *Construction.* Earth ramps and runways shall be constructed of suitable soil, gravel, stone or similar embankment material. Such material shall be placed in layers not exceeding three feet in depth

and each such layer shall be properly compacted except where an earth ramp or runway consists of undisturbed material. Earth ramp and runway surfaces shall be maintained free from potholes, soft spots or excessive unevenness.

(b) *Slope.* Earth ramps and runways shall have maximum slopes of one in four (equivalent to 25 percent maximum grades).

(c) *Earth ramps and runways used by motor trucks.* Earth ramps and runways constructed for use by motor trucks or heavier vehicles shall be at least 12 feet in width if used only for single lane traffic or shall be at least 24 feet in width if used for two lane traffic. Such ramps and runways shall be provided with timber curbing at least 10 inches by 10 inches full size securely pinned to the ramps or runways by steel rods, with beams at least two and one-half feet in height or with equivalent barriers along the sides.

(d) *Earth ramps and runways used by persons.* Earth ramps and runways used by persons with or without wheelbarrows, power buggies, hand carts or hand trucks shall be at least 48 inches in width. Such ramps and runways more than four feet above the adjacent ground, grade or equivalent level shall be provided with safety railings constructed and installed in compliance with this Part (rule). The total rise of any continuous ramp or runway used by persons with or without wheelbarrows, power buggies, hand carts or hand trucks shall not exceed 12 feet unless such rise is broken by a horizontal section at least four feet in length every 50 feet.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.24 Work on roofs. (a) *General requirements.* (1) *Roofing brackets.*

(i) *Required use.* Roofing brackets shall be used whenever work is to be performed on any roof having a slope steeper than one in four inches unless crawling boards or approved safety belts are used in compliance with this Part (rule).

(ii) *Roofing bracket construction.* Roofing brackets shall be constructed and installed to fit the pitch of the roof and when in use shall provide a level working platform.

(iii) *Roofing bracket installation.* Roofing brackets shall be secured in place by nailing, by securely driving into the roof the pointed metal projections which are attached to the undersides of roofing brackets or by means of first grade manila rope or synthetic fibre rope at least three-quarters inch in diameter which is passed over the ridge poles and tied.

(2) *Crawling boards.* (i) *Crawling board construction.* Crawling boards shall be at least 10 inches in width and one inch in thickness. Each crawling board shall be provided with cleats which are at least one and one-half inches in width by one inch in thickness. Such cleats shall be spaced at equal intervals across the full width of the board and shall be firmly nailed. Cleat nails shall be driven through and clinched or shall be of the screw type. Crawling boards shall extend from the ridge poles to the eaves when used in connection with roof construction, repair or maintenance.

(ii) *Crawling board installation.* Crawling boards shall be secured to a roof by ridge hooks or equally effective means.

(iii) *Crawling board lifeline.* A lifeline in compliance with this Part (rule) shall be strung beside each crawling board.

(b) *High and steep roofs.* Where any work is being performed in the construction, repair or maintenance of any roof without a parapet at least two and one-half feet in height and such roof is more than 20 feet in height measured from the ground or grade level to the exterior edge of the eaves and the slope of such roof is

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greater than one in four, a ground-supported scaffold in compliance with this Part (rule) shall be provided. Such scaffold shall be installed beneath the work area with the scaffold platform not more than two feet below the exterior edges of the eaves of the roof. Such scaffold shall be of sufficient width to extend outward at least two feet from the exterior roof edge and the scaffold platform shall be provided with a safety railing constructed and installed in compliance with this Part (rule). In addition, persons performing such work shall be protected against sliding by means of roofing brackets or crawling boards installed and used in compliance with this Part (rule). Such roofing brackets or crawling boards are not required in cases where every employee engaged in work on such roof is provided with and used an approved safety belt or harness securely attached to a lifeline in compliance with this Part (rule).

(c) *Protection of persons using roofing machines.* Where persons are using roofing machines on any roof which does not have a parapet at least three feet in height installed around the perimeter of such roof, protection from falling shall be provided for such persons as follows:

(1) If the work area extends to any edge of the roof, such edge shall be provided with a safety railing constructed and installed in compliance with this Part (rule) or a ground-supported scaffold in compliance with this Part (rule) shall be provided. Such scaffold shall be installed the length of the work area with the scaffold platform level with the roof edge elevation. Such scaffold shall be of sufficient width to extend outward from the roof at least two feet. The scaffold platform shall be provided with a safety railing constructed and installed in compliance with this Part (rule) and the space between the scaffold platform and the roof shall not be more than six inches.

(2) If such work does not extend to any roof edge, portable stanchions located five feet in from the roof edge and connected by ropes or chains shall be provided. Such stanchions shall be spaced so that the connecting ropes or chains shall not be less than 36 nor more than 48 inches above the roof surfaces.

(d) *Hot roofing material transporters, also known as hot luggers.* Closed containers or devices used for transporting molten roofing materials from fill stations to the application areas on roofs shall be equipped with at least the following safety features in order to minimize hazards to persons caused by blowbacks of the molten roofing materials:

(1) *Existing transporters.* On or before January 1, 1973, every existing transporter shall be equipped with the following devices:

(i) The fill pipe cover shall be provided with a safety latch designed and installed to keep the cover in place at all times except during filling operations.

(ii) On top of every such transporter remote from the fill pipe there shall be installed an automatic venting device designed to release any accumulation of gas pressure. Such venting device shall be inspected daily to assure proper operation.

(2) *New transporters.* Every transporter manufactured after January 1, 1973 shall be equipped with the following safety devices:

(i) The fill pipe cover shall be provided with a safety latch designed and installed to keep the cover in place at all times except during filling operations.

(ii) Every such transporter shall be automatically vented or so constructed as to prevent the accumulation of gas. Every such transporter shall be inspected daily to assure proper operation.

(iii) Manufacturers of hot roofing material transporters shall furnish written operating and safety instructions with every transporter.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.25 Welding and flame cutting operations. (a) Compressed gas cylinders.

(1) *Cylinder storage.* Compressed gas cylinders not in use shall be stored in an upright position remote from open flames, radiators and other sources of heat, buildings or other structures and from any combustible material and shall be protected from the sun and high temperatures or fire-resistant shields shall be provided. Such cylinders shall be so arranged or placed that they will not be knocked over or damaged by passing or falling objects, equipment or materials. Cylinders containing oxygen shall not be stored near cylinders containing combustible gas, combustible material, oil or grease or in other areas where a spontaneous combustion hazard exists. Cylinder valves shall be closed at all times when not in use.

(2) *Control valves and regulators.* (i) The control valve of any compressed gas cylinder shall be located at the domed end of such cylinder and when not in use such control valve shall be protected by a suitable cap or ring guard. A key or wrench shall be maintained on the spindle of every compressed gas cylinder at all times during use.

(ii) Each compressed gas cylinder in use shall be provided with a pressure regulator or an automatic pressure reducing device.

(3) *Use.* (i) Compressed gas cylinders shall be raised or lowered only in suitable cradles. The use of ordinary slings for such purpose is prohibited.

(ii) Compressed gas cylinders shall not be dropped or thrown from any height.

(iii) Compressed gas cylinders shall be placed in an upright position when in use.

(iv) During use each compressed gas cylinder shall be securely fastened to a stationary object unless other suitable provision has been made to keep it from falling over.

(v) During use a compressed gas cylinder shall be located at least six feet from any combustible material or from any heating device.

(vi) Empty compressed gas cylinders shall be immediately removed from working areas and stored in designated safe locations. The valves of such cylinders shall be closed and tags or signs indicating that such cylinders are empty shall be attached thereto. The use of compressed gas cylinders as rollers, props or supports is prohibited.

(b) *Hose and hose connections.* (1) All hose shall be first quality and of a type manufactured for use on construction or demolition job sites. Hose used for oxygen cylinder connections shall have fittings of a different design than hose used for compressed gas connections. Hose connections shall be of either the ferrule or clamp type. Hose shall be capable of withstanding, without leakage, a pressure equal to at least twice the maximum delivery pressure of the pressure regulators provided for the system but not less than 300 pounds per square inch gage.

(2) Hose shall be protected from damage by trucks or other moving construction or demolition equipment. Hose shall be so placed when in use as not to constitute a falling or tripping hazard. All hose shall be carefully examined at frequent intervals for leaks or for signs of excessive wear, damage from abrasion or any other deterioration. Defective hose or hose connections shall be immediately repaired or removed from the job site.

(c) *Torches.* (1) Torches shall be lighted only by means of friction lighters or self-contained electric spark igniters.

(2) When torches are changed or when welding is halted for more than five minutes, all cylinder valves shall be closed.

(3) Momentary stoppages may be controlled at the torch valves.

(d) *Protection of persons.* All persons engaged in welding or flame-cutting operations shall be provided where necessary with proper scaffolds installed and used in compliance with this Part (rule). Such persons shall be provided with approved eye protection suitable for the work involved and appropriate protective apparel. When arc welding is performed near other persons, such other persons shall be protected from the arc rays by opaque screens or by approved eye protection.

(e) *Fire protection.* (1) Oily and greasy substances shall be kept away from the areas where cylinders, hose and torches are being used. Cylinder valves and connections shall not be lubricated.

(2) Where there is a hazard to other persons from flying particles of metal there shall be provided suitable incombustible screening installed between the welding or flame-cutting operations and such other persons.

(3) Whenever welding or flame-cutting operations are performed in the vicinity of any combustible material there shall be provided, within easy reach of the person performing such work, at least one approved fire extinguisher or fire pail filled with an appropriate fire extinguishing agent.

(f) *Explosion hazard.* Before any welding or flame cutting is done on any tank or container that contained any materials which may generate a flammable vapor upon the application of heat, all piping connected to such tank or container shall be disconnected or blanked off. Any residual flammable material shall be removed and the tank or container shall be completely purged with a suitable purging agent.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.26 Lead fumes and dust from structural steel. (a) *General.* All hot riveting, welding, flame cleaning and flame cutting of structural steel or other metal which has been coated with any compound containing lead or with any other substance which may create toxic fumes when heated shall be performed in the following manner.

(b) *Hot riveting or welding.* Where such hot riveting or welding is to be performed in confined spaces, the contact surfaces, exterior surfaces and the rivet holes of field joints to be hot riveted shall be free from any compound containing lead or from any other substance which may create toxic fumes when heated.

(c) *Cleaning coated surfaces.* (1) Removal of paint from rivet holes shall be performed by means of reaming or other suitable method.

(2) All surfaces adjoining rivet holes and surfaces subject to heat from welding shall be so cleaned as to prevent the creation of toxic and noxious fumes during riveting or welding.

(3) Where cleaning is performed with a torch, the person performing such cleaning shall be provided with an approved respirator. Where cleaning is performed by mechanical means, such as in scraping or grinding, the person performing such work shall be provided with an approved respirator.

(d) *Flame-cleaning or flame-cutting operations.* Unless suitable local exhaust ventilation is provided, all persons performing flame-cleaning or flame-cutting operations on metals that have been coated with any compound containing lead or any other substance which may create toxic fumes when heated, and all persons located within a radius of 15 feet of such operations, shall be provided with approved respirators.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.27 Mechanical, hydraulic and pneumatic jacks. (a) *Capacity marking.* The rated capacity of every jack in pounds or tons shall be legibly marked in a conspicuous location on the jack by casting, stamping, etching or other suitable permanent means. Such marking shall not affect the structural integrity of any jack.

(b) *Overtravel.* Every jack shall be provided with a positive stop to prevent overtravel.

(c) *Lubrication.* Every jack shall be maintained properly lubricated.

(d) *Loads.* When an object or structure has been raised to a desired height by means of a jack, such object or structure shall be immediately blocked or cribbed.

(e) *Use.* The use of any jack shall be at all times under the direct supervision of a designated person.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.28 Hand-propelled vehicles. (a) *Maintenance.* Hand-propelled vehicles shall be maintained in good repair. Hand-propelled vehicles having damaged handles or any loose parts shall not be used.

(b) *Wheels and handles.* Wheels of hand-propelled vehicles shall be maintained free-running and well secured to the frames of the vehicles. Buggy handles shall not extend beyond the wheels on either side.

(c) *Buggy counterbalance.* Loose weights shall not be hung on buggy handles as counter-balances. When counter balance weights are used, they shall be fastened securely to the buggy handles.

(d) *Curbing.* Curbing at least six inches in height shall be provided along edges over which material or debris is dumped from a hand-propelled vehicle to a lower level.

(e) *Storage.* When not in use, hand-propelled vehicles shall be stored in locations away from passageways and work areas.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.29 Public vehicular traffic. (a) Whenever any construction, demolition or excavation work is being performed over, on or in close proximity to a street road, highway or any other location where public vehicular traffic may be hazardous to the persons performing such work, such work area shall be so fenced or barricaded as to direct such public vehicular traffic away from such area, or such traffic shall be controlled by designated persons.

(b) Every designated person authorized to control public vehicular traffic shall be provided with a flag or paddle measuring not less than 18 inches in length and width. Such flag or paddle shall be colored fluorescent red or orange and shall be mounted on a suitable hand staff. Such designated person shall be stationed at a proper and reasonable distance from the work area and shall face approaching traffic. Such person shall be instructed to stop traffic, whenever necessary, by extending the traffic flag or paddle horizontally while facing the traffic. When traffic is to resume, such designated person shall lower the flag or paddle and signal with his free hand.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.30 Illumination. Illumination sufficient for safe working conditions shall be provided wherever persons are required to work or pass in construction, demo-

lition and excavation operations, but in no case shall such illumination be less than 10 foot candles in any area where persons are required to work nor less than five foot candles in any passageway, stairway, landing or similar area where persons are required to pass.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.31 Approval of materials and devices. Application may be made to the board for the approval of any device, apparatus, material, equipment or method which may be used in compliance with the intent of this Part (rule) and approval by the board shall be deemed to authorize such use.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.32 Imminent danger—notice, warning and avoidance. Where noncompliance with a provision of this Part (rule) causes or tends to cause imminent danger to a person employed in construction, demolition or excavation work and written notice thereof is given by the commissioner to the appropriate employer, owner, contractor or his agent, such person shall either (a) at once effect compliance sufficiently to end the danger, or (b) unless the commissioner does such posting or tagging on his behalf, forthwith post the dangerous area or tag the dangerous device or material with suitable posters or signs warning of the danger and forbidding unauthorized entry into the area or unauthorized use of the device or material, and shall maintain such posters or signs until the danger has been ended. While such noncompliance exists no employer shall suffer or permit any person employed by him to enter or be within an area or to use a device or material as to which he has received such a notice of imminent danger, or which is so posted or tagged, except to effect compliance with this Part (rule). No unauthorized person shall remove such poster or sign.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-1.33 Protection of persons passing by construction, demolition or excavation operations. [Additional statutory authority: Labor Law, §§ 200, 241, 241-a, 242]

Note: Pursuant to section 241(8) of the Labor Law, this section does not apply to any city in the State of New York having a population of one million or more persons.

(a) *Protection required.* (1) Reasonable and adequate protection and safety shall be provided for all persons passing by areas, buildings or other structures in which construction, demolition or excavation work is being performed. In addition, such protection and safety shall also be provided for persons passing by unattended excavations, such as sump holes, trenches, shafts, wells, pits and similar excavations. Such protection and safety shall be provided in accordance with the provisions of this Part (rule).

(2) Every area, building or other structure where construction, demolition or excavation work is being performed shall be so constructed, shored, equipped, guarded, arranged, operated and conducted as not to endanger any person passing by on any sidewalk, street, highway or other public or private thoroughfare.

(3) The means, methods, procedures, devices or structures used to provide such protection and safety shall include but not be limited to railings, fences, barricades, sheeting and shoring, sidewalk sheds, temporary walkways and temporary roadways. Such means, methods, procedures, devices or structures shall

be selected to provide the required protection and safety in accordance with the particular hazard or hazards involved.

(b) *Pedestrian protection.* (1) *Existing thoroughfares.* (i) Where pedestrians use an existing public sidewalk or other public thoroughfare which is adjacent to an area, building or other structure where construction, demolition or excavation work is being performed, the side of such existing thoroughfare which is next to or faces toward the work shall be protected or guarded. Such protection shall be at least 36 inches in height above the walking surface and shall be substantially constructed, installed and maintained in accordance with the provisions of this Part (rule).

(ii) Where any such existing thoroughfare is endangered by falling objects or materials, a sidewalk shed or other overhead protection shall be installed and maintained in accordance with the provisions of this Part (rule).

(iii) Where any such existing thoroughfare is endangered from both sides, protection or guarding shall be provided for both sides.

(iv) Where a vehicle crossing interrupts any such thoroughfare, clearly legible signs shall be posted in conspicuous locations warning pedestrians of such crossing. In addition, any vehicle intending to cross such thoroughfare shall come to a complete stop and shall not proceed until:

(a) pedestrians using such thoroughfare have been warned by either a flagman or other designated person, a pedestrian light control or by an audible signal; and

(b) the driver of the vehicle is assured that no pedestrian is in his path.

(2) *Temporary walkways.* (i) Where an existing sidewalk or other public thoroughfare is interrupted by the work being performed, a temporary walkway at least four feet in width shall be constructed and maintained in accordance with the provisions of this paragraph.

(ii) Such temporary walkways shall be protected on both sides for their entire length or on one open side if the other side is against a wall or building. If endangered by falling objects or materials, every such walkway shall be provided with overhead protection in accordance with the provisions of this Part (rule).

(iii) The walking surface of every such temporary walkway shall be compacted, free from tripping hazards and so constructed as to permit adequate drainage. If planking is used on the surface of any such walkway, it shall be of uniform thickness, shall be laid parallel to the length of the walkway and shall be fastened together to prevent displacement.

(iv) Any temporary walkway located in a street, highway or other public thoroughfare used by vehicles shall be provided with adequate signs, reflectors, flashing lights or other warning devices which will provide sufficient warning to vehicle operators.

(3) *Elevated temporary walkways.* (i) Every temporary walkway elevated to a height of more than four feet above the ground or equivalent surface and which is more than 10 feet in length shall be designed by a professional engineer or registered architect licensed to practice in the State of New York and shall be installed in accordance with such design.

(ii) Every elevated temporary walkway shall be designed and installed to carry a minimum live load of 125 pounds per square foot of surface.

(iii) The surface of every elevated temporary walkway shall be smooth, firm, free from tripping hazards and so constructed as to permit adequate drainage. If planking is used on the surface of any such walkway, it shall be

of uniform thickness, shall be laid parallel to the length of the walkway and shall be fastened together to prevent displacement.

(iv) Both sides of every elevated temporary walkway shall be provided with safety railings or equivalent protection in accordance with the provisions of this Part (rule). Where one side of any such walkway is against a wall or building, only the open side shall be required to be so protected.

(v) Every stairway leading to or from an elevated temporary walkway shall be substantially constructed and rigidly braced. The treads shall be constructed of wood planks not less than two inches by 10 inches nominal size while the risers shall be not more than eight inches in height. Every such stairway shall be at least four feet in width and, if more than five feet in width, provided with an intermediate or center stringer. Both sides of every such stairway having more than four risers shall be provided with smooth handrails which are free from splinters and which shall be located at least 30 inches but less than 40 inches in height above the nose of any tread.

(vi) Where ramps are used in lieu of stairways in connection with elevated temporary walkways, such ramps shall be constructed, installed and maintained in accordance with the provisions of this Part (rule).

(c) *Vehicular protection.* (1) Whenever any construction, demolition or excavation operation is to be performed adjacent to, over or in a street, highway or other public or private thoroughfare where vehicular traffic is passing, such work area shall be barricaded or otherwise guarded to protect such traffic.

(2) The closing of streets, roads, highways or other public thoroughfare where vehicular traffic is passing shall be in accordance with and the approval of the local authorities having jurisdiction.

(3) Where flagmen are used to control public vehicular traffic at any such work site, such control shall be in accordance with the provisions of this Part (rule).

(4) Where a temporary roadway is designated or constructed, adequate warning signs, flashing lights, flagmen or other means shall be provided to indicate clearly the paths of vehicular travel.

(5) If a temporary roadway is designed for two-way traffic, traffic lanes shall be clearly indicated by barriers, painted markings or other equivalent means.

(6) Where any temporary roadway is adjacent to an excavation, the side of the roadway so adjacent shall be guarded by timber curbs not less than 10 inches by 10 inches in size, full size timber, which are substantially anchored or guarded by barriers of equivalent strength.

(7) Where any temporary roadway is constructed of an earthen embankment and such roadway is intended for use for a period of more than five working days, the surface shall be constructed of suitable gravel, stone or similar material. Such material shall be adequately tamped and the surface shall be free from potholes, soft spots and excessive bumps.

(8) Any structural temporary roadway elevated to a height of four feet or more above the ground or equivalent surface and which is 10 feet or more in length shall be designed by a professional engineer or registered architect licensed to practice in the State of New York and shall be constructed in accordance with such design.

(d) *Maintenance.* (1) Existing and temporary walkways shall be maintained free from obstructions, tripping hazards, snow, sleet, ice and accumulations of water, dirt or dust and of any other material or objects.

(2) Temporary roadways shall be maintained free from ice, snow and exces-

sive accumulations of dust and water. The surfaces of such roadways shall be maintained firm, reasonably even and free from bumps and potholes.

Exception: Such maintenance shall not be required for any temporary roadway which is part of a street, highway or other public thoroughfare.

(e) *Illumination.* (1) Temporary walkways and the surfaces beneath sidewalk sheds shall be provided with illumination of at least five foot candles.

Note: Where normal street lighting provides adequate illumination, additional sources of illumination are not required.

(2) Temporary roadways shall be provided with sufficient illumination or reflectorized delineators so as to clearly indicate the side barriers or guardrails and the path or paths of travel.

(f) *Protection from associated hazards.* (1) Where welding or cutting operations are being performed adjacent to any public thoroughfare, such operations shall be shielded from public exposure by an opaque screen.

(2) Where spray painting, sand blasting or steam cleaning operations are being performed adjacent to a public thoroughfare which may be exposed to spray mists or flying particles, such operations shall be shielded from public exposure by canopies, tarpaulins or other substantial coverings.

(3) Where any demolition operation is being performed, public thoroughfares shall be established and maintained well outside the zone of demolition in accordance with the provisions of this Part (rule).

(4) Where any material is stored adjacent to a public thoroughfare, material piles shall be maintained stable and of such size that falling or shifting material will not endanger persons using the thoroughfare.

(5) Temporary service lines such as hose lines, electrical wiring, cables, ropes, piping and similar lines which cross public thoroughfares shall be so located or guarded that they will not constitute tripping hazards for pedestrians nor obstructions for vehicular traffic. Where such service lines are suspended they shall be located at least eight feet above the ground or equivalent surface where pedestrians are passing and at least 18 feet in height above the ground or equivalent roadway surface where vehicles are passing.

Historical Note

Sec. filed May 30, 1972; renum., 23-1.34,
new, filed Jan. 31, 1975 eff. Feb. 1, 1975.

23-1.34 Severability. If any provision of this Part (rule) or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this Part (rule) which can be given effect without the invalid provisions or applications and to this end the provisions of this Part (rule) are declared to be severable.

Historical Note

Sec. added by renum., 23-1.33, filed Jan.
31, 1975 eff. Feb. 1, 1975.

SUBPART 23-2

CONSTRUCTION OPERATIONS

Sec.	Sec.
23-2.1 Maintenance and housekeeping	23-2.5 Protection of persons in shafts
23-2.2 Concrete work	23-2.6 Catch platforms required
23-2.3 Structural steel assembly	23-2.7 Stairway requirements during the construction of buildings
23-2.4 Flooring requirements in building construction	23-2.8 Painting

Historical Note

Subpart (§§ 23-2.1—23-2.8) added, filed
May 30, 1972 eff. June 1, 1972.

Section 23-2.1 Maintenance and housekeeping. (a) *Storage of material or equipment.*

(1) All building materials shall be stored in a safe and orderly manner. Material piles shall be stable under all conditions and so located that they do not obstruct any passageway, walkway, stairway or other thoroughfare.

(2) Material and equipment shall not be stored upon any floor, platform or scaffold in such quantity or of such weight as to exceed the safe carrying capacity of such floor, platform or scaffold. Material and equipment shall not be placed or stored so close to any edge of a floor, platform or scaffold as to endanger any person beneath such edge.

(b) *Disposal of debris.* Debris shall be handled and disposed of by methods that will not endanger any person employed in the area of such disposal or any person lawfully frequenting such area.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-2.2 Concrete work. (a) *General requirements.* Forms, shores and reshores shall be structurally safe and shall be properly braced or tied together so as to maintain position and shape.

(b) *Inspection.* Designated persons shall continuously inspect the stability of all forms, shores and reshores including all braces and other supports during the placing of concrete. Any unsafe condition shall be remedied immediately.

(c) *Beams, floors and roofs.* (1) Necessary horizontal and diagonal bracing shall be provided in both longitudinal and transverse directions to provide structural stability of beams, floors and roofs. Shores and reshores shall be properly seated top and bottom and shall be secured in place.

(2) Where shores or reshores rest upon the ground, mud sills or other bases shall be provided.

(3) Where the sum of the dead and live loads on the forms may exceed 150 pounds per square foot, the design of such forms, including shores, reshores and bracing, shall be as specified by a professional engineer licensed to practice in the State of New York. Such design plans and specifications shall be kept on the job site available for examination by the commissioner. All forms, shores, reshores and bracing shall be constructed and installed in accordance with such design plans and specifications.

(d) *Stripping.* After stripping, forms shall be promptly stockpiled or removed from areas in which persons are required to work or pass. Protruding nails, wire ties and other form accessories not necessary for subsequent work shall be pulled, cut or otherwise made safe.

(e) *Reshoring.* Reshoring shall be provided when necessary to safely support slabs and beams after stripping or where such members are subjected to superimposed loads due to construction on upper levels.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-2.3 Structural steel assembly. (a) *Placing of structural members.* (1) During the final placing of structural steel members, loads shall not be released from hoisting ropes until such members are securely fastened in place. Structural steel members shall not be forced into place by hoisting machines while any person is so located that he may be injured thereby.

(2) Open web steel joists that are hoisted singly shall be transferred from their place of storage directly to their permanent location and secured against dislodgment. Such a load shall not be released from the hoisting rope until it is so secured. Bundles of such joists shall be so placed as to prevent accidental dislodgment while being hoisted. Immediately upon the release of the ties or straps

from such bundles, the individual joists shall be distributed to and placed in their permanent positions and secured against accidental dislodgment.

(3) Loads shall not be placed on open web steel joists until such joists are permanently located and secured including the installation of required bridging.

(b) *Holing or cutting of structural steel members.* Load-bearing structural steel members shall not be materially weakened by holing, cutting or by any other means except in accordance with the advice of the designer thereof or of a professional engineer licensed to practice in the State of New York.

(c) *Tag lines.* While steel panels or structural steel members are being hoisted, tag lines shall be provided and used to prevent uncontrolled movement of such panels or members.

(d) *Erection of lintels.* Where exterior metal lintels are erected in steel or concrete frame buildings or other structures after the permanent floors have been installed, a suitable scaffold constructed and installed in compliance with this Part (rule) shall be provided and used unless each person engaged in the work of erecting such lintels is provided with and wears an approved safety belt or harness in compliance with this Part (rule).

(e) *Tandem loads.* The suspension of tandem loads from the boom or hook of any crane or derrick over any area or location where persons work or pass is prohibited.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-2.4 *Flooring requirements in building construction.* (a) *Permanent flooring—skeleton steel construction in tiered buildings.* The permanent floors of such buildings or other structures shall be installed as soon as possible as the erection of structural steel members progresses. In no case shall there be more than eight stories, floors or equivalent levels or 120 feet, whichever is less, between the erection floor and the uppermost permanent floor.

(b) *Temporary flooring—skeleton steel construction in tiered buildings.* (1) *Erection by tower crane or derrick.* (i) The erection floor shall be covered over the entire surface except for access openings. Such flooring shall be of the proper strength to support the working load intended to be imposed thereon. Such temporary flooring shall be laid tight and secured against movement.

(ii) There shall also be provided a tight and substantial floor within two stories or 30 feet, whichever is less, below and directly under that portion of each tier of beams on which any work is being performed. Such floor shall be of the proper strength to support the working load intended to be imposed thereon. Such floor shall be constructed of planking at least two inches thick full size or material of equivalent strength as a minimum.

(2) *Erection by ground-supported crane.* Where erection is being done by means of a crane operating on the ground, grade or equivalent surface, a tight, secure and substantial floor shall be installed within two stories or 30 feet, whichever is less, below and directly under that portion of each tier of beams on which any work is being performed. Such floor shall consist of planking at least two inches thick full size or of material of equivalent strength. As an alternative to such floor, an approved life net installed in compliance with this Part (rule) may be provided. Any such life net shall be installed and maintained not more than two stories or 30 feet, whichever is less, below and directly under that portion of each tier of beams on which any work is being performed.

(3) *High one story skeleton steel construction.* In the erection of one story skeleton steel buildings or other structures where the clear vertical height of

such building or other structure is 30 feet or more, protection similar to that required for tiered construction as specified in paragraphs (1) and (2) above shall be provided.

(c) *Flooring—other construction.* (1) In the erection of any building or other structure having double wood floor or bar joist construction, the rough flooring shall be completed as the construction of such building or other structure progresses, including the tier below the one on which the wood floor joists or bar joists are being installed.

(2) In the construction of a building or other structure having single wood flooring or any other flooring system, the floor immediately below the story where the floor joists are being installed shall be kept covered. Such flooring shall be at least two inches thick full size or shall be of material of equivalent strength and be laid tight and secure.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-2.5 Protection of persons in shafts. (a) *General.* Persons required to perform work in or at shafts, other than elevator shafts, shall be provided with the following protection:

(1) *Protection from falling material.* A tight covering consisting of planks at least two inches thick full size, exterior grade plywood at least three-quarters inch thick or material of equivalent strength shall be installed so as to cover the entire cross-sectional area of the shaft. Such cover shall be located at a point in the shaft not more than two stories or 30 feet, whichever is less, above the level where persons are working.

(2) *Protection from falling.* (i) To minimize injuries from falls in shafts, a tight platform consisting of planks at least two inches thick full size, exterior grade plywood at least three-quarters inch thick or material of equivalent strength shall be installed not more than one story or 15 feet, whichever is less, in the shaft below the level where persons are working. In lieu of such platform, an approved life net installed in compliance with this Part (rule) may be provided. Such approved life net shall be installed in the shaft not more than one story or 15 feet, whichever is less, below the level where persons are working.

(ii) In buildings or other structures where stair halls, stairwells or other similar shafts are to be constructed of masonry, floor slab forms or planking at least two inches thick full size shall be installed as the work progresses. Such slab forms or planking shall be installed in such shafts not more than two stories or 30 feet, whichever is less, below the story on which any brickwork or masonry is being erected.

(b) *Protection of persons in elevator shafts.* (1) During the installation, repair or replacement of any elevator where persons are working in the elevator shaft, except for the stacking of elevator rails, a tight platform consisting of planks at least two inches thick full size, exterior grade plywood at least three-quarters inch thick or material of equivalent strength shall be installed not more than two stories or 30 feet, whichever is less, above the level at which any work is being performed so as to provide protection against falling objects or material. Such platform shall cover the entire cross-sectional area of the shaft except that spaces not exceeding 12 inches may be left for rail clearance between the edge of the platform and the sides of the shaft. Protection for persons stacking elevator rails shall be provided by the installation of a platform as described above which shall be installed immediately above the hitch point of the hoisting equipment.

(2) A similar platform such as is specified in paragraph (1) above shall be

installed level with the top landing of each elevator shaft in which work is being performed to prevent any person from falling into such shaft.

(3) Where any elevator is being installed, repaired or replaced and persons are working in the shaft, a solid or wire mesh partition shall be provided where necessary to prevent such persons from contacting any adjacent operable elevator or counterweight.

(4) Where persons are required to perform any work at intermediate levels between stories in elevator shafts, such persons shall be provided with overhead protection from falling objects or material. Such protection shall be at least 27 inches in width and shall cover the area where the persons are working.

(5) Where persons are required to perform any work at intermediate levels between stories in an elevator shaft, such persons shall be provided with protection against falling. Such protection shall be either an approved life net installed in compliance with this Part (rule) or planking at least two inches thick full size or other material of equivalent strength. Such protection shall be located not more than two stories or 30 feet, whichever is less, below the point in the elevator shaft where such persons are working. In lieu of an approved life net or substantial covering, such persons may use approved safety belts or harnesses securely attached to hanging lifelines in compliance with this Part (rule).

(6) While any work is being performed in existing elevator shafts, all shaft doors shall be kept closed except where it is necessary to keep a door open in order to perform the work in which case either the elevator car shall be locked at such landing and a chain or other barrier between 36 and 42 inches in height shall be placed across the door opening, or a person shall be stationed at such door opening to prevent unauthorized entrance to such door opening.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-2.6 Catch platforms required. (a) During the construction of exterior masonry walls of any building or other structure, except chimneys, from a floor or scaffold inside the building or other structure and such floor or scaffold is more than 35 feet above the adjoining ground or equivalent surface, there shall be provided along the exterior face of such wall a catch platform, installed in compliance with this Part (rule) with the following exceptions:

(1) In lieu of the required barricade or fence on all open sides of the catch platform, such sides shall be provided with planks whose minimum cross-sectional dimensions shall be two inches by nine inches or material of equivalent strength having one dimension at least nine inches. Such planks or material of equivalent strength shall be so placed that the greater dimensions are vertical.

(2) A two-inch space may be left between the inner edge of the catch platform and the face of the wall of the building or other structure.

(b) Such catch platform shall be located not more than 20 feet below the floor or scaffold platform from which the work is being performed.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-2.7 Stairway requirements during the construction of buildings. (a) *General requirements.* During the construction of any reinforced concrete building or other structure, at least one stairway shall be installed which shall extend to a level not more than four floors or 60 feet, whichever is less, below the uppermost working floor or level. During the construction of other types of buildings or other structures, at least one stairway shall be installed which extends to a level not more than two floors or 30 feet, whichever is less, below the uppermost working floor or level.

Such stairways shall be extended upward as the construction progresses to comply with this Part (rule).

(b) *Stairway construction.* Temporary stairways shall have treads constructed of wood planks not less than two inches by 10 inches in size, or metal not less than two inches in depth of equivalent strength. Such temporary stairways shall be not less than three feet in width and shall be substantially constructed and rigidly braced. Such stairways more than five feet in width shall be provided with intermediate or center stringers. Stairways with steel treads and landings which are to be subsequently filled in with concrete or provided with other permanent tread surfacing shall be provided temporary wooden treads carefully fitted in place and extending to the edges of the metal nosing and over the full width of the treads and landings.

(c) *Skeleton iron or steel stairs.* Skeleton iron or steel stairs shall have treads of wood planking not less than two inches by 10 inches in size.

(d) *Vertical rise.* Any temporary stairway shall not have a vertical rise of more than 12 feet between landings or floors.

(e) *Protective railings.* The stairwells of temporary wooden stairways and of permanent stairways where enclosures or guard rails have not been erected shall be provided with a safety railing constructed and installed in compliance with this Part (rule) on every open side. Every stairway and landing shall be provided with handrails not less than 30 inches nor more than 40 inches in height, measured vertically from the nose of the tread to the top of the rail.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-2.8 Painting. (a) *Confined space definition.* As used in this section, a confined space means a room, a portion of a room or an enclosure having no means of natural ventilation other than one entrance opening and which room, portion of a room or enclosure is of such dimensions that a painter is required to work inside such room, portion of a room or enclosure. Such confined space may be a tank, an elevator car, a compartment, a closet, the upper area of a high ceiling room or a similarly enclosed space.

(b) *General requirements.* The painting of confined spaces, including the use of coating materials, paint removers, stains, solvents and abrasives, shall be so performed as to prevent the dissemination of such harmful materials into the air where persons are located in quantities tending to injure the health of such persons.

(c) *Paint spraying.* Persons engaged in paint spraying operations and persons in such close proximity to such operations that they are exposed to the spray mists shall be provided with and shall use approved respirators. Operators of paint spraying equipment shall be provided with and shall use protective oil, grease or cream on the exposed parts of their bodies. Where such work is performed in tanks, vats and similar enclosed vessels, protection in addition to the required respirators shall be provided by means of mechanical exhaust ventilation.

(d) *Brush work.* Persons engaged in brush painting with other than water-mixed paints in confined spaces shall be provided with approved respirators. Where brush work is performed in tanks, vats and similar enclosed vessels, protection in addition to the required respirators shall be provided by means of mechanical ventilation.

(e) *Coating removal.* Where coating removal is being performed with any volatile solvent in a confined space, protection in addition to approved respirators shall be provided by means of mechanical ventilation.

(f) *Machine sanding.* An approved respirator shall be provided for, and shall be worn by, any person operating a sanding machine unless the sandpaper is wetted with oil or water or the sanding machine is provided with a dust collector.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-3

DEMOLITION OPERATIONS

Sec.

23-3.1 Special approval required
23-3.2 General requirements

Sec.

23-3.3 Demolition by hand
23-3.4 Mechanical methods of demolition

Historical Note

Subpart (§§ 23-3.1—23-3.4) added, filed May 30, 1972 eff. June 1, 1972.

Section 23-3.1 Special approval required. Any method of demolition of any building or other structure not named or described in this Subpart shall not be used unless granted a special approval.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-3.2 General requirements. (a) *Preparations for the demolition of any building or other structures.* (1) Before demolition is started, all glass in the exterior openings of the building or other structure to be demolished shall be removed.

(2) Before demolition is started, all gas, electric, water, steam and other supply lines shall be shut off and capped or otherwise sealed. In each such case, the service or utility company involved shall be notified in writing at least 24 hours in advance of the start of work on such lines.

(3) Where it is necessary to maintain any gas, electric, water, steam or other supply line during the demolition operations, such lines shall be so protected with substantial coverings or shall be so relocated as to protect them from damage and to afford protection to any person. If such lines are to be relocated, the service or utility company involved shall be notified in writing at least 48 hours in advance of such relocation. In not more than one normal working day the service or utility company shall notify the employer of the procedure to be followed in performing such relocation and such procedure shall be followed by the employer.

(b) *Protection of adjacent structures.* During the demolition of any building or other structure, the employer performing such demolition shall examine the walls of all buildings or other structures adjacent to the one which is to be demolished. Such examination shall include a determination of the thickness and method of support of any wall of such adjacent buildings or other structures. Where there is any reason to believe that an adjacent building or other structure or any part thereof is unsafe or may become unsafe because of the demolition operations, such operations shall not be performed until means have been provided to insure the stability and to prevent the collapse of such adjacent buildings or other structures. Such means shall consist of sheet piling, shoring, bracing or the equivalent.

(c) *Barricades.* Demolition sites shall be fenced, barricaded or provided with sidewalk sheds in compliance with this Part (rule).

(d) *Dust control.* Provision shall be made at every demolition site to control the amount of airborne dust resulting from demolition operations by wetting the debris and other materials with appropriate spraying agents or by other means.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-3.3 Demolition by hand. (a) *Application.* The provisions of this section shall not apply to mechanical means of demolition.

(b) *Demolition of walls and partitions.* (1) The demolition of walls and partitions shall proceed in a systematic manner and all demolition work above each tier of floor beams shall be completed before any demolition work is performed on the supports of such floor beams.

(2) Masonry shall not be loosened nor permitted to fall in such masses as to endanger the structural stability of any floor or structural support which such masonry may strike in falling.

(3) Walls, chimneys and other parts of any building or other structure shall not be left unguarded in such condition that such parts may fall, collapse or be weakened by wind pressure or vibration.

(4) Employers shall not suffer or permit any person to work while such person is standing on top of a wall or any similar elevated structure of small area.

(5) In the demolition by hand of exterior walls, all persons performing such work shall be provided with safe footing in the form of sound flooring or scaffolds constructed and installed in compliance with this Part (rule).

(6) Walls or partitions which are being demolished by hand shall not be left standing more than one story or 15 feet, whichever is less, above the uppermost floor on which persons are working. Such walls or partitions shall be removed before the aggregate area of the openings in such floor exceeds 25 percent of the total floor area.

(c) *Inspection.* During hand demolition operations, continuing inspections shall be made by designated persons as the work progresses to detect any hazards to any person resulting from weakened or deteriorated floors or walls or from loosened material. Persons shall not be suffered or permitted to work where such hazards exist until protection has been provided by shoring, bracing or other effective means.

(d) *Boarding of wall openings.* Where windows and other exterior wall openings in buildings or other structures being demolished are more than 25 feet in height above the ground or grade level and are within 20 feet of any floor opening used for the removal of debris from floors above, such windows and other openings shall be solidly boarded up during demolition operations to prevent the accidental passage of debris.

(e) *Methods of operation.* Where the demolition of any building or other structure is being performed by hand, debris, bricks and any other materials shall be removed as follows:

(1) By means of chutes constructed and installed in compliance with this Part (rule);

(2) By means of buckets or hoists; or

(3) Through openings in the floors of the building or other structure in compliance with this section.

(f) *Access to floors.* There shall be provided at all times safe access to and egress from every building or other structure in the course of demolition. Such safe means of access and egress shall consist of entrances, hallways, stairways or ladder runs so protected as to safeguard the persons using such means from the hazards of falling debris or materials.

(g) *Protection in other areas.* Every floor or equivalent area within the building or other structure that is subject to the hazard of falling debris or materials from above shall be boarded up to prevent the passage of any person through such area, or shall be fenced off by a substantial safety railing constructed and installed in compliance with this Part (rule) and placed not less than 20 feet from the perimeter of such floor opening or such area shall be provided with overhead protection

in the form of tight planking at least two inches thick full size, exterior grade plywood at least three-quarters inch thick or material of equivalent strength.

(h) *Demolition of structural steel by hand.* Steel construction shall be demolished column length by column length and floor by floor. Every structural member which is being dismembered shall not be under any stress other than its own weight and such member shall be chained or lashed in place to prevent its uncontrolled swinging or dropping. Large structural members shall not be thrown or dropped from the building or other structure, but shall be carefully lowered. Where a derrick is used in the demolition of buildings or other structures of skeleton steel construction, the floor upon which the derrick rests shall be completely planked over with planking of adequate size. Where other methods are used, the persons engaged in the dismantling of structural steel members shall be protected by solidly planked flooring not less than two inches thick full size or sound floor arches not more than two stories or 30 feet, whichever is less, below and directly under that portion of any tier of beams where such persons are at work.

(i) *Demolition of floor arches.* Before demolishing any floor arch, debris and other materials shall be removed from such arch and from other adjacent floor areas. Planks not less than two inches thick by nine inches in cross-section full size shall be provided for and shall be used by the persons to stand on while breaking down floor arches between beams. Such planks shall be so located as to provide safe supports for such persons should the arches between the beams collapse. Any open spaces between such planks shall not exceed 16 inches.

(j) *Floor openings.* (1) *Permissible aggregate area.* During the demolition of any building or other structure by hand, the aggregate area of openings in the floor immediately beneath the floor being demolished shall not exceed 25 percent of the total area of such floor.

(2) *Required protection.* (i) Every opening used for the removal of debris or materials on every floor not closed to access, except the top working floor, shall be provided with an enclosure from floor to ceiling equivalent to that afforded by planking not less than two inches thick full size. Such enclosure shall be solid except for portions openable for loosening blocked debris. Alternatively, the opening shall be fenced off by a substantial safety railing constructed and installed in compliance with this Part (rule) and placed not less than 20 feet from the perimeter of such opening. Every opening not used for the removal of debris or other materials in any floor to which access is permitted shall be protected by a solid enclosure as described above, by a substantial safety railing constructed and installed at least two feet from the perimeter of the opening and otherwise in compliance with this Part (rule) or such opening shall be solidly planked over with planks not less than two inches thick full size.

(ii) Openings in the top or working floor more than 16 inches in least dimension shall be protected on all sides, except the side at which debris or other materials is deposited, by a substantial safety railing constructed and installed at least two feet from the perimeter of the opening and otherwise in compliance with this Part (rule) or by a rope not less than five-eighths inch diameter or an equivalent chain placed not less than two feet from the perimeter of such opening. Such rope or chain shall be not less than 36 inches nor more than 42 inches above the floor surface. That portion of any floor opening adjacent to and immediately below a point where persons are employed in any work upon a wall or equivalent structure shall be provided with solid flooring not less than five feet in width measured from the inside face of such wall or equivalent structure. Such flooring shall consist of planking not less than two inches thick full size, exterior grade plywood not less than three-quarters inch thick or material of equivalent strength.

(k) *Storage of materials.* (1) *General.* (i) Materials shall not be stored on catch platforms, scaffold platforms, floors or stairways of any building or other structure being demolished, except that any such floor may be used for the temporary storage of materials when such floor is of such strength as to safely support the load to be imposed.

(ii) Storage areas shall not interfere with access to any stairway or passageway used by any person as a means of ingress or egress. Suitable barricades shall be provided to prevent stored materials from sliding or rebounding into any area where any person is located or passing. All materials shall be safely piled in such locations as will not interfere with any work operations nor present any hazard to any person employed at or frequenting the demolition site.

(2) *Storage of debris or materials in cellars.* When debris or materials are stored in the cellar or basement of any building or other structure being demolished, such debris or materials shall not be in piles which extend higher than the top of the foundation wall. The person in charge of the demolition operations shall provide sheet-piling, shoring, bracing or such other means as may be necessary to insure the stability of such foundation walls and to prevent any such wall from collapsing due to the pressure of the accumulated debris or materials.

(l) *Safe footing required.* Any person working above the first floor or ground level in the demolition of any building or other structure shall not be suffered or permitted to use accumulated debris or piled materials as a footing in the performance of his work. Every person shall be provided with safe footing consisting of sound flooring, planking not less than two inches thick full size, adequately supported exterior grade plywood at least three-quarters inch thick or other material of equivalent strength.

(m) *Catch platform required.* During the demolition of any exterior masonry wall or a roof from a point more than 75 feet above the adjoining ground, grade or equivalent level where persons are exposed to falling debris, materials or objects, a catch platform shall be constructed and installed in compliance with this Part (rule). Such catch platform shall be located at a level not more than 20 feet below the working level.

Exceptions: (1) A catch platform is not required where a chimney is being demolished.

(2) A catch platform is not required where a scaffold, constructed and installed in compliance with this Part (rule), provide equivalent protection.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-3.4 Mechanical methods of demolition. The use of a swinging weight attached to the line of a crane boom, clamshell bucket, power shovel, bulldozer or any other mechanical device or equipment for the purpose of demolishing a building or other structure or any remaining portion thereof shall be in accordance with the following requirements:

(a) *Height limitation.* The building or other structure or any remaining portion thereof shall be not more than 80 feet in height above the ground, grade or equivalent surface.

(b) *Structural stability.* Walls, chimneys and other parts of any building or other structure shall not be left unsupported or unguarded in such condition that such parts may fall, collapse or be weakened by wind pressure or vibration.

(c) *Zone of demolition.* (1) Where a swinging weight is used in demolition

operations, a zone of demolition with a radius of at least equal to one and one-half times the height of the building or other structure or any portion thereof being so demolished shall be maintained around the points of impact. Where a swinging weight is used, the supporting cables shall be of such length or shall be so restrained that it is not possible for the weight to swing against any other building or structure than the one being demolished.

(2) Where a clamshell bucket is being used in demolition operations, a zone of demolition shall be maintained within 25 feet on both sides of the line of travel of the bucket.

(3) Where other mechanical devices or equipment are being used in demolition operations, a zone of demolition shall be maintained in the area into which the building or other structure or any portion thereof may fall. Such zone of demolition shall equal at least one and one-half times the height of the building or other structure or any portion thereof above the ground, grade or equivalent level.

(4) Only persons essential to the operation of the demolition devices or equipment shall be suffered or permitted to enter any zone of demolition.

(5) Substantial barricades constructed and installed in compliance with this Part (rule) shall be erected wherever there is likelihood of any person entering a zone of demolition other than the persons essential for operation of the demolition devices or equipment.

(6) The controls of any mechanical device or equipment used in demolition operations shall be located and operated a safe and reasonable distance from the point of demolition.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-4

EXCAVATION OPERATIONS

Sec.

- 23-4.1 General requirements
- 23-4.2 Trench and area type excavations
- 23-4.3 Access to excavations

Sec.

- 23-4.4 Sheeting, shoring and bracing
- 23-4.5 Use of Tables III and IV

Historical Note

Subpart (§§ 23-4.1—23-4.5) added, filed May 30, 1972 eff. June 1, 1972.

Decisions

1. **Liability for breach of duty to provide shoring**

Held that a subcontractor who breached the nondelegable duty of providing shoring for an excavation (Labor Law, § 241; 12 NYCRR 23.8 [cf. Part 23-4]) has no cause

of action against the contractor, who breached the same duty. They are joint tort-feasors. *Milne v. Chandler & Hatlee*, 45 Misc 2d 593 (1964), *affd.* 23 AD 2d 711 (1965).

23-4.1 General requirements. (a) *Stability of structures.* Except in hard rock, whenever any excavation is to be performed in the vicinity of buildings, structures or utilities, the integrity, stability and structural adequacy of such buildings, structures or utilities shall be maintained at all times by the use of underpinning, sheet piling, bracing or other equivalent means to prevent damage to or failure of foundations, walls, supports or utility facilities and to prevent injury to any person. Such underpinning, sheet piling, bracing or equivalent means shall be inspected at least once each day or more often if conditions warrant. Every such inspection shall be conducted by an experienced, designated person.

(b) *Prohibited entry.* No person shall be suffered or permitted to enter any trench or similar excavation where he may be exposed to side or bank failure or cave-in unless proper safeguards for his protection have been provided.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-4.2 Trench and area type excavations. (a) Whenever any person is required to work in or is lawfully frequenting any trench or excavation five feet or more in depth which has sides or banks with slopes steeper than those permitted in Table I of this Subpart, such sides or banks shall be provided with sheeting and shoring in compliance with this Part (rule). Such sheeting and shoring system shall be in contact with the sides or banks of such trench or excavation. A designated person shall carefully inspect such sheeting and shoring at least once each day and more frequently in the event of rain, the presence of additional surface or ground water from any source, excessive ground vibrations or whenever additional loads of any kind have been imposed near or adjacent to such excavation. Additional protection against slides and cave-ins shall be provided whenever necessary. Any trench or excavation in clay, sand, silt, loam or nonhomogenous soil which has sides or banks more than three feet but less than five feet in depth shall be provided with side or bank protection in compliance with this Part (rule). Such side or bank protection shall not be required where an employer maintains on file at the excavation site a dated certification in writing by a designated person who is qualified by training and experience indicating that such person has examined the sides and banks and has found them to be stable and not subject to failure or cave-in. Such certification shall be available for examination by the commissioner.

(b) Where the sides or banks of a trench or area type excavation may be sloped back without causing subsidence or damage to buildings, structures, utilities, roads, streets, highways or similar facilities, sloping of the excavation sides or banks may be used as protection in lieu of the sheeting and shoring required by this Part (rule), provided such sloping conforms to the values set forth in Table I of this Subpart. Such sloping of the excavation sides or banks may be used in combination with sheeting and shoring. When such a combination is used, a level bench at least 24 inches in width shall be left between the toe of the sloped section and the braced section. The sheeting of the braced section shall extend at least 12 inches above the elevation of such level bench.

(c) Any unbraced sloped excavation which extends below the ground water table, especially adjacent to rivers, reservoirs or other bodies or sources of free water, shall be under the direct supervision of an experienced person designated by the employer.

(d) In any excavation with a combination of sloped unbraced sides or banks near the surface and vertical sheeted and shored sides or banks near the bottom, the steepest allowable slope of such unbraced portion of the sides or banks shall be based on the total excavation depth. (See Table I of this Subpart.)

(e) Where any side or bank of an excavation is undercut and has a reverse slope toward the trench centerline creating a vertical load on the sheeting and shoring, such sheeting and shoring shall be designed by, and installed in accordance with the specifications determined by, a professional engineer licensed to practice in the State of New York. Such sheeting and shoring shall be designed to support the vertical load imposed by the overhanging material as well as the load imposed by the adjacent ground.

(f) Excavated material and other superimposed loads shall be placed at least 24 inches back from the edges of any open excavation and shall be so placed or piled that no part thereof can slide, fall or roll into the excavation. Such 24-inch required clearance may be reduced if the employer installs a barrier or similar retaining device which is designed and constructed to prevent excavated material from falling into the excavation.

TABLE I
STEEPEST ALLOWABLE UNBRACED SLOPES

Type of Soil or Rock	Depth of Excavation	
	5 to 10 ft.	Over 10 ft.
Stiff cohesive soil	1½ vertical on 1 horizontal	1 vertical on 1 horizontal (trench) 1½ vertical on 1 horizontal (area)
Noncohesive soil	1 vertical on 1 horizontal 1 vertical on 1½ horizontal (when subject to vibrations)	1 vertical on 1 horizontal 1 vertical on 1½ horizontal (when subject to vibrations)
Soft cohesive or wet flowing soil	1 vertical on 1 horizontal 1 vertical on 1½ horizontal (when subject to vibrations)	1 vertical on 1½ horizontal (trench) 1 vertical on 1 horizontal (area) 1 vertical on 1½ horizontal (when subject to vibrations)
Stable rock	Vertical sides permitted	Vertical sides permitted
Unstable rock	1½ vertical on 1 horizontal	1½ vertical on 1 horizontal

Notes: The slopes given in Table I are the steepest allowable. Conditions may occur requiring the use of flatter slopes to prevent slope failure and subsidence of adjacent areas. A slope shall start from the bottom of each side of an excavation or where the lower portions of such sides consist of stable rock from the top of such rock.

(g) All sides or banks, slopes and areas in and adjacent to any excavation shall be stripped and cleared of loose rock or any other material which may slide, fall, roll or be pushed upon any person located in such excavation.

(h) Any open excavation adjacent to a sidewalk, street, highway or other area lawfully frequented by any person shall be effectively guarded. Such guarding shall consist of a substantial fence or barricade. As an alternative, such guarding may consist of an extension of the sheeting above the ground surface adjacent to the excavation to a height of at least 42 inches above such adjacent street, highway or other area lawfully frequented by any person. In lieu of such guarding, protection may be afforded by a substantial covering installed over such excavation. Such covering shall consist of planking at least two inches thick full size, properly supported exterior grade plywood at least three-quarters inch thick or material of equivalent strength. Where it is possible that the movement of vehicles or other heavy equipment will take place over such covering, the covering shall be of sufficient strength to withstand such loading without structural failure of the covering or of the support system.

(i) Where no work is being performed in an unattended open excavation which has substantially vertical sides or banks three feet or more in depth, such excavation shall be effectively guarded on all open sides regardless of the location of such excavation. Such guarding shall consist of a fence, a barricade or a safety railing constructed and installed in compliance with this Part (rule). As an alternative, such guarding may consist of an extension of the sheeting above the excavation to a height of at least 42 inches above the adjacent ground, grade or equivalent level. In lieu of such guarding, protection may be afforded by a substantial covering installed over the excavation. Such covering shall consist of planking at least two

inches thick full size, properly supported exterior grade plywood at least three-quarters inch thick or material of equivalent strength. Where it is possible that the movement of vehicles or other heavy equipment will take place over such covering, the covering shall be of sufficient strength to withstand such loading without structural failure of the covering or of the support system.

(j) Temporary sheet piling installed in an excavation to permit the construction of a retaining or structural wall shall be left in place until such wall has developed adequate strength to support any load intended to be imposed upon such wall.

(k) Persons shall not be suffered or permitted to work in any area where they may be struck or endangered by any excavation equipment or by any material being dislodged by or falling from such equipment.

(l) The sides of any excavation in stable rock may be vertical and are not required to be provided with sheeting and shoring. Such sides shall be scaled and kept free of all loose rock or material that may be dislodged or may fall into such excavation.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-4.3 Access to excavations. Ladders, stairways or ramps constructed in compliance with this Part (rule) shall be provided in every excavation more than three feet in depth for safe access and egress. Such ladders, stairways or ramps shall be installed in sufficient number and in such locations as to be readily accessible to any person wishing to enter or leave such excavation without more than 25 feet of lateral travel.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-4.4 Sheeting, shoring and bracing. (a) Where any excavation is not protected by sloped sides or banks in compliance with Table I of this Subpart, any person in such excavation shall be protected by sheeting, shoring and bracing in compliance with Tables II, III and IV of this Subpart. Sizes of materials listed in the tables are nominal or trade dimensions.

TABLE II
MAXIMUM HORIZONTAL DISTANCE BETWEEN EDGES OF SHEETING

Type of Soil	Excavation Depth		
	5 to 10 ft.	Over 10 to 15 ft.	Over 15 to 20 ft.
Stiff cohesive soil	Tight	Tight	Tight
Noncohesive soil	2 feet	Tight	Tight
Soft cohesive or wet flowing soil	Tight	Tight	Tight

(b) Shores, struts and braces, whether horizontal or inclined, shall be of adequate size to provide stiffness and adequately braced to withstand the loads intended to be imposed thereon. The ends of all braces shall be individually anchored and fastened to fully resist all imposed forces and to prevent such braces from shifting or slipping. The placing of any inclined shores, struts or braces at any angle exceeding 30 degrees from the horizontal is prohibited.

(c) Each earth-supported shore, strut or brace shall bear against a footing of sufficient area and stability to prevent any subsidence, yield or shifting of such shore, strut or brace.

TABLE III
MINIMUM SIZES OF STRINGERS AND BRACES
Narrow Trenches—Horizontal Cross-Braces Not Longer Than Four Feet

Trench Depth	Type of Soil	Vertical Spacing of Stringers	Horizontal Spacing of Cross-Braces					
			4 Feet		6 Feet		8 Feet	
			Stringers	Braces	Stringers	Braces	Stringers	Braces
5 to 10 ft.	Stiff cohesive	4 ft. max.	4 x 4	4 x 4	6 x 6 or 4 x 8	4 x 4	6 x 6	4 x 4
	Noncohesive	4 ft. max.	6 x 6 or 4 x 8	4 x 4	6 x 6	4 x 4	6 x 8	4 x 4
	Soft cohesive and wet flowing	4 ft. max.	6 x 6	4 x 4	6 x 10	4 x 6	8 x 10	6 x 6
Over 10 to 20 ft.	Stiff cohesive and noncohesive	4 ft. max.	4 x 6	4 x 4	6 x 6	4 x 4	8 x 8 or 6 x 10	4 x 6
	Soft cohesive and wet flowing	4 ft. max.	6 x 8	6 x 6	8 x 10	6 x 8	10 x 12	8 x 8
Over 20 ft.								

For any trench over 20 feet in depth the sheeting, shoring and bracing systems shall be designed by a professional engineer licensed to practice in the State of New York shall be constructed and used for the specific condition involved.

* Sizes of timber for such conditions become excessive. A special structure designed by a professional engineer licensed to practice in the State of New York shall be constructed and used for the specific condition involved.
Note: Timber sizes are nominal or trade dimensions.

(d) Each end of each stringer shall be individually braced. Where stringers are terminated to form individual panel type sheeting, each such panel shall be braced at either end.

(e) In lieu of sheeting and shoring and where conditions permit, a self-supporting movable shield of timber or metal may be used and moved ahead as the excavation and construction progresses. The supporting capacity of such a shield shall be equal in all respects to the sheeting and shoring set forth in Tables II, III and IV of this Subpart. When any person is located in such excavation at any point not protected by such shield, sheeting and shoring as set forth in Tables II, III and IV of this Subpart shall be provided.

(f) In lieu of wood, screw jacks of adequate size and stability may be used as cross bracing in the sheeting and shoring of any excavation. Any type of cross bracing used shall be in a true horizontal position, shall be securely fastened and shall be prevented from shifting or slipping by adequately fastened scabs or blocks.

(g) When the depth of an excavation requires the use of two vertical lengths of sheeting, one above the other, the lower sheeting shall be set inside the bottom stringers of the upper sheeting and shall be driven down and braced as the excavation continues.

(h) Excavations which are generally parallel to existing underground pipe lines, utilities or structures of any kind shall be tightly sheeted and shored alongside such pipe lines, utilities or structures where they are exposed by such excavations.

(i) Timber sheeting shall consist of structurally sound hardwood at least two inches by six inches in size or of lumber of equivalent strength. The actual thickness of such timber sheeting shall be consistent with the size of the supporting timbers and the depth of the excavation.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-4.5 Use of Tables III and IV. The use of Tables III and IV shall be subject to the following requirements:

(a) The sizes of members shown in Tables III and IV are the minimum requirements for timber bracing systems used in the sheeting and shoring of excavations.

(b) Steel, aluminum or combinations of steel, aluminum and timber bracing systems of equivalent strength and capacity may be used in place of timber bracing systems.

(c) Portable, adjustable-type metal shores for trench bracing systems shall be approved.

(d) Braces shall be so placed that the full cross-sectional areas required by Tables III and IV of this Subpart bear against the stringers.

(e) Stringers shall be placed with their least dimensions flat against the sheeting.

(f) Where any side of an excavation is a combination of an unbraced slope in accordance with Table I of this Subpart near the surface and a braced vertical section near the bottom, the sizes of the bracing members shall be determined from Tables III and IV of this Subpart. In such case, the excavation depth shall be the sum of the depth of the braced section plus one-half the depth of the unbraced sloped section.

(g) The uppermost brace of any bracing system shall be located not more than two feet below the top of the supported material.

(h) The maximum distance between the lowest brace and the bottom of the excavation shall not exceed three feet, except where the sheeting or soldier beam is embedded as stipulated in subdivision (i) below.

TABLE IV
MINIMUM SIZES OF STRINGERS AND BRACES
Wide Trenches—Horizontal Cross-Braces More Than Four Feet But Not Longer Than Eight Feet

Trench Depth	Type of Soil	Vertical Spacing of Stringers	Horizontal Spacing of Cross-Braces							
			4 Feet		6 Feet		8 Feet		12 Feet	
			Stringers	Braces	Stringers	Braces	Stringers	Braces	Stringers	Braces
5 to 10 ft.	Stiff cohesive	4 ft. max.	4 x 4	4 x 4	6 x 6 or 4 x 8	4 x 6	6 x 6	4 x 6	8 x 8	6 x 6
	Noncohesive	Over 4 ft. to 6 ft. max.	6 x 6 or 4 x 8	4 x 6	6 x 6	6 x 6	6 x 8	6 x 8	8 x 10	6 x 8
	Soft cohesive and wet flowing	4 ft. max.	6 x 6	6 x 6	6 x 10	6 x 6	8 x 10	6 x 6	10 x 12	8 x 8
Over 10 to 20 ft.	Stiff cohesive and noncohesive	4 ft. max.	4 x 6	4 x 6	6 x 6	6 x 6	8 x 8 or 6 x 10	6 x 6	10 x 10	8 x 8
	Soft cohesive and wet flowing	4 ft. max.	6 x 8	6 x 8	8 x 10	6 x 10	10 x 12	8 x 10	*	*
Over 20 ft.	For any trench over 20 feet in depth the sheeting, shoring and bracing system shall be designed by a professional engineer licensed to practice in the State of New York. Such design plan, including design analysis and specifications, shall be submitted to the board for special approval before any work is performed on such excavation.									

* Sizes of timber for such conditions become excessive. A special structure designed by a professional engineer licensed to practice in the State of New York shall be constructed and used for the specific condition involved.

Note: Timber sizes are nominal or trade dimensions.

(i) If the bottom of the sheeting or soldier beam is embedded below the bottom of the excavation, the maximum distance between the lowest brace and the bottom of the excavation shall not exceed the vertical spacing for braces allowed in Tables III and IV of this Subpart. The minimum depth of embedment of the sheeting or soldier beam shall be three feet. The actual depth of each such embedment shall be such that there is no significant movement of the bottom of the sheeting or soldier beam.

Exception: Where the operation being performed, such as laying large diameter concrete pipe or reinforced concrete cutbacks, precludes the piling of vertical bracing as specified in subdivisions (i) and (j) above, the vertical spacing may be in accordance with a specific design and plans made by a professional engineer licensed to practice in the State of New York. Such special bracing system shall be designed so that the sheeting and shoring will withstand all the forces intended to be imposed thereon. Copies of the design and plans of such sheeting and shoring system shall be kept at the job site available for examination by the commissioner.

(j) The bracing or shoring of trenches shall be continued as the excavation progresses in length. No person except workmen fabricating the required sheeting and shoring system shall be allowed inside such excavation until the required sheeting and shoring system has been completed.

(k) Backfilling and removal of trench supports shall progress together from the bottom of the trench. Jacks or braces shall be released slowly and, in unstable soil, ropes shall be used to remove the jacks or braces from above after employees have vacated the trench.

Historical Note

Subpart added, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-5
SCAFFOLDING

Sec.		Sec.	
23-5.1	General provisions for all scaffolds	23-5.13	Carpenters' portable bracket scaffolds
23-5.2	Approval required	23-5.14	Bricklayers' square scaffolds
23-5.3	General provisions for metal scaffolds	23-5.15	Lean-to scaffolds
23-5.4	Tubular welded frame scaffolds	23-5.16	Trestle and extension trestle ladder scaffolds
23-5.5	Tube and coupler metal scaffolds	23-5.17	Ladder jack scaffolds
23-5.6	Pole scaffolds	23-5.18	Manually-propelled mobile scaffolds
23-5.7	Outrigger scaffolds	23-5.19	Manually-propelled mobile scaffolds
23-5.8	All suspended scaffolds	23-5.20	Window jacks
23-5.9	Two-point suspension scaffolds	23-5.21	Boatwain's chairs
23-5.10	Multiple-point suspension scaffolds	23-5.22	Stills
23-5.11	Needle beam scaffolds		
23-5.12	Hoist scaffolds		

Historical Note

Subpart (§§ 23-5.1—23-5.22) added, filed May 30, 1972 eff. June 1, 1972.

Section 23-5.1 General provisions for all scaffolds. (a) Scope of this Subpart. The provisions of this Subpart pertaining to all scaffolds used in construction and demolition operations shall not be construed or applied in contravention of the special provisions pertaining to specific types of scaffolds hereinafter set forth.

(b) Scaffold footing or anchorage. The footing or anchorage for every scaffold erected on or supported by the ground, grade or equivalent surface shall be sound, rigid, capable of supporting the maximum load intended to be imposed thereon.

without settling or deformation and shall be secure against movement in any direction. Unstable supports, such as barrels, boxes, loose brick or loose stone, shall not be used.

(c) *Scaffold structure.* (1) Except where otherwise specifically provided in this Subpart, all scaffolding shall be so constructed as to bear four times the maximum weight required to be dependent therefrom or placed thereon when in use. (See Labor Law, § 240, subdivision 3.) Such maximum weight shall be construed to mean the sum of both dead and live loads.

Exception: Paragraph (1) above does not apply to scaffold suspension ropes. (See section 23-5.15 of this Subpart.)

(2) Every scaffold shall be provided with adequate horizontal and diagonal bracing to prevent any lateral movement.

(d) *Scaffold loading.* (1) Light duty scaffolds shall not be loaded with live loads in excess of 25 pounds per square foot.

(2) Medium duty scaffolds shall not be loaded with live loads in excess of 50 pounds per square foot.

(3) Heavy duty scaffolds shall not be loaded with live loads in excess of 75 pounds per square foot.

(4) No scaffold shall be loaded in excess of the maximum load for which it is intended.

(e) *Scaffold planking.* (1) Except on needle beam and pole scaffolds, scaffold planks shall extend not less than six inches beyond any support nor more than 18 inches beyond any end support. Such six inch minimum requirement shall not apply when such planks are securely fastened in place. Scaffold planks shall be laid tight and inclined planking shall be securely fastened in place.

(2) The maximum permissible live load for two-inch full size planking shall be as follows:

(i) *Heavy duty scaffolds*—75 pounds per square foot for spans up to and including six feet.

(ii) *Medium duty scaffolds*—50 pounds per square foot for spans over six feet and up to and including eight feet.

(iii) *Light duty scaffolds*—25 pounds per square foot for spans over eight feet and up to and including 10 feet.

(3) The maximum permissible live load for two-inch nominal thickness planking shall be as follows:

(i) *Light duty scaffolds*—25 pounds per square foot for spans over six feet and up to and including eight feet.

(ii) *Medium duty scaffolds*—50 pounds per square foot for spans up to and including six feet.

(iii) *Heavy duty scaffolds*—two-inch nominal thickness planking shall not be used for heavy duty scaffolds.

(4) The maximum permissible live load for one and one-quarter inch full size planking shall be 50 pounds per square foot for spans up to and including four feet.

(5) The minimum width of every planked scaffold platform shall be 18 inches except for the following:

(i) Bench type scaffolds where the working platforms are not more than 24 inches above the floor or other supporting surface shall be not less than nine inches in width.

(ii) Trestle and extension trestle ladder scaffold platforms shall have

widths equal to the distances between the side rails of the ladders, but in no case shall such platforms be less than 12 inches in width.

(f) *Scaffold maintenance and repair.* Every scaffold shall be maintained in good repair and every defect, unsafe condition or noncompliance with this Part (rule) shall be immediately corrected before further use of such scaffold.

(g) *Scaffold lumber.* All lumber used in the construction of scaffolds and scaffold platforms shall be stress-grade, having a minimum unit stress "f" of 1500 psi. The use of scaffold lumber shall be in conformance with the grade classification, i.e. lumber graded for use as posts or columns shall not be used where beams or joists are required. All lumber subjected to stress shall be sound, straight grained, free from shakes, large, loose or dead knots or checks or from any other defects which may impair its strength or durability.

(h) *Scaffold erection and removal.* Every scaffold shall be erected and removed under the supervision of a designated person.

(i) *Overhead protection.* Overhead protection when required for any scaffold shall consist of planking not less than two inches thick full size, exterior grade plywood not less than three-quarters inch thick or material of equivalent strength. Such planks used for overhead protection shall be laid tight, shall extend the full length and width of the working platform. Such overhead protection shall be located not more than 10 feet above the surface of the working platform. Such overhead protection shall not be used to support any person, material, tools or equipment.

(j) *Safety railings.* (1) The open sides of all scaffold platforms, except those platforms listed in the exception below, shall be provided with safety railings constructed and installed in compliance with this Part (rule).

Exceptions: Any scaffold platform with an elevation of not more than seven feet; the platforms of needle beam scaffolds; floats and rivet heater platforms in use by structural ironworkers; ladder jack scaffold platforms; and trestle and extension trestle ladder scaffold platforms.

(2) All scaffolds under which any person is likely to work or pass shall be provided with a wire mesh screen of not less than No. 18 U.S. gage steel with openings that will reject a one-inch diameter ball. Such wire mesh screen shall be installed between the toeboard and the top guard rail on both ends and on the outboard side of the scaffold platform.

(3) Any end or side of any scaffold platform that is located within six feet horizontally of an unenclosed side of a material hoist tower, construction elevator or similar moving equipment shall be effectively screened to a height of at least six feet above the scaffold platform. Such screen shall be constructed of wire mesh of not less than No. 18 U.S. gage steel with openings that will reject a one-inch diameter ball.

(k) *Splices.* Horizontal load-bearing members of any scaffold shall not be spliced between points of support.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

Decisions

1. Maintaining scaffold without overhead protection

After one of its employees was struck and killed by falling object while working on scaffold on sixth floor of 24-story building, defendant masonry contractor was properly charged with and found guilty of maintaining scaffold without overhead pro-

tection in violation of occupational health and safety standards (12 NYCRR 23-1.7 [a][1], 23-5.1[1]). State plan of occupational health and safety standards has not been pre-empted by Federal Occupational Safety and Health Act of 1970. *People v. Rosen & Sons*, 79 Misc 2d 328 (1974).

23-5.2 Approval required. The use of any scaffold of a type not named, specified or described in this Part (rule) is prohibited unless such scaffold has been granted a special approval.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.3 General provisions for metal scaffolds. (a) *Application of this section.* This section applies to all scaffolds constructed of metal except mobile types.

(b) *Special approval required.* Any metal scaffold erected after June 1, 1972 to a height exceeding 125 feet above the ground, grade or equivalent surface shall not be placed in service until such scaffold has been granted a special approval. The plans and specifications for any such scaffold shall be submitted to the board for such approval.

(c) *Strength and factor of safety.* The total of live and dead loads imposed on any scaffold assembly shall not exceed one-quarter of the ultimate strength of the members as determined by actual test.

(d) *Minimum uniform live loads.* (1) Metal scaffolds shall be designed and constructed to support safely all loads intended to be imposed thereon, but in no case shall such scaffolds be designed or constructed to support uniform live loads of less than the following:

- (i) Light duty scaffolds—25 pounds per square foot.
- (ii) Medium duty scaffolds—50 pounds per square foot.
- (iii) Heavy duty scaffolds—75 pounds per square foot.

(2) Metal scaffolds designed and constructed for particular types of work shall support uniformly distributed live loads in accordance with the following:

- (i) Stone masons—75 pounds per square foot.
- (ii) Stone setters (no stone on scaffold)—25 pounds per square foot.
- (iii) Bricklayers—50 pounds per square foot.
- (iv) Stucco applicators—50 pounds per square foot.
- (v) Lathers and plasterers—50 pounds per square foot.
- (vi) Carpenters—25 pounds per square foot.
- (vii) Miscellaneous (no material on scaffold)—25 pounds per square foot.

(3) In addition to such live loads, metal scaffolds shall be designed and constructed to support the dead loads, such as platforms, frames, safety railings and other members.

(e) *Safety railings.* Safety railings constructed and installed in compliance with this Part (rule) shall be provided for every metal scaffold.

(f) *Access.* Ladders, stairs or ramps shall be provided for access to and egress from the platform levels of metal scaffolds which are located more than two feet above or below the ground, grade, floor or other equivalent level.

(g) *Footings.* (1) Footings for metal scaffolds shall be sound, rigid and capable of supporting the maximum design loads of such scaffolds without settlement or deformation. Such footings shall be secure against movement in any direction and shall have sufficient area to properly transfer the vertical post or end frame loads of the scaffolds to the ground, grade or equivalent surface without causing any unsafe condition.

(2) Metal base plates of not less than 16 square inches in area by one-eighth inch in thickness shall be provided for the tubular ends of posts and for the legs of end frames which are in bearing contact with the footings or other supporting surfaces.

(3) Where the ground, grade or other supporting surface of a metal scaffold is not level, screw jacks or adjustment jacks shall be used to support the tubular posts or end frames of the scaffold so that the scaffold platform bearers are level. Such adjustment jacks shall be so positioned that the threaded sections do not extend beyond the frames or parts more than 12 inches.

(h) *Tie-ins.* (1) Every metal scaffold shall be securely tied into the building or other structure at intervals not to exceed 30 feet horizontally and 26 feet vertically.

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- (2) Ties to any window cleaners' anchors are prohibited.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.4 Tubular welded frame scaffolds. (a) *Bracing.* (1) Tubular welded frame scaffolds shall be properly braced by cross bracing or diagonal bracing, or both, for securing vertical members together laterally. Such braces shall be of such length as will automatically square and align the vertical members of such scaffolds so that when erected such scaffolds are plumb, square and rigid. All braces shall be securely connected.

(2) Every tubular welded frame scaffold erected after June 1, 1972 to a height in excess of 26 feet shall be provided with continuous vertical cross-bracing on the inboard and outboard sides of the scaffold except as follows:

(i) Vertical cross-bracing may be omitted at the working level of any such scaffold. Such vertical bracing may be omitted between alternate pairs of scaffold frames on the inboard side of any such scaffold for a maximum of two working levels.

(ii) Tower bracing may be used in which case each separate tower shall be provided with continuous vertical cross-bracing for the full height on both the inboard and outboard sides. The vertical cross-bracing may be omitted on the inboard side of the uppermost working level only. Adjacent towers of the scaffold shall be tied together on both the inboard and outboard sides by continuous horizontal members that extend the full length of the scaffold. Such horizontal members shall be placed at every level where building or structure tie-ins are required by paragraph 23-5.3(h)(1) of this Subpart.

(3) Diagonal horizontal bracing shall be provided at every level where building or structure tie-ins are required.

(b) *Scaffold frames.* (1) Coupling pins, sprockets or other safe positive couplers shall be used to connect scaffold frames at every vertical frame extension.

(2) Each frame leg shall have a positive lock or fastener to hold one frame member to the other vertically.

(3) The spacing of frame members of tubular welded frame scaffolds shall not exceed the following limits except for special conditions where trusses or other means of bracing insure the required factor of safety of such scaffolds:

(i) The maximum permissible frame spacing for heavy duty scaffolds shall be up to and including six feet.

(ii) The maximum permissible frame spacing for medium duty scaffolds shall be up to and including eight feet.

(iii) The maximum permissible frame spacing for light duty scaffolds shall be up to and including 10 feet.

(c) *Brackets.* Brackets shall be supported by the vertical members of the scaffold frames. Brackets shall not be more than 30 inches in width. When a bracket is used to extend the width of the frame on any side of a scaffold normally requiring a safety railing, provision shall be made in the outer end of such bracket for a safety railing post.

(d) *Safety railing posts.* Each safety railing post installed on a tubular welded frame scaffold shall fit over a coupling pin or sprocket connected to the outer end of an end frame leg, or shall fit into a frame leg not less than four inches. Such post shall be securely fastened to the end frame of the scaffold by a positive locking device.

(e) *Metal trusses.* (1) Where metal trusses are used on any tubular welded frame scaffold, such trusses shall be provided with sufficient supports for the platform planks between the scaffold frames.

(2) Any metal truss used to span a gap in a tubular welded frame scaffold shall have a strength capacity sufficient to provide the required factor of safety.

(3) Where trusses are used on tubular welded frame scaffolds erected to a height of more than 60 feet, such scaffolds shall be designed by a professional engineer licensed to practice in the State of New York. Copies of the design drawings for any such scaffold shall be kept at the scaffold installation site available for examination by the commissioner.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.5 Tube and coupler metal scaffolds. (a) *Structural members.* The structural members of tube and coupler scaffolds shall be constructed of steel tubing.

(b) *Couplers.* (1) All vertical, horizontal and diagonal members of tube and coupler metal scaffolds shall be securely fastened together with approved safe locking devices to form positive connections.

(2) The use of grey cast iron fittings in such scaffolds is prohibited.

(c) *Runners.* (1) Every tube and coupler metal scaffold shall be provided with a ledger or runner of metal tubing locked end to end with fittings to form a continuous length of the scaffold. Such runner shall be secured to each intersecting post of the scaffold with approved couplers or clamps.

(2) Runners shall be placed not more than six feet, six inches on centers vertically.

(3) The bottom runner of any such scaffold shall be located as close to the base of the scaffold as possible.

(d) *Bearers or putlogs.* (1) The bearers or putlogs of such scaffolds shall be installed transversely between the posts. They shall be securely coupled to the posts and shall bear on the runner couplers. When such bearers or putlogs are coupled directly to the runners, the couplers shall be kept as close to the posts as possible.

(2) The bearers or putlogs shall be located at each set of posts, at each level and at each intermediate level where a working platform has been installed.

(3) Each bearer or putlog shall be of sufficient length to provide an overhang of at least four inches but not more than 12 inches beyond the inside and outside posts.

(e) *Bracing.* (1) Cross bracing shall be installed across the width of every tube and coupler scaffold at every third set of posts horizontally and at every fourth runner vertically. Such bracing shall extend diagonally from the inner and outer runners in an upward direction to the next outer and inner runners.

(2) Longitudinal bracing shall be installed on every tube and coupler scaffold. Such bracing shall run from a point near the base of the first outer post upward at an approximate 45 degree angle to the extreme top of the scaffold.

(3) Where the length of the scaffold continues beyond such longitudinal bracing, such bracing shall be duplicated, beginning at every fifth post.

(4) In a similar manner, such longitudinal bracing shall also be installed to run from a point near the base of the last post upward at an approximate 45 degree angle toward the first post to the extreme top of the scaffold.

(5) Where the height of any such scaffold is greater than its length, additional longitudinal bracing shall be installed at a point on the first post at the

same elevation as the top of the lower longitudinal bracing. Such additional bracing shall run in an upward direction at an angle of approximately 45 degrees to the top of the scaffold. Such additional bracing shall also be installed in a similar manner starting from the outer end or last post at the same elevation.

(6) Where conditions prevent the attachment of such longitudinal bracing to the posts, such bracing may be attached to the runners of the scaffold.

(f) *Light duty tube and coupler scaffolds.* All posts, bearers, runners and bracing used for light duty tube and coupler scaffolds shall be constructed of nominal two-inch O.D. steel tubing. The posts of any such scaffold shall be spaced not more than six feet apart by 10 feet along the length of the scaffold.

(g) *Medium duty tube and coupler scaffolds.* All posts, runners and bracing of medium duty tube and coupler scaffolds shall be constructed of nominal two-inch O.D. steel tubing. Where the posts are spaced not more than six feet apart by eight feet along the length of such scaffold, the bearers shall be constructed of nominal two and one-half inch O.D. steel tubing. Where the posts are spaced not more than five feet apart by eight feet along the length of such scaffold, the bearers shall be constructed of nominal two-inch O.D. steel tubing.

(h) *Heavy duty tube and coupler scaffolds.* All posts, bearers, runners and bracing of heavy duty tube and coupler scaffolds shall be constructed of nominal two and one-half inch O.D. steel tubing. The posts of such a scaffold shall be spaced not more than six feet apart by six feet, six inches along the length of the scaffold.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.6 Pole scaffolds. (a) *Poles.* The foot end of any pole used in a pole scaffold shall rest on firm footing and shall be secured against lateral movement by nailing, the use of cleats or by any other effective means. Where wood poles are spliced, the ends shall be square and the upper sections shall rest squarely on the lower sections. Wood splicing pieces shall be provided on at least two adjacent sides and shall be not less than three feet in length. They shall overlap the abutting ends by an equal distance and shall have a combined cross-sectional area of not less than 50 percent of the cross-sectional area of the pole.

(b) *Putlogs.* Every wood putlog shall be reinforced with a substantial steel strip secured to the lower edge of the putlog throughout the entire length of such putlog.

(c) *Bracing.* Every pole scaffold shall be braced or attached to the building or other structure to prevent movement of the scaffold away from such building or other structure. Diagonal bracing shall be provided to prevent the poles from moving in a direction parallel to the wall of the building or other structure. Diagonal bracing shall be so installed that every spliced section of every pole is connected with the adjacent poles.

(d) *Connections.* (1) The ends of all horizontal wood supporting members and of all braces shall overlap the nail fastenings a sufficient amount to prevent the ends of such members from splitting.

(2) Where bearers rest on a wall of a building or other structure, the length of the bearing surfaces on such wall shall be at least four inches. Such bearers shall rest on firm and level surfaces.

(3) Where ledgers lap each other, bearing blocks or other effective means attached to the poles shall be provided to support such ledgers. Ledgers shall not be spliced between poles, but shall be continuous from pole to pole.

(e) *Planking.* Where planking is lapped on a pole scaffold, each plank shall lap its end supports at least 12 inches. Where the ends of planks on a pole scaffold abut

each other to form a flush floor the butt joints shall be at the center lines of the poles. The abutted ends shall rest on separate bearers. Intermediate beams shall be provided where necessary to prevent the dislodgment of planks because of deflection and the ends of the planks shall be secured to prevent their dislodgment.

(f) *Pole scaffold erection and removal.* When a new working level is desired, the existing platform shall be left undisturbed until the new working level is framed. As the scaffold is abandoned with the progress of the work, all supporting members shall be left intact. When a pole scaffold is dismantled the sequence of the removal of members shall be in reverse of that used in the erection of such scaffold.

(g) *Specification requirements for pole scaffolds.* Any wood pole scaffold over 80 feet in height above the ground, grade or equivalent surface shall be designed by a professional engineer licensed to practice in the State of New York and shall be constructed and maintained in accordance with such design. A copy of the drawings and specifications for such scaffold shall be kept at the job site available for examination by the commissioner. The wood of any such scaffold shall be treated to make it incombustible as defined in Industrial Code Part (rule) 7. Wood pole scaffolds 80 feet or less in height above the ground, grade or equivalent surface shall be constructed in conformity with Tables V, VI, VII, VIII, IX, and X of this Subpart.

TABLE V
LIGHT DUTY SINGLE POLE SCAFFOLDS
Minimum Nominal Sizes in Inches and Maximum Spacing of Members

Type of use	Light duty	
Uniformly distributed load	Not to exceed 25 pounds per sq. ft.	
Maximum height of scaffold	20 ft.	80 ft.
Poles or uprights	2 x 4	4 x 4
Pole spacing (longitudinal)	6 ft.	10 ft.
Maximum width of scaffold	5 ft.	
Bearers or putlogs (min.)		
To 3 ft. width	2 x 4 on edge	
To 5 ft. width	3 x 4 or 2 x 6 on edge	
Ledgers		
With 6 ft. pole spacing	1 1/4 x 4 on edge	
With 10 ft. pole spacing	1 1/4 x 9 on edge	
Vertical spacing of horizontal members	7 ft.	
Bracing (horizontal and diagonal)	1 x 4	
Tie-ins	1 x 4	
Planking		
Not more than 6 ft. span	1 1/4 x 9	
Not more than 10 ft. span	2 x 9	

TABLE VI
MEDIUM DUTY SINGLE POLE SCAFFOLDS
Minimum Nominal Sizes in Inches and Maximum Spacing of Members

Type of use	Medium duty		
Uniformly distributed load	Not to exceed 50 pounds per sq. ft.		
Maximum height of scaffold	60 ft.	80 ft. Top 60 ft. Lower sect.	
Poles or uprights	4 x 4	4 x 4	4 x 6
Maximum width of scaffold	5 ft.	8 ft.	
Pole spacing (longitudinal)	8 ft.		
Bearers or putlogs	3 x 4 on edge	3 x 5 or 2 x 9 on edge	
Spacing of bearers or putlogs	3 ft.-4 in.	6 ft.	
Ledgers	2 x 9 on edge		
Vertical spacing of horizontal members	9 ft.		
Bracing (horizontal)	1 x 6 or 1¼ x 4		
Bracing (diagonal)	1 x 4		
Tie-ins	1 x 4		
Planking	2 x 9		

TABLE VII
HEAVY DUTY SINGLE POLE SCAFFOLDS
Minimum Nominal Sizes in Inches and Maximum Spacing of Members

Type of use	Heavy duty		
Uniformly distributed load	Not to exceed 75 pounds per sq. ft.		
Maximum height of scaffold	60 ft.	80 ft. Top 60 ft.	Lower sect.
Poles or uprights	4 x 4	4 x 4	4 x 6
Pole spacing (longitudinal)	6 ft.		
Maximum width of scaffold	5 ft.	8 ft.	
Bearers or putlogs	3 x 5 or 2 x 9 on edge	3 x 6 or 2 x 9 on edge	
Spacing of bearers or putlogs	6 ft.		
Ledgers	2 x 9 on edge		
Vertical spacing of horizontal members	6 ft.-6 in.		
Bracing (horizontal and diagonal)	2 x 4		
Tie-ins	1 x 4		
Planking	2 x 9		

TABLE VIII
LIGHT DUTY INDEPENDENT POLE SCAFFOLDS
 Minimum Nominal Sizes in Inches and Maximum Spacing of Members

<i>Type of use</i>	<i>Light duty</i>	
Uniformly distributed load	Not to exceed 25 pounds per sq. ft.	
Maximum height of scaffold	20 ft.	80 ft.
Poles or uprights	2 x 4	4 x 4
Pole spacing (longitudinal)	6 ft.	10 ft.
Pole spacing (transverse)	6 ft.	10 ft.
Ledgers	1 ¼ x 4 on edge	1 ¼ x 9 on edge
Vertical spacing of horizontal members	7 ft.	
Bearers—to 3 ft. span to 10 ft. span	2 x 4 on edge 1 ¼ x 9 on edge	
Bracing (horizontal and diagonal)	1 x 4	
Tie-ins	1 x 4	
Planking		
Not more than 6 ft. span	1 ¼ x 9	
Not more than 10 ft. span	2 x 9	

TABLE IX
MEDIUM DUTY INDEPENDENT POLE SCAFFOLDS
 Minimum Nominal Sizes in Inches and Maximum Spacing of Members

<i>Type of use</i>	<i>Medium duty</i>		
Uniformly distributed load	Not to exceed 50 pounds per sq. ft.		
Maximum height of scaffold	60 ft.	80 ft.	
		Top 60 ft.	Lower sect.
Poles or uprights	4 x 4	4 x 4	4 x 6
Pole spacing (longitudinal)	8 ft.		
Pole spacing (transverse)	10 ft.		
Ledgers	2 x 9 on edge		
Vertical spacing of horizontal members	6 ft.		
Spacing of bearers	6 ft.		
Bearers	2 x 9 on edge		
Bracing (horizontal)	1 x 6 or 1 ¼ x 4		
Bracing (diagonal)	1 x 4		
Tie-ins	1 x 4		
Planking	2 x 9		

TABLE X
HEAVY DUTY INDEPENDENT POLE SCAFFOLDS
Minimum Nominal Sizes in Inches and Maximum Spacing of Members

<i>Type of use</i>	<i>Heavy duty</i>		
Uniformly distributed load	Not to exceed 75 pounds per sq. ft.		
Maximum height of scaffold	60 ft.	80 ft.	
		Top 60 ft.	Lower sect.
Poles or uprights	4 x 4	4 x 4	4 x 6
Pole spacing (longitudinal)	6 ft.		
Pole spacing (transverse)	10 ft.		
Ledgers	2 x 9 on edge		
Vertical spacing of horizontal members	4 ft.-6 in		
Bearers	2 x 9 on edge		
Bracing (horizontal and diagonal)	2 x 4		
Tie-ins	1 x 4		
Planking	2 x 9		

Historical Note

Sec. added, filed May 30, 1972 eff. June
1, 1972.

23-5.7 Outrigger scaffolds. (a) *Outrigger beams.* Outrigger beams shall extend not more than six feet beyond the face of the building or other structures. The inboard ends of outrigger beams, measured from the fulcrum points to the extreme inboard points of support, shall be not less than one and one-half times the outboard ends in length. Any wood beams used as outriggers shall rest on their least dimensions. The sides of any such wood beam shall be plumb and the edges shall be horizontal. The fulcrum point of any outrigger beam shall rest on a secure bearing which is at least six inches in each horizontal dimension. Every outrigger beam shall be secured in place against movement in any direction and shall be securely braced at the fulcrum point against tipping.

(b) *Inboard supports.* The inboard ends of outrigger beams shall be securely supported either by means of struts bearing against the sills in contact with an overhead structure or by means of anchoring tension members such as U-bolts secured to the structural frame of the building or other structure. The inboard ends of outrigger beams shall be secured against tipping and the entire supporting structures shall be securely braced in both directions to prevent any horizontal movement of such structures.

(c) *Design and construction.* (1) Unless outrigger scaffolds are designed by a professional engineer licensed to practice in the State of New York, the minimum sizes of the members of such scaffolds shall be in accordance with Table XI of this Subpart.

(2) Any outrigger scaffold designed by a professional engineer licensed to practice in the State of New York shall be constructed to conform to such design. A copy of the detailed drawings and specifications showing the sizes and spacing of the members of such scaffold shall be kept at the job site available for examination by the commissioner.

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(d) *Planking.* The planking of every outrigger scaffold platform shall be laid tight and shall extend to within three inches of the wall of the building or other structure. Such planking shall be nailed or bolted to the outriggers.

(e) *Screening.* Where there is a danger of material or objects falling from any outrigger scaffold, such scaffold shall be provided with wire mesh screening in compliance with this Part (rule) installed between the guard rail and the toeboard.

TABLE XI
MINIMUM SPECIFICATIONS FOR OUTRIGGER SCAFFOLDS

	Light duty scaffolds	Medium duty scaffolds
Maximum Load	25 lbs. per sq. ft.	50 lbs. per sq. ft.
Outrigger Size—		
Lumber	2" x 10"	3" x 10"
Steel	7" I-beam	7" I-beam
Aluminum	10 I 8.7	10 I 8.7
Maximum Outrigger Spacing—		
Lumber	10' - 0"	6' x 0"
Steel—7" I-beam	10' - 0"	8' x 0"
Aluminum—10 I 8.7	10' x 0"	8' x 0"
Planking	2" x 9"	2" x 9"
Guard Rail	2" x 4"	2" x 4"
Guard Rail Uprights	2" x 4"	2" x 4"
Toeboards	2" x 6"	2" x 9"

(f) *Superstructures.* All supports for superstructures installed on outrigger scaffolds shall be placed directly over the outrigger beams and shall be nailed or otherwise secured in place. Such superstructures shall not exceed six feet in height above the outrigger beam supports and shall otherwise conform with this Part (rule). In no case shall horses be used as supports for such superstructures.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.8 All suspended scaffolds. (a) *Inspection before installation.* All load-carrying parts or components and means of suspension including adequacy of anchorage or support of every suspended scaffold shall be inspected before such scaffold is installed.

(b) *Suspension from roof hooks or irons.* No parapet, curtain wall or similar portion of a building or other structure shall be used to support the roof hooks or irons of any suspended scaffold unless a professional engineer licensed to practice in the State of New York certifies that such parapet, curtain wall or similar portion of a building or other structure is adequate to support the loads intended to be imposed thereon. Such certification shall be kept on the job site available for examination by the commissioner.

(c) *Installation and use.* (1) The installation or horizontal change in position of every suspended scaffold shall be in charge of and under the direct supervision of a designated person.

(2) The horizontal displacement of any suspended scaffold platform in a direction perpendicular to the face of a building or other structure by means of an applied horizontal force shall not exceed one-tenth of the vertical distance from the elevation of the scaffold platform to its point of suspension. Any person who applies such horizontal force to a scaffold platform while he is located on any portion of the building or other structure at a point more than 10 feet above the ground, grade or equivalent surface shall be provided with and shall use an approved safety belt with a lifeline in compliance with this Part (rule).

(d) *Hoisting machines.* (1) Any manual or power-operated hoisting machine used for suspended scaffolds shall be approved.

(2) A block and tackle shall not be construed to be a hoisting machine and is not required to be approved.

(3) At least four turns of the suspension wire rope shall at all times remain on the drum. The end of such rope shall be properly secured to the drum. The foregoing requirement does not apply to traction type hoists.

(e) *Fibre rope.* Fibre ropes used with suspended scaffolds shall be first grade manila hemp or its equivalent in strength. Blocks shall be of a size to fit the ropes.

(f) *Limited use of fibre rope.* (1) Fibre rope shall not be used for or near any work involving the use of corrosive substances or chemicals.

(2) Fibre rope shall not be used as a means of suspension in lengths exceeding 100 feet between blocks.

(3) Fibre rope shall not be used on hoisting drums.

(g) *Tie-ins.* Every suspended scaffold shall be tied in to the building or other structure at every working level. Window cleaners' anchors shall not be used for such tie-ins and other means shall be provided.

(h) *Scaffold platform.* The planking of every suspended scaffold platform shall overlap its support in compliance with this Part (rule). Such planking shall be either nailed in place or otherwise secured against displacement. Where such planks rest directly upon stirrups without any intermediate supporting frames, they shall be secured together by means of cleats nailed to the undersides at intervals not exceeding four feet. Cleats or other equivalent means shall be provided on each side of the supporting stirrups under the planks to prevent sliding or any movement of the planks.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.9 Two-point suspension scaffolds. (a) *Width and fastening.* Two-point suspension scaffold platforms shall be not less than 20 inches nor more than 32 inches in width. Every such platform shall be of sufficient width to properly fit the hangers and shall be securely fastened thereto by U-bolts which pass around the hangers or by other equivalent means.

(b) *Hangers.* The platforms of two-point suspension scaffolds shall rest on hangers fabricated of mild steel or wrought iron, each having a cross-sectional area capable of sustaining four times the maximum rated load. Such hangers shall be designed with supports for guard rails, intermediate rails and toeboards.

(c) *Roof irons.* Roof irons or hooks used in connection with two-point suspension scaffolds shall be constructed of mild steel or wrought iron and shall be securely anchored. They shall be provided with tie-backs of at least three-quarters inch manila rope so installed that the tension is at right angles to the face of the building or other structure. Where the upper block hook does not directly engage the roof iron, the connection shall be made by improved plow steel wire rope not less than one-half inch in diameter.

(d) *Safety railings and screening.* The open sides of two-point suspension scaffolds shall be provided with safety railings constructed and installed in compliance with this Part (rule). In addition, such safety railings shall be provided with wire mesh installed from the toeboards to the top railings. Such wire mesh shall be not less than No. 18 U.S. gage steel with openings that will reject a one-inch diameter ball.

(e) *Use of two-point suspension scaffolds.* (1) Two or more such scaffolds shall not be combined into one by bridging the distance between them. Persons shall not pass from one two-point suspension scaffold to another. Not more than

two persons shall be permitted to work on any two-point suspension scaffold at one time unless such scaffold is specially approved and such use is stated in such approval.

(2) Every person located on any two-point suspension scaffold shall be provided with and shall be required to use an approved safety belt or harness together with a separate hanging lifeline in compliance with this Part (rule).

(f) *Suspension ropes.* (1) When holisting machines are used for any two-point suspension scaffold, the wire rope shall be at least five-sixteenths inch in diameter and capable of supporting at least six times the intended load.

(2) All fibre rope used for two-point suspension scaffolds shall be at least equivalent in strength to three-quarter inch first grade manila rope.

(g) *Platform requirements.* Wood platforms of two-point suspension scaffolds shall comply with one of the following requirements. Metal platforms or other platforms not in compliance with this Part (rule) shall be approved.

(1) *Ladder type platforms.* (i) The side stringers of the horizontal supporting ladder shall be constructed of clear spruce or other material of equivalent strength and durability. The rungs shall be constructed of straight-grained oak, ash or hickory not less than one and one-eighth inches in diameter with seven-eighths inch tenons mortised into the side stringers at least seven-eighths of an inch. The stringers shall be tied together with metal tie rods not less than one-quarter inch in diameter. Such tie rods shall pass through the stringers and shall be riveted tight against washers at both ends. Hangers shall be securely fastened to the platforms not less than six inches nor more than 18 inches from either end by means of U-bolts at the bottom supporting member. Such U-bolts shall pass over the side rails of the platforms. (See Tables XII and XIII of this Subpart.)

(ii) The flooring strips of ladder type platforms shall be spaced so that any opening in the platform floors will reject a three-quarter inch diameter ball. Ladder type platforms shall be constructed in accordance with the schedules listed in Tables XII and XIII of this Subpart.

(2) *Plank type platforms.* Plank type platforms shall be constructed of planks not less than two inches in thickness and eight inches in width, full size. Such planks shall extend not less than six inches nor more than 18 inches beyond the supporting hangers. A bar shall be nailed across the platform on the underside at each end to prevent the platform from slipping off the hangers. Where two or more planks are used, they shall be fastened together by cleats not less than one inch by six inches in size. Such cleats shall be nailed on the underside at intervals of not more than four feet. Planks used for such platforms shall not be spliced. Any span between supports shall not exceed 10 feet.

(3) *Beam platforms.* Beam platforms shall have stringers constructed of straight-grained lumber not less than two inches by six inches full size set on edge. The stringers shall be supported on the hangers and the clear spans between hangers shall not exceed 16 feet. The ends of the stringers shall extend beyond the hangers not less than six inches nor more than 18 inches. The stringers shall be bolted to the hangers by means of U-bolts which pass around the hangers and through the stringers. The platforms shall be supported on cross-beams not less than two inches by six inches full size which are laid flat and let into the upper edges of the stringers at intervals of not more than four feet. Such cross-beams shall fit snugly and shall be securely nailed in place with screw-type nails. The platforms shall be constructed of lumber not less than one inch by six inches in size, nailed tight together and extended to the outside faces of the stringers. The ends of all platform boards shall rest on the cross-beams and shall be securely nailed thereto.

TABLE XII
SCHEDULE FOR LADDER TYPE PLATFORMS

Platform Length (Feet)	12	14 & 16	18 & 20	22 & 24	28 & 30
Side Stringers—Minimum Cross-Section (Finished Sizes—Inches)					
(a) At Ends	1½ x 2¼	1½ x 2¼	1½ x 3	1½ x 3	1½ x 3½
(b) At Middle	1½ x 3¾	1½ x 3¾	1½ x 4	1½ x 4¼	1½ x 4½
Reinforcement (Minimum)	A ¼-in. x ¾-in. steel reinforcing strip or its equivalent shall be attached to the underside, full length.				
Rungs	Rungs shall be 1½ inches minimum diameter with at least ¾-in. diameter tenons, and the maximum spacing shall be 18 inches, center to center.				
Tie Rods—					
(a) Number (Minimum)	3	4	4	5	6
(b) Diameter	Minimum diameter—¼-in.				
Flooring	The minimum finished size of flooring shall be ½-in. x 2¼-in.				
Materials					
Side Rails	Clear sitka spruce; west coast hemlock; Douglas fir.				
Rungs	Straight grain hickory, ash or oak.				

TABLE XIII
SCHEDULE FOR LADDER TYPE PLATFORMS
FOR EXTENSION TRESTLE AND TRESTLE SCAFFOLDS

Platform Length (Feet)	10-14	16	18-20	22-24	26-28
Cross-Section (Inches)—					
Tapered — Ends	1½ x 3	1½ x 3¼	1½ x 3½	1½ x 3½	—
Middle	1½ x 3	1½ x 3¼	1½ x 3¾	1½ x 4½	—
No Taper	1½ x 3	1½ x 3¼	1½ x 3½	1½ x 4	1½ x 4½
Reinforcement	A ½-in. x ¾-in. steel reinforcing strip or its equivalent shall be attached to the underside of each side rail, full length.				
Rungs	Rungs shall be 1-3/16 inches minimum diameter with at least ¾-in. diameter tenons, and the maximum spacing shall be 14 inches, center to center.				
Tie Rods	5/16-in. diameter spaced at every fourth rung.				
Flooring	Minimum finished flooring size: ½-in. x 1½-in.				
Materials					
Side Rails	Clear sitka spruce; west coast hemlock; Douglas fir.				
Rungs	Straight grain hickory, ash or oak.				

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.10 Multiple-point suspension scaffolds. (a) *Design.* (1) Every multiple-point suspension scaffold, including all its supports and fastenings, shall be designed by a professional engineer licensed to practice in the State of New York. A copy of the typical drawings and all specifications, signed by such professional engineer, shall be kept on the job site available for examination by the commissioner.

(2) Every multiple-point suspension scaffold shall be designed and constructed with a factor of safety in compliance with the Labor Law and this Part (rule), except that wire ropes supporting the platform shall be at least five-sixteenths inch in diameter and capable of supporting at least six times the load intended to be imposed on such scaffold.

(3) Every multiple-point suspension scaffold shall be provided with an approved hoisting machine.

(4) Outrigger beams and platform bearers of multiple-point suspension scaffolds shall be constructed of structural grade metal. A detailed inspection of each such beam or bearer shall be made prior to installation and use and such inspection shall be repeated at intervals of not more than 30 days during scaffold use. Such inspections shall be made by competent designated persons who shall complete and sign a written record of the results of each such inspection. Such written record shall be kept at the job site available for examination by the commissioner.

(5) Platform supports of multiple-point suspension scaffolds shall be designed to provide sufficient headroom for easy passage throughout the lengths of such scaffolds.

(6) Effective means shall be provided to prevent rope supports from slipping off the ends of the outrigger beams.

(b) *Installation of multiple-point suspension scaffolds.* (1) Each such scaffold shall be installed in accordance with the required design drawings. Any installation or relocation of a multiple-point suspension scaffold shall be by or under the direct supervision of a competent designated person.

(2) The overhang of outrigger beams on such scaffolds shall at no time exceed that specified on the required design drawings.

(3) Outrigger beams shall be properly anchored and braced to provide rigidity and to prevent sliding or tipping.

(4) Supporting points for outrigger beams shall be level, smooth and of sufficient areas to provide firm seats.

(5) Wire rope connections shall be in compliance with this Part (rule). At least four turns of the wire rope shall remain on the hoisting drum at all times. The foregoing does not apply to traction type hoists.

(6) The hoisting rope of every multiple-point suspension scaffold shall be maintained properly lubricated.

(c) *Scaffold platform.* The platform of every medium duty multiple-point suspension scaffold shall be at least equivalent in strength to two-inch planking, full size. Such planking shall be laid tight and shall be fastened in place or cleated to prevent dislodgment. Light duty multiple-point suspension scaffolds shall be provided with ladder type platforms constructed in accordance with the schedule listed in Table XII of this Subpart and securely fastened to the hangers by U-bolts or other equivalent means.

(d) *Safety railings and screening.* (1) The open side and ends of every multiple-point suspension scaffold shall be provided with a safety railing constructed and installed in compliance with this Part (rule). In addition, every such safety

railing shall be provided with an enclosure of wire mesh installed from the toeboard to the top railing. Such wire mesh shall be not less than No. 18 U.S. gage steel with openings that will reject a one-inch diameter ball.

(2) The inboard side (side next to the building or other structure) of every multiple-point suspension scaffold shall be provided with a toeboard.

(e) *Overhead protection.* Where there is a hazard from falling objects or materials, multiple-point suspension scaffolds shall be provided with overhead protection in compliance with this Part (rule).

(f) *Scaffold dismantling.* When a multiple-point suspension scaffold is being dismantled and the scaffold platform is not lowered intact to the ground or other safe surface, each person performing such dismantling shall be provided with and shall use an approved safety belt or harness together with a lifeline in compliance with this Part (rule).

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.11 Needle beam scaffolds. (a) *Use of needle beam scaffolds.* Needle beam scaffolds shall be used only for the support of persons performing riveting, plastering, painting and other similar work. Needle beam scaffolds shall not be used for the storage of materials.

(b) *Scaffold platform supports.* Wood needle beams shall not be less than four inches by six inches in size and shall be so placed that the greater dimension is vertical. They shall be of one length and shall not be spliced. Such beams shall be provided with intermediate supports or hangers in such manner that any span shall not exceed 10 feet. Where metal beams are used for needle beam scaffold platform supports, such beams shall be at least equal in strength to the four inch by six inch wood beams.

(c) *Rope.* Rope used for the support of needle beams shall be equivalent in strength to one-inch diameter first grade manila rope. Such rope shall be attached to the needle beams with "square hitches" which shall be so tied on rectangular beams as to prevent such beams from rolling or otherwise becoming displaced. Mechanical stops such as cleats or pins shall be used to prevent the ropes from slipping off the ends of the beams.

(d) *Scaffold platform.* (1) The platform planks for needle beam scaffolds shall not be less than two inches in thickness full size. Platform planks shall extend not less than 12 inches beyond any support nor more than 18 inches beyond any end support.

(2) The dimension of any needle beam scaffold platform in a direction parallel to the needle beams shall be not less than three feet nor more than six feet.

(3) When needle beam scaffolds are used with one beam higher than the other or where the platform planks are not level, the platform shall be secured against slipping.

(e) *Containers for tools.* Suitable containers for tools, bolts and similar objects shall be provided for every needle beam scaffold. Such containers shall be securely attached to the scaffolds.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.12 Horse scaffolds. (a) *Limitation of height.* Horse scaffolds shall not be constructed with more than two tiers of horses and the height of the working platforms of such scaffolds shall not exceed 10 feet.

(b) *Installation of horse scaffolds.* The footings for horses shall be level and secure against accidental movement in any direction. Where horse scaffolds are superimposed upon other types of scaffolds, the horses shall be placed directly over supporting beams. All horse scaffolds shall be secured against sliding or tipping.

(c) *Construction of horses.* (1) The minimum sizes of members for horse scaffolds used for light duty shall be two inches by four inches for the backs or bearers and one inch by four inches for the legs and horizontal braces. The span of such backs or bearers shall not exceed four feet.

(2) The minimum sizes of members of horse scaffolds used for medium duty shall be one and one-quarter inches by nine inches for the backs or bearers and one and one-quarter inches by four and one-quarter inches for the legs and horizontal braces. The span of such backs or bearers shall not exceed six feet.

(3) The minimum sizes of members of horse scaffolds used for heavy duty shall be three inches by four inches for the backs or bearers and one and one-quarter inches by four and one-quarter inches for the legs and horizontal braces. The span of such backs or bearers shall not exceed six feet.

(4) The backs or bearers of horse scaffolds shall in every case rest on gusset braces which are at least one inch thick.

(5) Every horse scaffold shall be provided with sufficient diagonal and horizontal bracing to assure rigidity.

(6) In lieu of wood, the legs of such horses may be constructed of metal which is in every case equivalent in strength to the wood herein required.

(7) Horse scaffold legs may be lengthened by means of splicing on extension pieces having the same cross-sectional areas as the scaffold legs, provided such extension pieces lap the full lengths of the scaffold legs and are securely attached to the legs by through bolts.

(d) *Horse spacing.* The backs or bearers or horses used in the construction of scaffolds designed for loads up to 25 pounds per square foot shall be spaced not to exceed 10 feet, center to center. When used in scaffolds designed for loads up to 50 pounds per square foot such spacing shall not exceed eight feet, center to center. When used in scaffolds designed for loads up to 75 pounds per square foot such spacing shall not exceed six feet, center to center.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.13 *Carpenters' portable bracket scaffolds.* (a) *Construction of brackets.* Each supporting bracket of a carpenters' portable bracket scaffold shall consist of a triangular portable frame constructed of wood not less than two inches by three inches in cross-section or shall be constructed of metal of equivalent strength. The members of such brackets shall be properly fitted and securely joined.

(b) *Bracket installation.* Each such bracket shall be attached to the wall of a building or other structure by means of a bolt not less than five-eighths inch in diameter. Such bolt shall extend through such wall and shall be secured to develop the required strength. The brackets shall be spaced not to exceed eight feet, center to center. Where the use of five-eighths inch diameter bolts for such installations is impractical, such brackets shall be secured by whaler cleats or metal ties equivalent in strength to five-eighths inch diameter bolts.

(c) *Loading.* No more than two persons shall occupy any given 16 feet of a carpenters' portable bracket scaffold at any one time. The total weight of supplies, tools, materials or equipment placed on any such scaffold in addition to the occupants shall not exceed 100 pounds.

(d) *Safety railing.* Where the working platform of any carpenters' portable bracket scaffold is elevated more than seven feet above the ground, grade, floor or equivalent surface, such platform shall be provided with a safety railing constructed and installed in compliance with this Part (rule).

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.14 Bricklayers' square scaffolds. (a) *Limitation of use.* Bricklayers' square scaffolds shall not be used as heavy duty scaffolds.

(b) *Construction of squares.* (1) The squares of bricklayers' square scaffolds shall not exceed five feet in width by five feet in height. The minimum sizes of members shall not be less than those specified in Table XIV of this Subpart.

TABLE XIV

MINIMUM SPECIFICATIONS OF BRICKLAYERS' SQUARE SCAFFOLDS

Members	Dimensions
Bearers or horizontal members	2" x 8"
Legs	2" x 8"
Braces at corners	1" x 8"
Braces diagonally from center frames	1" x 8"

(2) Such squares shall be reinforced on both sides of each corner with gusset braces at least one inch thick. Each square shall be provided with braces at least one inch by eight inches in size on both sides. Such braces shall extend from the center of each member to the center of the adjacent member or shall be otherwise arranged to secure rigidity of the square.

(c) *Construction of scaffolding.* The squares shall be set not more than five feet apart for medium duty scaffolds and not more than eight feet apart for light duty scaffolds. One inch by eight inch diagonal bracing extending from the bottom of one square to the top of the next adjacent square shall be provided on both the front and back of every bricklayers' square scaffold.

(d) *Scaffold platforms.* The platform planks used for such scaffolds shall be not less than two inches in thickness, full size. The ends of the planks shall overlap on the backs of the squares and each such plank shall be supported by not less than three squares. Such planks shall extend beyond the edges of the squares by not less than six inches nor more than 18 inches.

(e) *Multiple tiers.* Bricklayers' square scaffolds shall not be constructed with more than three tiers. When erected in tiers, such scaffolds shall be so constructed that the squares are directly one above the other. The upper tiers shall stand on continuous rows of planks laid across the next lower tier and shall be nailed securely or otherwise secured so as to prevent displacement. Such scaffolds shall be erected on level and firm foundations equivalent to that afforded by two-inch by nine-inch planking.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.15 Lean-to scaffolds. (a) *Limited use of lean-to scaffolds.* Lean-to scaffolds shall not be used or erected to a height exceeding 10 feet above the ground, grade or equivalent surface. Lean-to scaffolds shall be used only as light duty scaffolds.

(b) *Scaffold construction.* The spread between the legs of any lean-to scaffold, measured at the feet, shall be at least equal to one-half the height of such scaffold.

The maximum span for two-inch by nine-inch planking shall be 10 feet and the maximum span for one and one-quarter inch by nine-inch planking shall be six feet. The minimum sizes of members of lean-to scaffold supports shall be as specified in Table XV of this Subpart.

TABLE XV
MINIMUM SPECIFICATIONS FOR LEAN-TO SCAFFOLDS

Members	Dimensions
Horizontal bearers	2" x 8"
Legs	2" x 4"
Braces between legs	1" x 8"
Gusset braces at top of legs	1" x 8"
Half diagonal braces	1" x 8"
Maximum spans of planking:	
2" x 9"	10 ft.
1 1/4" x 9"	6 ft.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.16 Trestle and extension trestle ladder scaffolds. (a) *Permissible scaffold height.* The elevation of working platforms of trestle and extension trestle ladder scaffolds shall not exceed 20 feet above the ground, grade, floor or equivalent surface.

(b) *Bracing or tie-ins required.* Where the working platform of any trestle ladder scaffold is located more than 10 feet above the ground, grade, floor or equivalent surface, the tops of such trestle or extension trestle ladders shall be tied in to the building or other structure. Such tie-ins shall be by means of rigid bracing, chains or ropes fastened securely to substantial, firm anchorages. Where such anchorages are unavailable or where such tie-ins are impossible and there is no adjacent wall, the bases of such trestle ladders shall be extended perpendicularly to the length of the working platform such distance as to provide a base dimension of not less than one-quarter of the height of the scaffold platform above such base.

(c) *Scaffold platforms.* Working platforms between trestles shall be equal to the width of the rungs of the extension. Where ladder type platforms are used, such platforms shall comply with the requirements listed in Table XIII of this Subpart.

(d) *Limitations of use.* Trestle and extension trestle ladder scaffolds shall be used only for interior painting, decorating, light maintenance or similar work. Such scaffolds shall not be used for exterior work nor for work in which the equipment, supplies or materials required may hamper or endanger the persons on such scaffolds.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.17 Ladder jack scaffolds. (a) *Approval required.* Ladder jack scaffolds shall not be used unless approved.

(b) *Limitations of use.* Ladder jack scaffolds shall be used only as light duty scaffolds. The scaffold platform elevation of any ladder jack scaffold shall not be more than 20 feet above the floor or equivalent surface.

(c) *Scaffold construction.* Ladders used in the construction of ladder jack scaffolds shall be designed, constructed and maintained in accordance with the provisions of 602.6 LB 5-31-72.

sions of this Part (rule) pertaining to ladders. Such ladders shall be so placed, fastened or held, or shall be so equipped with acceptable means as to prevent slipping. Platform planks shall be not less than two inches thick full size if constructed of wood. Metal planks shall be approved. Any plank used for such scaffold platform shall extend beyond any support not less than six inches nor more than 18 inches beyond any end support. The spans between supports shall not exceed eight feet. No more than two persons shall occupy any ladder jack scaffold at one time.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.18 Manually-propelled mobile scaffolds. (a) *Platform planking.* Scaffold platforms for manually-propelled mobile scaffolds shall be tightly planked for the full width of the scaffolds except for necessary access openings. Such planking shall consist of planks not less than two inches thick full size, exterior grade plywood at least three-quarters inch thick or material of equivalent strength.

(b) *Safety railings required.* The platform of every manually-propelled mobile scaffold shall be provided with a safety railing constructed and installed in compliance with this Part (rule).

(c) *Platform access.* A ladder or stairway shall be provided for proper access to every manually-propelled mobile scaffold. Such ladder or stairway shall be affixed to or built into the scaffold and so located that when in use it will not have a tendency to tip the scaffold. Landing platforms shall be provided at intervals not to exceed 35 feet.

(d) *Scaffold height.* For any free-standing manually-propelled mobile scaffold the ratio of the platform height above the ground, grade, floor or equivalent surface to the minimum base dimension shall assure scaffold stability when in use, but in no case shall such height be more than four times the minimum base dimension.

(e) *Casters.* Casters shall be properly designed for strength and dimensions to support four times the maximum load intended to be imposed thereon. All casters shall be provided with positive locking devices to hold the scaffolds in position.

(f) *Scaffold bracing.* Manually-propelled mobile scaffolds shall be properly braced by cross-bracing or diagonal-bracing, or both, to secure vertical members together laterally. Cross-braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, square and rigid. All brace connections shall be made secure.

(g) *Scaffold footing.* Whenever any such scaffold is in use and is occupied by any person, such scaffold shall rest upon a stable footing, the platform shall be level and the scaffold shall stand plumb. All casters or wheels shall be locked in position.

(h) *Moving the scaffold.* Provisions shall be made to prevent such scaffolds from tipping or falling during their movement from one location to another. Scaffolds shall be moved only on level floors or equivalent surfaces free from obstructions and openings. No person shall be suffered or permitted to ride on any manually-propelled mobile scaffold while it is being moved.

(i) *Bridging prohibited.* Bridging between two or more manually-propelled mobile scaffolds or between any such scaffold and other supports is prohibited.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.19 Elevator scaffold jacks. (a) When elevator scaffold jacks are used for the installation of elevator hoistway doors, such scaffold jacks shall be constructed and installed in compliance with this Part (rule).

(b) The platforms of such scaffolds shall consist of planks at least equal in strength to No. 1 grade fir. Such planks shall be at least two inches thick full size. Such planks shall be supported by scaffold brackets or jacks constructed of spruce or plywood at least three-quarters inch by five inches in size or of metal of equivalent strength.

(c) Such jacks shall be constructed and installed in any hoistway by being tightly wedged between the guide rails and the elevator door sill. There shall be a notch at least one and one-half inches by one and one-half inches in the lower horizontal member of each jack at which point such jack shall rest on the door sill. A plank, at least two inches thick full size, shall be placed on the lower members of the jack and notched to fit tightly against the front vertical members to prevent any inward movement of the jacks. Such planks shall be bolted to the jacks by means of angles three inches by three inches by one-quarter inch in size. The first plank of the main scaffold platform shall be bolted similarly to the jacks. At the points where the jacks rest against the guide rails, "C" clamps shall be used to prevent dislodgment. "C" clamps shall also be used to fasten two-inch by four-inch guard rails to the guide rails. Where it becomes necessary to prevent horizontal movement, cleats shall be nailed to the platform planks to block such planks against the guide rails and/or hoistway walls.

(d) Every person working from, installing or dismantling such scaffolds shall be provided with and shall use an approved safety belt or harness properly secured in compliance with this Part (rule).

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.20 Window jacks. (a) *Approval required.* All window jacks shall be approved.

(b) *Construction of window jacks.* All window jacks shall be constructed, installed and used in compliance with section 23-5.1 of this Subpart.

(c) *Window jack use.* Every window jack shall be limited to light duty loading and shall be used only for the purpose of working at the window opening through which such jack is installed. No more than one person shall occupy a window jack at any one time. Window jacks shall not be used as supporting elements or anchorages of scaffolds or other devices and the placing of planks between one window jack and the jack of an adjacent window is prohibited.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.21 Boatwain's chairs. (a) *Manual type of wood construction.* (1) *Strength.* Every boatwain's chair and supports shall be capable of sustaining four times the maximum weight intended to be placed thereon.

(2) *Chair or seat.* Every boatwain's chair or seat shall be suspended from its four corners by means of rope slings. Such chair or seat shall be not less than 24 inches in length by 10 inches in width. Such chair or seat shall be two inches in thickness except that such thickness may be one and one-eighth inches if the chair or seat is constructed of hardwood. Each such chair or seat shall be reinforced across its full width by means of cleats securely fastened to the underside of each end.

(3) *Suspension tackle.* The rope used as a means of suspension for boatwain's chairs shall be first grade manila at least five-eighths inch in diameter or synthetic fibre with a breaking strength of 5,000 pounds and with a diameter of at least one-half inch. Such rope shall be reeved through proper size ball bearings

or bushed blocks. Rope attachments to such blocks shall be by means of thimbles and splicing. Only safety hooks shall be used.

(4) *Anchorage*. The means of suspension shall be attached to anchorages of sufficient rigidity and of ample strength. Where necessary, ropes shall be protected against chafing.

(5) *Seat guard or safety belt*. Every boatswain's chair or seat shall be provided with a rope or strap guard across both the front and rear located 18 inches above the seat or shall be provided with an approved safety belt with separate hanging lifeline securely attached to a fixed support or anchorage in compliance with this Part (rule).

(b) *Powered type boatswain's chairs*. All powered type boatswain's chairs shall be approved.

(c) *Harnesses*. Harnesses designed to suspend a person in a sitting position in order to perform work of any kind shall be approved.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-5.22 *Stilts*. (a) *Limited use*. (1) Stilts shall be used only for the work of taping joints in wallboard used for wall and ceiling construction, commonly known as "dry wall" construction. The use of stilts for any other purpose is prohibited.

(2) Stilts shall be used only by competent persons who have voluntarily agreed to their use. The use of stilts shall not be at the direction of or at the request of, expressed or implied, any employer. Any person who uses stilts in the performance of such taping work shall be qualified for such use.

(b) *Notification of the commissioner*. In every case where stilts are to be used, the employer shall notify the commissioner, in writing, of such intended use at least five days prior to such use. Such notification shall give the name and address of the person agreeing to use the stilts, the location of the job site where the stilts are to be used and the date when such use is to commence.

(c) *Scaffolds required*. Whenever stilts are used, scaffolds commonly used and appropriate for wallboard construction and which are in compliance with this Part (rule) shall be provided at all times such work is being performed. Such scaffolds shall be readily available for any person performing such work who may elect to use such scaffold.

(d) *Stilt construction*. Stilts shall be of sound and substantial construction and shall be maintained in good repair at all times while they are being used.

(e) *Stilt elevation*. Stilts shall not elevate the feet of any person more than 24 inches above the floor.

(f) *Protection from hazards*. Stilts shall be used only on even floor surfaces kept free from obstructions, materials, debris, accumulations of dirt or slippery substances. Persons on stilts shall not be suffered or permitted to work near any opening which is not covered or protected in compliance with this Part (rule) or otherwise guarded.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-6
MATERIAL HOISTING

Sec.
23-6.1 General requirements
23-6.2 Rigging, rope and chains for
material hoists

Sec.
23-6.3 Material platform or bucket hoists

Historical Note

Subpart added, filed May 30, 1972 *eff.*
June 1, 1972.

Section 23-6.1 General requirements. (a) *Application of Subpart.* The general requirements of this Subpart shall apply to all material hoisting equipment except cranes, derricks, aerial baskets, excavating machines used for material hoisting and fork lift trucks.

(b) *Maintenance.* Material hoisting equipment shall at all times be maintained in good repair and proper operating condition with sufficient inspections to insure such maintenance. All defects affecting safety shall be immediately corrected either by necessary repairs or replacement of parts, or such defective equipment shall be immediately removed from the job site.

(c) *Operation.* (1) Only trained, designated persons shall operate hoisting equipment and such equipment shall be operated in a safe manner at all times.

(2) Operators of material hoisting equipment shall remain at the controls while any load is suspended.

(d) *Loading.* Material hoisting equipment shall not be loaded in excess of the live load for which it was designed as specified by the manufacturer. Where there is any hazard to persons, all loads shall be properly trimmed to prevent dislodgment of any portions of such loads during transit. Suspended loads shall be securely slung and properly balanced before they are set in motion.

(e) *Signal system required.* (1) Operators and signalmen. Material hoists shall be operated only in response to a signal system and all operators and signalmen shall be able to comprehend the signals readily and to execute them properly.

(2) *Signal transmittal.* Such signal system shall consist of manual signals, telephone communications or a visual or audible signal code. Such signaling methods may be used separately or in combination. Where manual or visual signals are used, the signalman shall have a clear and unobstructed view of the hoist operator at all times and the hoist operator shall have a clear and unobstructed view of the signalman at all times. The maximum distance between the signalman and the operator shall be 80 feet. Where persons are loading or unloading at more than one level or where the signalman cannot be readily seen by the hoist operator, an electrically- or mechanically-operated bell system shall be provided and used. Where audible signals are used, such signals shall be capable of being heard at all times above the normal sound level in the area. Intercommunication or telephone systems shall be provided in addition to manually-operated electrical or mechanical bell signal systems where necessary for safe operation of the hoist. Weatherproof electrical connections and fittings shall be used for electrically-operated signal or communication systems on hoist towers that are exposed to the elements.

(3) *Visual and audible signal code.* Where a visual or audible signal system is used in the operation of any material hoist, the following signal code shall be employed:

<i>Signal</i>	<i>Action</i>
1 bell or light	Stop
2 bells or lights	Raise
3 bells or lights	Lower
4 bells or lights	Lower slowly

(4) *Posting of signal code.* Where a visual or audible signal code is used, a copy of such code shall be posted in a conspicuous location adjacent to the hoisting controls, clearly visible to the hoist operator from his operating position. Where there is a car attendant, such code shall also be posted in a conspicuous position in the hoist car.

(f) *Protection of hoist operator.* (1) Where an overhead hazard exists, the operator of a hoisting machine shall be provided with overhead protection equivalent to tight planking not less than two inches thick which is supported to develop its full strength.

(2) The area or space occupied by the hoisting machine and its operator shall be protected from the elements and shall be heated in cold weather to a temperature of at least 60 degrees Fahrenheit at all times such area or space is occupied.

(g) *Protection of moving parts.* Gears, belts, sprockets, drums, sheaves and points of contact between moving parts of power-driven hoist equipment, when not guarded by location, shall be guarded in compliance with this Part (rule) and with Industrial Code Part (rule) 19.

(h) *Tag line.* Loads which have a tendency to swing or turn freely during hoisting shall be controlled by tag lines.

(i) *Riding.* Riding on loads, buckets, slings, balls or hooks or material hoisting equipment is prohibited.

(j) *Hoisting machine.* (1) *Hoist brakes.* Hoist brakes, capable of stopping and holding 150 percent of the rated capacity of the hoist, shall be provided for every material hoist. Each manually-operated material hoist shall be equipped with an effective pawl and ratchet capable of holding the rated load capacity when such a load is suspended. Each electric motor-driven material hoist shall be provided with a mechanical automatic motor brake or an electrical or mechanical device which will stop and hold 150 percent of the rated capacity of the hoist automatically in case of power failure.

(2) *Hoisting machine anchorage.* Hoisting machines shall be so constructed, installed and secured in place as to prevent tipping or dislodgment.

(k) *Repairs and lubrication.* No repairing, cleaning or lubricating of machinery shall be done unless such machinery is at rest.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-6.2 Rigging, rope and chains for material hoists. (a) *Hoisting rope.*

(1) *Types required.* Only wire rope of the improved plow steel classification or equivalent having a safety factor of not less than six shall be used with power-driven hoisting machinery, except for winchheads or capstan hoists where fibre rope may be used.

(2) *Fibre rope.* (i) Fibre rope shall be first grade manilla hemp or synthetic fibre. Means to prevent chafing shall be provided where necessary. Proper size blocks to accommodate the rope shall be used. Fibre rope shall be protected where acid or any other harmful or corrosive agent or chemical

is used. All fibre rope shall be stored in a dry condition and in a dry place protected from the elements.

(ii) Fibre rope that is unsound in any way or that shows the effects of severe wear, deterioration or abrasion shall not be used and shall be removed from the job site. Frozen rope shall be thawed before being used.

(3) *Wire rope.* (i) Wire rope shall be so handled and stored as to prevent kinks and shall be maintained lubricated to prevent corrosion. Wire rope that is kinked shall not be used on any material hoist. Wire rope shall be discarded and replaced when more than 10 percent of the total wires of any lay are broken. A rope lay is that distance measured along the rope in which one strand makes a complete revolution around the rope axis. Wire rope shall be discarded and replaced when the wires on the crown of the strand are worn down to less than 60 percent of their original cross-sectional area, when visual inspection indicates marked signs of corrosion, deterioration or abrasion and when any combination of broken wires and abrasion has reduced the original strength of the rope to 80 percent or less.

(ii) The ends of wire rope shall be securely attached to the hoist drums and at least four turns of rope shall remain on each drum at all times.

Exception: Attachment of the rope to the hoist drum shall not be required on traction type hoists.

(iii) Means shall be provided to prevent accidental contact with or damage to any hoisting rope. Such means shall consist of substantial covering, fencing or guarding by location.

(4) *Wire rope fastenings.* (i) Wire rope fastenings shall consist of zinc-filled sockets, wedge sockets with at least one rope clip above each socket, eye-splices with pear-shaped thimbles to fit the rope, proper size thimbles with rope clips or other approved fastenings.

(ii) Where clips are used as fastenings, the number used shall be in accordance with Table XVI of this Subpart.

(iii) The spacing between clips shall be at least six times the diameter of the rope. The U-bolts of clips shall be placed over the short ends of the ropes.

TABLE XVI

ROPE CLIP REQUIREMENTS

<i>Rope diameter</i>	<i>Minimum number of clips</i>
Up to and including 7/16 inch	2
Up to and including 5/8 inch	3
Up to and including 1 inch	4
Up to and including 1¼ inches	5
Up to and including 1½ inches	6
Up to and including 1¾ inches	7
Up to and including 2½ inches	8
Up to and including 3 inches	9

(b) *Sheaves.* Load-bearing sheaves for wire rope shall be of proper diameter and grooving to accommodate the rope but in no case shall such diameter be less than 20 times the diameter of the rope. Sheaves shall be maintained properly lubricated. Sheaves and blocks that are so excessively worn, damaged, deteriorated or otherwise defective as to cause or threaten to cause failure of the equipment shall not be used. Sheaves intended for use with fibre rope shall not be used with wire rope.

(c) *Fittings.* All hooks, shackles and other fittings subject to tension or shear shall be drop-forged. The use of deformed or damaged hooks, shackles, chains or other fittings is prohibited. All suspended pulley blocks, sheaves, well wheels or similar devices shall be moused or securely fastened or safety hooks shall be used.

(d) *Use of chains.* (1) Chains shall not be used as slings in hoisting operations except for the raising or lowering of wooden piles, large timbers, large pieces of masonry or large stones.

(2) Chains shall not be knotted nor shall they be shortened or spliced by the use of nails or bolts.

(3) Defective chains shall not be used.

(e) *Heat treating of chains.* The annealing or normalizing of chains shall be performed only by the manufacturer or his authorized agent.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-6.3 Material platform or bucket hoists. (a) *Design requirement.* Every material platform or bucket hoist erected after June 1, 1972 shall be designed by a professional engineer licensed to practice in the State of New York. The design plans and specifications for any such hoist shall be kept on the job site available for examination by the commissioner.

(b) *Material hoist towers.* (1) The tower of every material hoist shall be supported by a firm foundation of such dimensions and area as to adequately distribute the intended load so as not to exceed the safe load-bearing capacity of the supporting soil. Tower bracing shall be constructed of such material and shall be so installed as to secured tower stability and rigidity and to keep the tower plumb.

(2) Each such tower shall be secured with guys or rigid braces at each corner at intervals not to exceed 26 feet vertically. Tower guys shall be at least one-half inch diameter improved plow steel wire rope and shall be securely fastened to adequate anchorages with wire rope clips in accordance with Table XVI of this Subpart.

(3) The erection and dismantling of any material hoist tower shall be performed only under the direct supervision of a designated person experienced in this type of work. Timber hoist towers shall be erected only to a height necessary for the performance of the work and shall be extended in height only when the construction work has progressed sufficiently to provide for the anchorages and bracing heretofore required. Hoist towers constructed of metal shall not be erected to a height exceeding 50 feet above the highest portion of the buildings or other structures which may be used as suitable anchorages for guying such towers.

(4) Hoist towers shall be so constructed that there shall be at least four feet of clearance between the lowest point on the circumference of the cathead sheave and the highest point on the hoisting rope fastening on the car or bucket when such conveyance is at the uppermost terminal or landing.

(c) *Hoistway enclosures.* (1) *Interior.* Interior hoistways for material hoists shall be enclosed at every floor level to a height of at least eight feet on all sides except entrance openings. Such enclosures shall be constructed of wire mesh of not less than No. 18 U.S. gage steel with openings which will reject a one-half inch diameter ball or such enclosures shall be partitions of exterior grade plywood at least three-quarters inch thick, of wood slats not less than three-quarters inch thick installed horizontally and spaced not more than two inches apart or of

other material of equivalent strength. Such enclosures shall be adequately supported, braced and secured.

(2) *Enclosed exterior.* When any exterior hoistway for a material hoist is enclosed, such enclosure shall extend from the lowest terminal points to the cathead elevations on all sides except entrance openings. Such enclosures shall be constructed of wire mesh of not less than No. 18 U.S. gage steel with openings which will reject a one-half inch diameter ball.

(3) *Unenclosed exterior.* When any exterior hoistway for a material hoist is unenclosed, the following requirements shall apply:

(i) Such hoistway shall be enclosed at the ground or grade level to a height of at least six feet on all sides except entrance openings. Such enclosure shall be constructed of wire mesh of not less than No. 18 U.S. gage steel with openings which will reject a one-half inch diameter ball. Entrance openings of any such hoistway shall be provided with gates or bars in compliance with this Part (rule) except that sliding bars may be used in lieu of hinged bars. Such gates or bars shall be kept closed whenever the car is hoisted.

(ii) In addition to the enclosure of the hoist car as required by this Part (rule), each loading side of any such car shall be provided with a self-closing gate at least 66 inches in height, constructed of the same material as the car enclosure.

(iii) Where any point on a moving car or counterweight of a material hoist passes less than eight feet from a floor, roof, scaffold platform or other work surface or position, such floor, roof, scaffold platform or other work surface shall be provided with a partition at least six feet in height. Such partition shall extend horizontally at least five feet past the horizontal projection of the path of the car or counterweight. Such partition shall be at least equal in construction to hoistway enclosures as specified in this Part (rule).

(d) *Entrances to hoistways.* (1) All entrances to any hoistway used for material hoisting above the lowest loading terminal or grade entrance shall be guarded by substantial gates painted fluorescent orange or yellow. When closed, such gates shall guard the full width of the entrance openings. The top of each such gate shall be at least 36 inches in height above the floor surface when located two feet or more from the hoistway line. Any such gate located less than two feet from the hoistway line shall be not less than 66 inches in height above the floor surface. If such entrance gates are constructed with a grille, wire mesh, lattice or other openwork material, the openings therein shall reject a ball more than two inches in diameter. Any such gate shall have an underclearance of not more than two inches. Such entrance gates shall be either vertical sliding, horizontal sliding or swinging gates. Any swinging gate shall swing in the direction of egress from the car to the floor.

(2) At the lowest loading terminal or grade entrance, a wood or metal bar may be used to guard the entrance to a hoistway used for material hoisting. Such bar shall be painted fluorescent orange or yellow. Such bar shall be mechanically or electrically interlocked with the hoist car so that the bar shall be closed and locked before the car can leave the lowest terminal or grade level and cannot be opened until the car has returned to such level.

(3) Bars or pipes shall not be used to guard hoistway entrances at any level or floor above the lowest terminal or grade level.

(4) Gates at hoistway entrances above the lowest terminal or grade level shall be kept closed when the car is not at such entrances.

(e) *Car construction.* (1) Hoist cars used for material hoisting shall be enclosed from floor to crosshead with solid enclosures on all sides not used for loading or unloading. Every such hoist car shall be provided with overhead protection installed at the crosshead to protect any person from falling objects or materials. Such overhead protection shall consist of planking at least two inches thick, exterior grade plywood at least three-quarters inch thick or other material of equivalent strength.

(2) In lieu of solid enclosures, hoist cars may be enclosed with expanded metal of not less than No. 9 U.S. gage steel with openings which will reject a one and one-half inch diameter ball. Such enclosed cars shall also be provided with toeboards at least four inches in height on all sides except those used for loading and unloading.

(3) Car platforms shall be provided with securely fastened blocks and cleats to prevent the rolling of wheeled vehicles and the shifting of other equipment.

(f) *Guide rails.* The guide rails of material hoists shall be constructed of steel or sound, structural grade hardwood securely fastened at intervals so as not to deflect more than one-quarter inch during normal operation of the hoist.

(g) *Operation of hoist.* The operation of any hoist car, bucket or platform is prohibited whenever persons are climbing the hoist tower or working on any part of the tower below the cathead.

Exception: The platform, cage, car or bucket may be used to raise persons for authorized maintenance and repairs that cannot be done otherwise.

(h) *Protection of operator.* The operator of every hoisting machine used with material platform or bucket hoists shall be provided with overhead protection against falling objects or materials. Such overhead protection shall be equivalent to tight planking not less than two inches thick supported to develop its full strength.

(i) *Loading and roping of platform hoists.* The maximum safe capacity of each platform hoist shall be determined by using a factor of safety of eight. Such maximum safe capacity shall be posted conspicuously on the crosshead or side members of every such hoist and such capacity shall not be exceeded.

(j) *Thoroughfare.* Hoistways for material hoists shall not be located either partially or wholly over sidewalks, passageways or other areas to which persons have access unless a broken-rope safety device is provided for each such hoistway. Such safety devices shall be capable of stopping and holding the platform or bucket with its rated load. Such safety device requirement shall also apply to the counterweights of such hoists, if provided.

(k) *Riding.* Riding by any person on a material hoist is prohibited except for necessary inspection, maintenance and repairs. Signs to that effect shall be posted in conspicuous locations on both sides of the crosshead or side members and at every entrance to any such hoist. The legend on every such sign, in letters not less than one and one-half inches in height on contrasting backgrounds, shall read as follows:

"WARNING—RIDING BY ANY PERSON PROHIBITED"

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-7
PERSONNEL HOISTS

Sec.

23-7.1 General requirements
23-7.2 Temporary personnel or workmen's
hoists

Sec.

23-7.3 Temporary use of permanent
elevators

Historical Note

Subpart added, filed May 30, 1972 eff.
June 1, 1972.

Section 23-7.1 General requirements. (a) *Application of Subpart.* This Subpart applies to personnel hoists where the temporary use of permanent elevators is made or where temporary workmen's hoists are provided to transport persons to and from their working levels in the construction of buildings or other structures.

(b) *Maintenance.* Personnel hoisting equipment shall be maintained in good repair and in proper operating condition at all times. Inspections of such equipment shall be made with such frequency as to insure such maintenance and operation.

(c) *Operation.* Only trained, designated persons shall operate personnel hoists and such hoists shall be operated in a safe manner at all times.

Historical Note

Sec. added, filed May 30, 1972 eff. June
1, 1972.

23-7.2 Temporary personnel or workmen's hoists. (a) *Approval required.* Temporary personnel hoists shall not be placed in service until each such installation has been granted a special approval. The requirements of any such approval shall be applied in conjunction with all other requirements of this section.

(b) *Hoist towers.* (1) Every hoist tower used for a temporary personnel hoist shall be supported by a firm foundation of such dimensions as to adequately distribute the transmitted load so as not to exceed the safe load-bearing capacity of the ground upon which such tower is erected. Each such hoist tower shall be securely braced to the building or other structure so that such tower is held in a plumb vertical position, is stable, rigid and able to withstand wind pressure.

(2) Each such hoist tower shall be secured with guys or rigid braces at each corner at intervals not to exceed 26 feet vertically. Tower guys shall be at least one-half inch diameter improved plow steel wire rope and shall be securely fastened to adequate anchorages with wire rope clips as specified in Table XVI of Subpart 23-6 of this Part (rule). All building tie-ins shall be identified by metal tags bearing the legend: "WORKMEN'S HOIST—DO NOT REMOVE".

(3) Hoist towers shall be erected and dismantled only under the direct supervision of qualified, designated persons.

(4) Hoist towers shall be erected only to heights necessary for the performance of the work and shall be extended in height only when construction has progressed sufficiently in height in order to provide for the adequate anchorages and bracing required by this Subpart unless other safe and adequate guying can be provided.

(c) *Hoistway enclosures.* (1) *Interior.* Interior hoistways for temporary personnel hoists shall be fully enclosed at every floor except for entrance openings. Such enclosures shall be constructed of wire mesh of not less than No. 18 U.S. gage steel with openings which will reject a one-half inch diameter ball or such enclosures shall be partitions of exterior grade plywood at least three-eighths inch thick, of wood slats not less than three-quarters inch thick installed horizontally and spaced not more than two inches apart or of other material of equivalent strength. Such enclosures shall be adequately supported, braced and secured.

(2) *Enclosed exterior.* When exterior hoistways for personnel hoists are enclosed, such enclosures shall extend from the lowest terminal points to the cathead elevations on all sides except entrance openings. Such enclosures shall be constructed of wire mesh of not less than No. 18 U.S. gage steel with openings which will reject a one-half inch diameter ball.

(3) *Unenclosed exterior.* When exterior hoistways for personnel hoists are unenclosed, the following requirements shall apply:

(i) Every such hoistway shall be enclosed at the ground or grade level to a height of at least 10 feet on all sides except entrance openings. Such enclosures shall be constructed of wire mesh of not less than No. 18 U.S. gage steel with openings which will reject a one-half inch diameter ball. The entrance openings of such hoistways shall be guarded in compliance with this section.

(ii) Where any point on a moving car or counterweight passes less than eight feet from a floor, scaffold platform or other work surface or position, such floor, scaffold platform or other work surface so exposed shall be provided with a partition at least six feet in height. Such partition shall extend horizontally at least five feet past the horizontal project of the path of the car or counterweight. Such partition shall be at least equal in construction to hoistway enclosures as specified in this section.

(4) *Running clearances.* Every hoistway enclosure shall be so installed and reinforced in all areas subject to external pressure that the running clearances between car and enclosure cannot be reduced to less than one inch upon the application of any horizontal pressure of 100 pounds against any point on such enclosure.

(d) *Hoistway doors.* (1) Every entrance opening in any hoistway enclosure for a personnel hoist shall be provided with a solid door at least 78 inches in height which shall extend across the full width of the opening. Such door shall be provided with a vision panel securely covered with wire mesh. Such door shall be provided with a lock or latch which is openable from the hoistway side only and inaccessible from the landing side. Every such door shall have an under-clearance of not more than one-half inch.

Exception: Such entrance door at the lowest landing of any hoistway shall be provided with a means, accessible only to designated persons, for unlocking the door from the landing side.

(2) In normal service every hoistway door shall be locked or latched shut except when in use for passage to or from the car. No person except the car attendant shall open any such door.

(3) Hoistway entrance doors shall be hung to provide durability and shall be securely reinforced.

(e) *Car enclosures.* The car of every personnel hoist shall be permanently enclosed on all sides and the top except the side used for entrance or exit. Such enclosure shall be equivalent in strength to two-inch planking laid tight. The top of every such enclosure shall be provided with an emergency exit opening fitted with a hinged hatch cover. Such exit opening shall be not less than 16 inches in its smallest dimension and not less than 400 square inches in area.

(f) *Car doors or gates.* (1) Each landing side of any car used in a personnel hoist shall be provided with a door or gate at least six feet in height constructed of material at least as equivalent in strength as the car enclosure.

(2) Every opening in such door or gate shall be of such size and shape as to reject a three-inch diameter ball at any point.

(3) Every such car shall be equipped with an approved electrical contact so arranged that the car cannot be operated unless each door or gate is shut.

(g) *Wiring.* Wiring and other electrical equipment shall be of proper quality and properly installed. Electrical installations shall be in accordance with the 1971 National Electrical Code. Hoistway wiring may consist of heavy-duty rubber-covered traveling cable. All wiring and other electrical equipment exposed to the elements shall be weatherproof.

(h) *Lighting.* Inside the hoistway car and at each landing means for artificial lighting shall be provided. The insides of hoistway cars, landings and spaces occupied by hoisting machines shall be illuminated in compliance with this Part (rule) at all times.

(i) *Materials carried on personnel hoists.* Personnel hoists may be used for carrying material providing the rated load capacity of the hoists are not exceeded. When materials are being carried on such a hoist, only the person necessary for handling such materials shall be permitted to ride in the car, in addition to the operator. When concentrated loads are carried in such a hoist car, such loads shall not exceed 25 percent of the rated load.

(j) *Car attendant or operator.* (1) Any car of a temporary personnel hoist shall not be operated in service unless such car is in the charge of a designated person stationed in the car as its attendant or operator.

(2) No person other than such car attendant shall cause or permit the car to move or shall open any car door or gate or hoistway door. The car attendant shall not cause the car to move until he is sure that the car door or gate and the hoistway doors are closed.

(3) The car attendant shall not cause the car to move unless he is satisfied that the load being carried is prepared for movement.

(4) Persons designated as car attendants for temporary personnel hoists shall be over 18 years of age, trained, qualified and competent to operate the cars of such hoists.

(k) *Hoisting machine enclosures.* Where a hoisting machine is located inside a building or other structure, such machine shall be effectively guarded in compliance with this Part (rule). Where a hoisting machine is located outside a building or other structure, such machine shall be enclosed or barricaded in compliance with this Part (rule) and, in addition, shall be provided with substantial overhead protection. Such overhead protection shall consist of planking at least two inches thick full size, exterior grade plywood at least three-quarters inch thick or material of equivalent strength.

(l) *Communications.* A means of voice communication shall be provided for every temporary personnel hoist where such hoist is operated jointly by a car attendant and a hoisting machine operator stationed adjacent to the hoisting machine.

(m) *Inspection and testing.* Prior to use, initially and after any extension, every temporary personnel hoist shall be tested. Such testing shall be performed only by a designated person and shall consist of the following:

(1) A running test with rated load and at rated speed with stops at each landing.

(2) A test of the normal and final terminal stopping devices with no load carried in the upward direction and with full load carried in the downward direction.

(3) A test of the car safety device at rated load and at rated speed.

(4) A test of the car speed governor.

(5) A complete written report of every such test shall be made and signed

by the designated person making such tests. Such reports shall include the dates of the tests, the test loads and speeds involved and the results of such test. Such reports shall be kept in a log book on the job site available for examination by the commissioner.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-7.3 Temporary use of permanent elevators. (a) *Temporary use permitted.* Passenger or freight elevators being installed in buildings or other structures for permanent use may be used before completion of the building or other structure during construction to carry persons or material, or both, provided such elevators conform to the following requirements:

(b) *Hoistway enclosures.* The hoistway of any such elevator shall be enclosed with its permanent enclosure and permanent doors or such hoistway shall be enclosed with either solid or openwork material, except for access openings, as follows:

(1) Openwork enclosures shall be either wire mesh of at least No. 18 U.S. gage steel or expanded metal of at least No. 18 U.S. gage. The openings of such openwork material shall reject a one-half inch diameter ball. Such enclosures shall be provided with unperforated kick plates installed at every floor level above the lowest floor. Where a counterweight is provided such openwork enclosure shall be covered on the counterweight side with wire mesh of not less than No. 18 U.S. gage steel with openings that will reject a one-half inch diameter ball. Such mesh covering shall extend the full width of the counterweight plus one foot on each side.

(2) Solid enclosures shall consist of partitions of exterior grade plywood at least three-eighths inch thick or of other material of equivalent strength.

(3) Every such enclosure shall be so supported and braced that when subjected to a horizontal pressure of 100 pounds applied at any point the resulting deflection shall not exceed one inch and shall not reduce the running clearance to less than one inch.

(c) *Hoistway doors.* Where permanent hoistway doors are not in place, temporary hoistway doors shall be provided as follows:

(1) Every floor landing opening in a hoistway enclosure shall be provided with a solid door extending across the full width of the opening and not less than 78 inches in height. The clearance between the bottom of any such door and the floor shall be not less than one inch nor more than two inches. Each such door shall be provided with a vision panel of not more than 80 square inches in area. Every such vision panel shall be covered with wire mesh of No. 18 U.S. gage steel with openings which will reject a one-half inch diameter ball. Each such hoistway door shall be provided with a lock or latch which is openable from the hoistway side only and inaccessible from the landing side.

(2) If the hoistway door at the lowest terminal landing is locked automatically when closed with the car at the landing, such door shall be provided with a means to unlock it from the landing side to permit access to the car. Such means shall be accessible only to designated persons.

(3) Where such hoistway doors are of the vertical sliding type, they shall be of a type that requires counterweights. Provisions shall be made for the containment of the counterweights if their means of suspension should fail.

(d) *Elevator car.* Except where permanent elevator cars are used, temporary elevator cars used in permanent hoistways shall be constructed to conform to the following requirements:

(1) *Frame.* The frame of every such car shall consist of a safety plank and vertical stiles gusseted to a crosshead constructed of steel channels. Such frame

shall be designed and constructed to carry safely all the loads intended to be imposed thereon. Steel diagonal bracing shall be provided to support the four corners of the car platform.

(2) *Platform.* The platform of every such car shall consist of a channel steel or aluminum frame and steel or aluminum stringers assembled as a unit and secured to the safety plank. Platform flooring shall be constructed of steel or aluminum plate or of wood. If wood is used, it shall be of structural grade lumber not less than two inches thick and shall be protected on the underside by steel sheeting of at least No. 26 U.S. steel. Such flooring shall be securely fastened to the car platform.

(3) *Car enclosures.* Such temporary elevator cars shall be enclosed on the top and on all sides except those sides used as entrance and exit openings. Such enclosures shall consist of planking at least two inches thick, laid tight, or of other material of equivalent strength. The top of every such elevator car shall have an emergency exit opening in the enclosure of not less than 400 square inches in area with the least dimension at least 16 inches. Such emergency exit openings shall be provided with hinged hatch covers.

(4) *Car doors or gates.* (i) Each such car shall be provided with a car door or gate on the landing side. Such door or gate shall be at least six feet in height and shall be of construction equivalent in strength to that of the car enclosure.

(ii) Every opening in such car door or gate shall be of such size and shape as to reject a three-inch diameter ball.

(iii) Every such car door or gate shall be equipped with an approved electric contact so arranged that the car cannot be operated unless the door or gate is within two inches of full closure. Such electric contact shall not be readily accessible from within the car.

(iv) Such car doors or gates shall be of the horizontally or counter-weighted vertically sliding type. Where a horizontal gate is used, such gate may be arranged to swing inward when fully collapsed.

(5) *Car controls.* The car controls of such elevators shall be so arranged that such cars can be operated or controlled only from within the cars.

(e) *Elevator operators.* Such elevator cars shall be operated only by competent, trained, designated persons.

(f) *Testing.* Prior to the initial use of any temporary elevator installed in a permanent hoistway, such elevator shall be tested by a designated person. Such testing shall be in accordance with the following requirements:

(1) The car of such elevator shall be loaded to its rated capacity and operated at its rated speed to the upper and lower limits of its travel at least twice in order to test the operation of the upper and lower automatic limit devices as well as the operation of the hoisting machine brake at various levels of the hoistway.

(2) With the rated load in place, the car safeties shall be actuated by tripping the governor by hand while the car is traveling downward at rated speed.

(3) Such test shall be repeated with no load at least once every month while the elevator is in use by operating at a slow speed and tripping the governor by hand.

(4) A written report of each test shall be made and signed by the designated person making such tests. Such reports shall include the dates, test loads and speeds involved as well as the test results. Such written reports shall be kept in a log book on the job site available for examination by the commissioner.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-8

MOBILE CRANES, TOWER CRANES AND DERRICKS

Sec.

- 23-8.1 General provisions
23-8.2 Special provisions for mobile cranes
23-8.3 Special provisions for tower cranes

Sec.

- 23-8.4 Special provisions for derricks
23-8.5 Special provisions for crane operators

Historical Note

Subpart added, filed May 30, 1972 eff.
June 1, 1972.

Section 23-8.1 General provisions. (a) *Stability and strength.* Mobile cranes, tower cranes and derricks used in construction, demolition and excavation operations shall be so constructed, placed and operated as to be stable. No component or part of any such crane or derrick shall be stressed beyond its rated capacity as determined by the manufacturer or builder.

(b) *Inspection.* (1) Every mobile crane, tower crane and derrick shall be thoroughly inspected by a competent, designated employee or authorized agent of the owner or lessee of such mobile crane, tower crane or derrick at intervals not exceeding one month. Such inspections shall include but not be limited to all blocks, shackles, sheaves, wire rope, connectors, the various devices on the mast or boom, hooks, controls and braking mechanisms.

(2) A written, dated and signed record of each such inspection shall be completed by the competent, designated employee or authorized agent who made the inspection on an inspection form provided by the commissioner. The most recent record of inspection of a mobile crane, tower crane or derrick shall be posted inside the cab of such crane or derrick under a transparent protective covering or shall be filed in an office on the job site available for examination by the commissioner. Attached to such record of inspection shall be a written designation naming the competent employee or authorized agent. Such attached designation shall be signed by the owner or lessee of such mobile crane, tower crane or derrick.

(3) Every mobile crane, tower crane and derrick shall be inspected before being erected or operated for the first time on any job.

(4) Adjustments and repairs to mobile cranes, tower cranes and derricks shall be made only by competent, designated persons.

(5) A preventive maintenance program shall be established for each mobile crane, tower crane and derrick based on the manufacturer's recommendations. Dated and detailed records of such programs shall be available on the job site for examination by the commissioner.

(c) *Footings.* A firm footing shall be provided for every mobile crane, tower crane and derrick.

(d) *Hoisting mechanism brakes and locking devices.* (1) Every power-operated mobile crane, tower crane and derrick shall be provided with hoisting mechanism brakes capable of sustaining at rest one and one-half times the maximum rated load on a single part line. Hand or foot operated brakes shall be provided with a substantial locking device to lock any such brake in engagement. Pedals of foot-operated brakes shall be constructed so that the operators' feet cannot easily slip off. Nonslip pedal surfaces are acceptable for this purpose.

(2) Power-controlled lowering devices, when provided, shall be capable of handling rated loads and speeds in order to provide precision lowering and reduce demands on the brake loads.

Exception: This paragraph does not apply to any mobile crane provided with a clamshell or dragline used in excavation operations.

(8) Electrically-driven mobile cranes, tower cranes and derricks shall be provided with devices which will automatically hold the loads in cases of power failure.

(e) *Load handling.* (1) Mobile cranes, tower cranes and derricks shall not be loaded beyond their rated capacities.

(2) Hoisting ropes for concrete buckets used with mobile cranes, tower cranes or derricks shall be provided with safety hooks or closed shackles.

(3) Where slings are used to hoist material of long length, spreader bars shall be used to space and keep the sling legs in proper balance.

(4) Reinforcing rods, conduit and lumber, when of uneven lengths as well as column clamps and similar items which cannot be easily secured to form safe drafts or loads shall be hoisted in boxes. Each such box shall be substantially constructed and supported from its four corners by individual lengths of wire rope having spliced or clipped loops for attachment to the load line. The construction and suspension of each such box shall be capable of holding at least four times the load for which it is intended.

(5) In steel erection, when a load is suspended from a mobile crane, tower crane or derrick at two or more points with slings, the eyes of the lifting legs of the slings shall be shackled together and this shackle or the eyes of the shackled slings shall be placed on the hook. Alternatively, the eyes of the lifting legs may be shackled directly to the hoisting block, ball or balance beam. The eyes may be placed on the lifting hook without shackles if the hook is of the safety type.

(6) No more than one load shall be suspended from the same load line of a mobile crane, tower crane or derrick at one time.

(f) *Hoisting the load.* (1) Before starting to hoist with a mobile crane, tower crane or derrick the following inspection for unsafe conditions shall be made:

(i) The hoisting rope shall be free from kinks.

(ii) Multiple part lines shall not be twisted around each other.

(iii) The hook shall be brought over the load in such manner and location as to prevent the load from swinging when hoisting is started.

(iv) The load is well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

(v) If there is a slack rope condition, it shall be determined that the hoisting rope is properly seated on the drum and in the sheaves.

(2) During the hoisting operation the following conditions shall be met:

(i) There shall be no sudden acceleration or deceleration of the moving load unless required by emergency conditions.

(ii) The load shall not contact any obstruction.

(3) The side loading of booms on mobile cranes, tower cranes and derricks shall be limited to freely suspended loads.

(4) Mobile cranes, tower cranes and derricks shall not be used for dragging loads sideways.

(5) Mobile cranes, tower cranes and derricks shall not hoist, lower, swing or travel while any person is located on the load or hook.

(6) Mobile cranes, tower cranes and derricks shall not hoist or carry any load over and above any person except as otherwise provided in this Part (rule).

(7) The operator of any mobile crane, tower crane or derrick shall not leave his position at the controls while any load is suspended nor shall any person be permitted to work or pass under a stationary suspended load.

(g) *Limitations on modifications of mobile cranes, tower cranes or derricks.* No load-bearing component or part of any mobile crane, tower crane or power-driven derrick shall be replaced by another component or part nor shall any mobile crane, tower crane or derrick be modified by the addition thereto or the removal therefrom of any load-bearing component or part unless such replacement or modification shall be as certified by either the manufacturer or builder of such crane or derrick or by a professional engineer licensed to practice in the State of New York.

(h) *Cast iron.* Cast iron shall not be used for members or parts of any mobile crane, tower crane or derrick subject to tension or torsion except for brake and clutch drums.

(i) *Guarding moving parts.* Exposed moving components or parts of mobile cranes, tower cranes and derricks such as gears, set screws, projection keys, chains, chain sprockets and reciprocating parts which might constitute a hazard under normal operating conditions shall be guarded and such guards shall be securely fastened in place. Each such guard shall be capable of supporting without permanent distortion the weight of a 200 pound man, unless such guard is located where it is impossible for a person to step or ply his weight on it.

(j) *Protection from the elements.* Friction brakes and clutches of mobile cranes, tower cranes and derricks shall be provided with adequate protection from the elements.

(k) *Wire ropes and reeving accessories.* (1) *Rope safety factors.* Wire rope provided for use on any mobile crane, tower crane or derrick shall be in compliance with the safety factor requirements listed as follows:

(i) For supporting rated loads (including boom suspensions):

(a) The safety factor for live or running ropes that wind on drums or pass over sheaves shall be not less than 3.5.

(b) The safety factor for boom pendants or standing ropes shall be not less than 3.0.

(ii) For supporting the boom and working attachments at recommended travel or transit positions and boom lengths:

(a) The safety factor for live or running ropes shall be not less than 3.5.

(b) The safety factor for boom pendants and standing ropes shall be not less than 3.0.

(iii) For supporting the boom under recommended boom erection conditions:

(a) The safety factor for live or running ropes shall be not less than 3.0.

(b) The safety factor for boom pendants or standing ropes shall be not less than 2.5.

(iv) The safety factors specified in subparagraphs (i), (ii) and (iii) above shall be determined on the basis of rope loads resulting from crane or derrick manufacturers' ratings, with approved reeving, published nominal breaking strengths of new ropes and with load and boom stationary.

(2) *Hoisting rope.* When the hook of the hoist of any mobile crane, tower crane or derrick is resting on the ground or equivalent elevation at least two full wraps of the hoisting rope shall remain on the drum of such crane or derrick.

(3) *Replacement rope.* Replacement ropes for any mobile crane, tower crane or derrick shall be at least the equivalent in strength and grade as the original ropes furnished by the manufacturer or builder of such crane or derrick.

(4) *Eye splices.* Eye splices shall be made in an acceptable manner and rope thimbles shall be used in the eye.

(5) *U-bolt clips.* U-bolt clips shall have the U-bolt section on the dead or short end, and the saddle on the live or long end of the rope. Spacing and number of clips shall be in accordance with manufacturer's recommendation. Clips shall be of drop-forged steel. When a newly installed rope has been in operation for at least one hour, all nuts on the clip bolts shall be re-tightened and they shall be re-checked for tightness at monthly intervals thereafter.

(6) *Special fittings.* Swaged, compressed or wedge-socket fittings shall be applied as recommended by the manufacturer of the rope or fittings or by the manufacturer or builder of the mobile crane, tower crane or derrick.

(7) *Rope inspection.* (i) *Daily.* All running ropes in continuous service on a mobile crane, tower crane or derrick shall be visually inspected at least once every working day.

(ii) *Monthly.* All ropes in use on a mobile crane, tower crane or derrick shall be thoroughly inspected by a competent, designated person at least once a month. A full written, dated and signed report of each such inspection, which shall include the condition of all ropes, shall be kept on file on the job site available for examination by the commissioner. Any rope damage or deterioration which might result in appreciable loss of original rope strength shall be carefully noted and a determination shall be made by the designated person as to whether continued use of such damaged or deteriorated rope constitutes a hazard.

(l) *Lubrication.* (1) *Sheave bearings.* All sheave bearings on mobile cranes, tower cranes and derricks shall be regularly lubricated according to the recommendations of the manufacturers or builders of such cranes or derricks.

(2) *Moving parts.* All moving parts of mobile cranes, tower cranes and derricks for which lubrication is specified, including ropes and chains, shall be regularly lubricated. Lubricating systems shall be frequently checked for proper delivery of the lubricant. Lubricating points shall be accessible without moving guards or other parts.

(m) *Operation near power lines.* The operation of any mobile crane, tower crane or derrick near or around any power line or power facility shall be done only in accordance with the provisions of Subpart 23-1 of this Part (rule).

(n) *Use of mobile cranes in concrete work.* In building construction where concrete is raised by mobile cranes, such loads raised to elevations more than 150 feet shall be deposited or discharged only in hoppers or other appropriate facilities which are so located as to permit operation of the boom of any such crane at a minimum load radius.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-8.2 *Special provisions for mobile cranes.* (a) *Inspection.* (1) A mobile crane which is moved from one job site to another without dismantling beyond the folding of the boom and such additional dismantling as may be necessary for that purpose is not required to be inspected before being first erected or operated on each job site to which it is moved, providing the monthly inspections are performed on schedule.

(2) The inspection and repair of mobile crane booms shall be made only when such booms are lowered and adequately supported.

(b) *Footings and outriggers.* (1) *Footings.* A firm footing shall be provided for every mobile crane. Where such firm footing is not naturally available, it shall be provided by substantial timbers, cribbing or other structural members

sufficient to distribute the load so as not to exceed the safe bearing capacity of the underlying material.

(2) *Outriggers.* (i) Means shall be provided to hold all outriggers of mobile cranes in their retracted positions while such cranes are traveling and in their extended positions when blocked for hoisting.

(ii) Where used on mobile cranes, power-operated jacks shall be provided with means to prevent loss of jack support under load.

(iii) Each outrigger on a mobile crane shall be visible from its actuating location.

(iv) Means shall be provided to securely fasten outrigger floats to the outriggers when in use.

(c) *Hoisting the load.* (1) Before hoisting a load the person directing the lift shall see that the mobile crane is level and, where necessary, blocked.

(2) Before hoisting any load at a new job site, the boom of a mobile crane shall be test operated to its maximum height.

(3) Loads lifted by mobile cranes shall be raised vertically so as to avoid swinging during hoisting except when such operations are permitted by the capacity chart. A tag or restraint line shall be used when rotation or swinging of any load being hoisted by a mobile crane may create a hazard.

(4) When a mobile crane is operated at a fixed radius, the boom-hoist pawl or other positive locking device shall be engaged.

(d) *Mobile crane travel.* (1) A mobile crane traveling to or from one job site to another or traveling on a street or highway shall not carry any jibs, attachments, buckets or other devices or material attached in any way to the boom whether the boom is in the folded position or not.

Exception: A hydraulic crane where the jib is permanently hinged to the boom or any crane where the manufacturer authorizes that the design of such crane guarantees the safe transport of the jib or other attachments.

(2) Mobile cranes shall not travel with suspended loads unless such crane is under the control of a competent, designated person who shall be responsible for the position of the load, boom location, ground support, travel route and speed of movement.

(3) A mobile crane, with or without load, shall not travel with the boom so high that it may bounce back over the cab.

(e) *Counterweights for mobile cranes.* Counterweights shall be provided for and used on mobile cranes as specified by the manufacturers or builders of such cranes or by professional engineers licensed to practice in the State of New York. A mobile crane shall not be operated without the full amount of ballast or counterweight in place. Mobile cranes that do not have the ballast or counterweight attached may be operated temporarily with special care when handling light loads. The ballast or counterweight in place on any mobile crane shall not exceed the manufacturer's or builder's specifications.

(f) *Mobile crane construction.* (1) *Booms.* (i) Booms, boom sections and jibs of every mobile crane shall be constructed of suitable steel and shall be used only for the purposes recommended by the manufacturer or builder of such mobile crane.

(ii) The boom of any mobile crane shall not be raised from the level of the surface on which the crane rests other than by the use of its own hoisting capabilities. The design, construction and length of any boom shall be such

that there is no undue stress imposed on the crane structure or mechanism during such raising operations.

(iii) Boom stops shall be provided on mobile cranes to prevent over-topping.

(iv) Any boom extension used on a mobile crane which is not provided by the manufacturer or builder of the crane shall be designed by a professional engineer licensed to practice in the State of New York. A copy of the design plans for such boom extension shall be kept at the job site available for examination by the commissioner.

(2) *Braking mechanism.* In addition to the hoisting mechanism brakes required by this Subpart, every mobile crane shall be provided with the following:

(i) An adequate braking mechanism for the boom hoist.

(ii) A swing lock or swing brake capable of preventing rotation.

(iii) A brake or other equivalent device adequate to bring the mobile crane to a stop from any travel for which such crane is designed, together with a means of locking such mobile crane so as to hold it stationary.

(3) *Boom sheave guard.* The sheave at the end of a mobile crane boom on which the hoisting rope operates shall be provided with a guard to prevent the rope from leaving the sheave in case of rope slack or any other condition.

(g) *Mobile crane capacity charts.* (1) *Load ratings for mobile cranes.* (i) Load ratings shall not exceed the percentages listed in Table XVII of this Subpart of the tipping loads for mobile cranes.

(ii) The stability of mobile cranes will be influenced by such factors as freely suspended loads, track, wind or ground conditions, condition and inflation of tires, boom lengths and proper operating speeds for existing conditions. All such factors shall be taken into account in determining mobile crane stability.

TABLE XVII
MAXIMUM LOAD RATINGS FOR MOBILE CRANES

<i>Type of mobile crane mounting</i>	<i>Maximum load ratings (Percentages of tipping loads)</i>
Crawler without outriggers	75
Crawler, outriggers fully extended	85
Truck and wheel mounted (with or without outriggers fully extended)	85

(2) *Mobile crane capacity chart required.* (i) Every mobile crane shall be provided with a capacity chart which shall be posted and maintained clearly legible in the cab of the crane visible to the crane operator from his operating position. Such chart shall set forth the safe loads which may be hoisted by such crane at various lengths of boom at various boom angles and radial distances. Where outriggers are provided, such safe loads shall be set forth on the capacity chart with and without the use of the outriggers. Such chart shall also indicate whether or not such handling accessories as hooks, blocks and slings are included.

(ii) Unless furnished by the manufacturer or builder of the mobile crane, the required capacity chart shall be prepared and certified by a professional engineer licensed to practice in the State of New York and a copy thereof submitted, on request, to the commissioner.

(iii) No load shall be lifted by any mobile crane that exceeds the relevant maximum specified by its capacity chart.

(h) *Boom angle indicator.* Every mobile crane having either a boom exceeding 40 feet in length or a maximum rated capacity exceeding 15 tons shall be provided with an approved boom angle indicator. Such boom angle indicator shall indicate the boom angle in degrees and shall be clearly visible to the mobile crane operator from his operating position at all times. Such boom angle indicator shall emit a visible or audible warning signal whenever the boom angle is unsafe.

Exception: Boom angle indicators are not required to be operative when such mobile cranes are used for excavation work with clamshells or dragline buckets.

(i) *Unauthorized operation.* The operator's cab of every mobile crane shall be kept locked whenever the operator is not present. No unauthorized person shall enter the cab of or remain immediately adjacent to any mobile crane in operation. Ignition locks, locking bars or other equivalent devices shall be provided to prevent unauthorized operation of mobile cranes.

(j) *Operation of a mobile crane with a demolition ball.* In addition to the general requirements of this Part (rule) for mechanical demolition, the operation of a mobile crane with a demolition ball shall be subject to the following provisions:

(1) The weight of any demolition ball shall not exceed 50 percent of the safe load capacity of the boom length used at its lowest angle of operation.

(2) During operation with a demolition ball the swing of the boom shall not exceed 30 degrees from the center line, front to back, of the crane mounting.

(3) The windows of such crane cabs shall be constructed of shatterproof glass or shall be protected by adequate metal screens.

(4) The load line and the attachment of the demolition ball to the load line shall be inspected at least twice daily.

(5) Truck-mounted mobile cranes without outriggers shall not be used with a demolition ball.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-8.3 Special provisions for tower cranes. (a) *Tower crane erection.* (1) Every tower crane used in construction shall be erected in accordance with the manufacturer's recommendations and under the supervision of a competent, designated person experienced in tower crane erection.

(2) Prior to the erection of any tower crane the ability of the supporting system, including slabs, foundations and the underlying soil to support the loads intended to be imposed thereon shall be certified by a professional engineer licensed to practice in the State of New York.

(3) Tower cranes shall be erected so that the jibs and counterweights can swing 360 degrees without striking any building, structure or any other object.

(4) Prior to initial use, a newly erected tower crane shall undergo a static overload test in the direction of least stability. Such test shall consist of suspending a load at the rated load and at the maximum radius for a period of at least one hour. Subsequent to such test, settlement of the equipment and load-bearing foundation shall be within the limits specified by the tower crane manufacturer. A written report of such test shall be kept on the job site available for examination by the commissioner.

(b) *Tower crane capacity chart.* Every tower crane shall be provided with a capacity chart which shall be posted and maintained legible in the cab of the crane clearly visible to the operator from his operating position. Where a remote control stand is used a duplicate of such capacity chart shall be affixed to such control stand. Such capacity chart shall be furnished by the manufacturer of the crane and shall

include a full and complete range of crane load ratings at all stated operating radii for each allowable speed and for each recommended counterweight loading.

(c) *Tower crane construction.* (1) *Limit switches.* Limit switches which shall be sealed against unauthorized tampering shall be provided as follows:

(i) To limit trolley travel at either end of the jib.

(ii) To limit load block upward motion to prevent two-blocking.

(iii) To limit the load being lifted to no more than 110 percent of the rated load upon completion of the static overload test as specified in paragraph (a) (4) of this section 23-8.3, above.

(2) *Cabs and remote control stations.* (i) Tower crane cabs and remote control stations for such cranes shall be protected from falling objects and material and from the elements.

(ii) Cab windows shall be constructed of transparent safety glazing material and shall provide clear visibility in all directions.

(iii) Cabs and remote control stations for tower cranes shall be heated to a temperature of at least 60 degrees Fahrenheit during cold weather whenever occupied.

(iv) Cabs and remote control stations for tower cranes shall be adequately ventilated.

(3) *Accessibility.* Adequate and safe means of access to and egress from the cabs and machinery platforms of tower cranes shall be provided. Where it is necessary to inspect the jib attachments located on the jib of any tower crane, a footwalk with suitable handrails shall be provided for such inspections.

(4) *Brakes.* In addition to the hoisting brakes required by this Subpart, tower cranes shall be provided with the following:

(i) *Slewing brake.* Every tower crane shall be provided with a brake having adequate holding power in either direction to prevent movement of the jib when desired during normal crane operation. Such brake shall be capable of being set in the holding position and kept there without attention from the operator.

(ii) *Trolley brake.* The trolley of every tower crane shall be provided with an automatic brake or device capable of stopping movement of the trolley in case of trolley rope breakage.

(5) *Electrical equipment.* (i) All electrical equipment of tower cranes shall be grounded.

(ii) All tower cranes shall be provided with lightning protection.

(iii) All controls of tower cranes shall be of the deadman type.

(iv) In the event of power failure, all tower crane brakes shall be set automatically.

(6) *Climbing jacks.* Where climbing jacks are provided for tower cranes such jacks shall be equipped with over-pressure relief valves, pressure gages and check valves designed to retain pressure in case of hydraulic line failure.

(7) *Wind velocity device.* Every tower crane shall be provided with a device for measuring wind velocity. The sensing portion of every such device shall be mounted on the highest point of the crane while the readout of every such device shall be located in the cab or remote control station of the tower crane.

(8) *Counterweights.* Counterweights used on tower cranes shall be in accordance with the manufacturers' recommendations. Counterweights shall be securely fastened to the counter jib to prevent pieces from being accidentally dislodged.

(d) *Inspection and maintenance.* (1) Tower cranes shall be inspected and maintained in accordance with the manufacturers' recommendations.

(2) Where the mast of any tower crane runs through floor openings in the building or other structure in which the crane is mounted and the mast is secured by wedges or braces, such wedges or braces shall be inspected for tightness and dislocation at least twice each working day.

(e) *Operation of tower cranes.* (1) Operators. Tower cranes shall be operated only by persons who are qualified in accordance with the provisions of section 23-8.5 of this Subpart.

(2) Operation in windy conditions. Tower cranes shall not be operated when the wind speed is at any time greater than 30 miles per hour. Tower cranes shall not be raised to new operating levels when the wind speed exceeds 20 miles per hour.

(3) Operation without counterweight prohibited. No tower crane shall be operated without the full amount of ballast or counterweight in place as specified by the manufacturer or builder of the crane or by a professional engineer licensed to practice in the State of New York.

Historical Note

Sec. filed May 30, 1972 eff. June 1, 1972.

23-8.4 Special provisions for derricks. (a) *Bracing of foot blocks.* The foot blocks of every derrick shall be securely supported and firmly anchored against movement in any direction.

(b) *Guys.* (1) Number and spacing. The top of any guy derrick mast more than 25 feet in height shall be steadied by not less than six wire rope guys so spaced as to make the angles between adjacent guys approximately equal.

(2) Attachment. Wire rope guys shall be secured by either weldless steel sockets, thimble and splice connections, thimbles with proper size and numbers of rope clips or cast steel guy plates having grooved bearing surfaces of the same shape and size as the wire rope thimbles, using a spliced or wire rope clip attachment.

(3) Anchoring. Guys shall be attached to strong permanent construction or to substantial "dead men" securely anchored in the ground.

(c) *Breast-type derricks.* Breast-type derricks shall be guyed from both the front and rear. Where front guys are not possible because of derrick operation, provisions shall be made to prevent such derricks from tipping over backward. Breast-type derricks which are operated by hand power shall have hand grips securely and positively fastened to the shaft and a ratchet and pawl shall be provided which will hold any load.

(d) *Derrick construction.* (1) Materials. The mast, boom, frame and similar parts of a derrick shall be constructed of suitable steel or of selected wood of proper strength and durability.

(2) Mast fittings. On derricks which have booms larger than the masts, the gudgeon pins, mast tops and goosenecks shall be securely fastened to the tops of the masts to prevent such parts from pulling out when the booms are raised.

(e) *Derrick capacity charts.* (1) A capacity chart shall be provided for every derrick and such chart shall be posted conspicuously on the job site. Unless furnished by the manufacturer or builder of the derrick, the capacity chart shall be prepared and certified by a professional engineer licensed to practice in the State of New York and a copy thereof shall be submitted, upon request, to the commissioner.

(2) A derrick shall not lift any load that exceeds the relevant maximum specified on its capacity chart.

(f) *Derrick boom raising.* The boom of any derrick shall not be raised from the level of the surface on which the derrick rests other than by the use of its own hoisting capabilities. The design, construction and length of the boom shall be such that there is no undue stress imposed on the derrick structure or mechanism during such raising operations.

Historical Note

Sec. filed May 30, 1972 eff. June 1, 1972.

23-8.5 Special provisions for crane operators. (a) *Finding of fact.* The board finds that the trade or occupation of operating cranes of the type described in subdivision (b) of this section, in construction, demolition and excavation work involves such elements of danger to the lives, health and safety of persons employed in such trade or occupation as to require special regulations for their protection and for the protection of other employees and the public in that such cranes may fall over, collapse, contact electric power lines, dislodge material and cause such material to fall or fail to support intended loads and convey them safely, unless such cranes are operated by persons of proper ability, judgment and diligence.

(b) *Limited application of this section.* This section applies only to mobile cranes having a manufacturers' maximum rated capacity exceeding five tons or a boom exceeding forty feet in length and to all tower cranes operating in construction, demolition and excavation work. The word crane as used in this section refers to tower cranes and to such mobile cranes of the following type: a mobile, carrier-mounted, power-operated hoisting machine utilizing hoisting rope and a power-operated boom which moves laterally by rotation of the machine on the carrier.

(c) *Certificate of competence required.* No person, whether the owner or otherwise, shall operate a crane in the State of New York unless such person is a certified crane operator by reason of the fact that:

(1) he holds a valid certificate of competence issued by the commissioner to operate a crane; or

(2) he is at least 21 years of age and holds a valid license issued by the Federal government, a State government or by any political subdivision of this or any other State and such license has been accepted in writing by the commissioner as equivalent to a certificate of competence issued by him; or

(3) he is a person who:

(i) is at least 21 years of age and is employed by the Federal government, the State or a political subdivision, agency or authority of the State and is operating a crane owned or leased by the Federal government, the State or such political subdivision, agency or authority and his assigned duties include operation of a crane;

(ii) is at least 21 years of age and is employed only to test or repair a crane and is operating it for such purpose while under the direct supervision of a certified crane operator; or under the direct supervision of a person employed by the Federal government, the State or a political subdivision, agency or authority of the State and his assigned duties include the operation of a crane;

(iii) an apprentice or learner who is at least 18 years of age and who has the permission of the owner or lessee of a crane to take instruction in its operation and is operating such crane under the direct supervision of a certified crane operator or under the direct supervision of a person employed by the Federal government.

the State or a political subdivision, agency or authority of the State and whose assigned duties include the operation of a crane.

(d) *Application forms and photographs.* An application for a certificate of competence or for a renewal thereof shall be made on forms provided by the commissioner. Upon notice from the commissioner to an applicant that a certificate of competence or a renewal thereof will be issued to him, the applicant must forward photographs of himself in such numbers and sizes as the commissioner shall prescribe, and such photographs must have been taken within 30 days of the request for such photographs.

(e) *Physical conditions.* No person suffering from a physical handicap or illness, such as epilepsy, heart disease, or an uncorrected defect in vision or hearing, that might diminish his competence, shall be certified by the commissioner.

(f) *Experience required.* An applicant for a certificate of competence must be at least 21 years of age and must have had practical experience in the operation of cranes for at least three years and, in addition, have a practical knowledge of crane maintenance.

(g) *Examining board.* The commissioner may appoint an examining board which shall consist of at least three members, at least one of whom shall be a crane operator who holds a valid certificate of competence issued by the commissioner, and at least one of whom shall be a representative of crane owners. The members of the examining board shall serve at the pleasure of the commissioner and their duties will include:

- (1) the examination of applicants and their qualifications, and the making of recommendations to the commissioner with respect to the experience and competence of the applicants;

- (2) the holding of hearings regarding appeals following denials of certificates;

- (3) the holding of hearings prior to determinations of the commissioner to suspend or revoke certificates, or to refuse to issue renewals of certificates;

- (4) the reporting of findings and recommendations to the commissioner with respect to such hearings;

- (5) the acts and proceedings of the examining board shall be in accordance with regulations issued by the commissioner.

(h) *General examination.* Each applicant for a certificate of competence will, and each applicant for a renewal thereof may, be required by the commissioner to take an appropriate general examination.

(i) *Operating examination.* An applicant who passes the general examination will also be required to take a practical examination in crane operation, except that the commissioner may waive this requirement with respect to an applicant for a renewal of a certificate of competence.

(j) *Contents of certificate.* Each certificate of competence issued shall include the name and address of the certified crane operator, a brief description of him for the purpose of identification and his photograph.

(k) *Term of certificate.* Each certificate of competence or renewal thereof shall be valid for three years from the date issued, unless its term is extended by the commissioner or unless it is sooner suspended or revoked. The commissioner may extend the term of any certificate of competence as he may find necessary to relieve a certified operator of unnecessary hardship.

(l) *Carrying certificate.* Each certified crane operator shall carry his certificate on his person when operating any crane and failure to produce the certificate upon request by the commissioner shall be presumptive evidence that the operator is not certified.

(m) *Renewals.* An application for renewal of a crane operator's certificate of competence shall be made within one year from the expiration date of the certificate sought to be renewed, except that the commissioner may extend the time to make such application to prevent any undue hardship to a certified crane operator.

(n) *Suspension, revocation, refusal to renew, denials of certificates, hearings.*

(1) The commissioner may, upon notice to the interested parties and after a hearing before the examining board, suspend or revoke a certificate of competence upon finding that the certified operator has failed to comply with an order of the commissioner or that the certified operator is not a person of proper competence, judgment or ability in relation to the operation of cranes, or for other good cause shown.

(2) Prior to a determination by the commissioner not to renew a certificate of competence, the commissioner shall require a hearing before the examining board upon notice to the interested parties.

(3) (i) An applicant whose application for a certificate has been denied by the commissioner may, upon his written request made to the commissioner within 30 days after the mailing or personal delivery to him of a notice of such denial, have a hearing before the examining board.

(ii) Such hearing shall be held by the examining board which shall make its recommendations to the commissioner within three days after such hearing has been concluded. A written notice of the commissioner's decision, containing the reasons therefor, shall be promptly given to the certified operator or applicant, as the case may be, and to any interested parties who appeared at the hearing. Every such hearing shall be held in accordance with such regulations as the commissioner may establish.

Historical Note

Sec. filed May 30, 1972; amd. filed April 2, 1991
eff. April 17, 1991. Amended (b).

SUBPART 23-9

POWER-OPERATED EQUIPMENT

Sec.	Sec.
23-9.1 Application of this Subpart	23-9.6 Aerial baskets
23-9.2 General requirements	23-9.7 Motor trucks
23-9.3 Conveyors and cableways	23-9.8 Lift and fork trucks
23-9.4 Power shovels and backhoes used for material handling	23-9.9 Power buggies
23-9.5 Excavating machines	23-9.10 Pile drivers
	23-9.11 Mixing machines

Historical Note

Subpart filed May 30, 1972 eff. June 1, 1972.

Section 23-9.1 Application of this Subpart. The provisions of this Subpart shall apply to power-operated heavy equipment or machinery used in construction, demolition and excavation operations. These provisions shall not apply to material or personnel hoists (see Subpart 23-6) nor to cranes and derricks (see Subpart 23-8).

Historical Note

Sec. filed May 30, 1972 eff. June 1, 1972.

23-9.2 General requirements. (a) *Maintenance.* All power-operated equipment shall be maintained in good repair and in proper operating condition at all times. Sufficient inspections of adequate frequency shall be made of such equipment to insure such maintenance. Upon discovery, any structural defect or unsafe

[continued]

condition in such equipment shall be corrected by necessary repairs or replacement. The servicing and repair of such equipment shall be performed by or under the supervision of designated persons. Any servicing or repairing of such equipment shall be performed only while such equipment is at rest.

(b) *Operation.* (1) All power-operated equipment used in construction, demolition or excavation operations shall be operated only by trained, designated persons and all such equipment shall be operated in a safe manner at all times.

(2) Operators of power-operated material handling equipment shall remain at the controls while any load is being handled.

(c) *Loading.* Power-operated material handling equipment shall not be loaded in excess of the manufacturer's design live load rating. All loads shall be properly trimmed to prevent dislodgment of any part of such loads during transit.

(d) *Protection of moving parts.* Gears, belts, sprockets, drums, sheaves and any points of contact between moving parts of power-operated equipment or machines when not guarded by location shall be guarded in compliance with this Part (rule) and with Industrial Code Part (rule) 19.

(e) *Refueling.* While refueling, the engines of power-operated equipment or machines shall be stopped except for turbo-charged diesel engines which are refueled through a special connection which prevents exposure of the fuel to the atmosphere. Open flames and any spark producing devices shall be kept a safe distance away from any area where engines are being refueled. Persons shall not smoke or carry lighted smoking materials in such area.

(f) *Engine exhaust.* Steam or exhaust gases from power-operated equipment shall be discharged at a point where such steam or gases will not contaminate the air in a working zone. Such discharges shall be in compliance with any regulations, orders, or laws promulgated by any authority concerned with air pollution.

(g) *Equipment at rest.* The operators of material handling equipment shall not leave such equipment while loads, buckets or blades are suspended. Any such load, bucket or blade shall be brought to rest on blocks, shall be lowered to the ground, grade or equivalent surface or shall be brought to the lowest end of travel of the equipment.

(h) *Roll-over protection required.* (1) *Roll-over protective structure.* (i) Any new self-propelled earth-moving, excavating or grading equipment or machines, whether mounted on crawlers or wheels, which is sold or offered for sale in New York State after January 1, 1973 shall be equipped with an approved roll-over protective structure when such equipment is used or intended to be used at any location in New York State subject to the provisions of the Labor Law or of this Part (rule). Such equipment shall include: grader; bulldozer; tractor (prime mover) having a manufacturer's rated flywheel horsepower of 50 or more; front end loader with bucket capacity rated by the manufacturer at one cubic yard or more; scraper and off-highway type hauler having capacities rated by the manufacturers at five cubic yards or more.

(ii) Any self-propelled earth-moving, excavating or grading equipment or machines, whether mounted on crawlers or wheels, which has been manufactured after July 1, 1971 and before December 31, 1972, and which is sold or offered for sale in New York State, shall be equipped with an approved roll-over protective structure by July 1, 1973, when such equipment is used or intended to be used at any location in New York State subject to the provisions of the Labor Law or of this Part (rule).

(iii) Such roll-over protective structure shall be designed, constructed and installed to protect the operator in the event of accidental overturning of such equipment.

(2) *Approved seat belt required.* Any equipment required by this Part (rule) to have an approved roll-over protective structure shall also be provided with an approved seat belt for each seat. Such seat belt shall be used by the operator whenever the equipment is being operated.

Exception: Tractors with pipe-laying equipment installed are not required to be provided with the roll-over protection.

(i) *Riding.* Persons shall not ride on the loads, buckets, blades, slings, balls, hooks, or similar parts of power-operated equipment or machines.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.3 Conveyors and cableways. (a) *Walkways.* Walkways along and adjacent to conveyor belts shall be kept free of materials and shall be unobstructed for their entire length. Where such walkways are located three feet or more above the ground, grade, floor or equivalent surface such walkways shall be provided with a safety railing constructed and installed in compliance with this Part (rule).

(b) *Trippers.* Where trippers are used to control discharge of materials from conveyors devices for throwing the belt drives into neutral shall be installed at both ends of the runways.

(c) *Spillage.* Where conveyor belts cross over any sidewalk, street, highway, or any other area where persons may work or pass, trays of sufficient size to catch any spillage from such belts shall be installed.

(d) *Overhead protection.* Where persons work or pass directly beneath a conveyor, overhead protection in compliance with this Part (rule) shall be provided.

(e) *Signal system required.* A signal system in compliance with Subpart 23-6 of this Part (rule) shall be used in conjunction with conveyors for starting and stopping and for the raising and lowering of loads.

(f) *Riding prohibited.* No person shall ride any conveyor belt or the bucket or load handled by any cableway.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.4 Power shovels and backhoes used for material handling. Where power shovels and backhoes are used for material handling, such equipment and the use thereof shall be in accordance with the following provisions:

(a) *Strength.* Such equipment shall be so constructed, placed and operated as to be stable. Such equipment shall not be stressed beyond their capacities as determined by the manufacturers.

(b) *Inspection.* (1) Such equipment shall be thoroughly inspected by designated persons at intervals not exceeding three months.

(2) Inspection and repair of each such machine shall be performed with the motor stopped and with the boom lowered and adequately supported.

(3) A written, dated record of the most recent inspection of each such machine shall be made on a form supplied by the commissioner and shall be signed by the designated person making such inspection. Such written record shall be kept on the job site available for examination by the commissioner.

(c) *Footing.* Firm, level and stable footing shall be provided for each such machine. Where such footing is not otherwise supplied, it shall be provided by substantial timbers, cribbing or other structural members in sufficient numbers and

of sufficient size to distribute the load so as not to exceed the safe bearing capacity of the underlying material.

(d) *Hoisting mechanism brakes and locking devices.* (1) Such equipment shall be provided with brakes or equivalent devices capable of sustaining at rest one and one-half times the maximum rated load.

(2) Hand or foot operated brakes or equivalent devices shall be provided with substantial locking mechanisms to lock such brakes or equivalent devices while they are engaged.

(e) *Attachment of load.* (1) Any load handled by such equipment shall be suspended from the bucket or bucket arm by means of wire rope having a safety factor of four.

(2) Such wire rope shall be connected by means of either a closed shackle or a safety hook capable of holding at least four times the intended load.

(f) *Limitation on modifications.* No modifications affecting the load handling capacity of such machines shall be made unless the modification is certified by either the manufacturer of the equipment or by a professional engineer licensed to practice in the State of New York.

(g) *Capacity.* No load shall be lifted by such equipment that exceeds the maximum load specified by the manufacturer of such equipment.

(h) *General operation.* (1) Any load lifted by such equipment shall be raised in a vertical plane to minimize swing during hoisting.

(2) Such equipment shall not travel with a suspended load except on surfaces which conform to the requirements of subdivision (c) of this section.

(3) Ignition locks or equivalent means shall be provided to prevent unauthorized use of such equipment.

(4) Unauthorized persons shall not be permitted in the cab or immediately adjacent to any such equipment in operation.

(5) Carrying or swinging suspended loads over areas where persons are working or passing is prohibited.

(6) Operation near power lines or power facilities shall be in compliance with this Part (rule).

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.5 Excavating machines. (a) *Footings.* Excavating machines shall not be used where unstable conditions or slopes of the ground or grade may cause such machines to tilt dangerously. To prevent such unstable conditions, mats of timber or equivalent means to afford stable footings shall be provided.

(b) *Protection of operator.* Where an operator of an excavating machine may be exposed to an overhead hazard, such equipment shall be provided with a cab or equivalent cover affording protection against such hazard.

(c) *Operation.* Excavating machines shall be operated only by designated persons. No person except the operating crew shall be permitted on an excavating machine while it is in motion or operation. No person other than the pitman and excavating crew shall be permitted to stand within range of the back of a power shovel or within range of the swing of the dipper bucket while the shovel is in operation. When an excavating machine is not in use, the blade or dipper bucket shall rest on the ground or grade. The operator of an excavating machine shall not leave the controls of such machine at any time when the master clutch is engaged

and the engine is operating. Oiling and greasing shall be performed only while an excavating machine is at rest and the master clutch disengaged. The boom or the bucket, dipper or clamshell of a power shovel shall not pass over the seat or cab of a truck or other vehicle while any person is in such seat or cab.

(d) *Operation near power lines or power facilities.* The operation of excavating machines near power lines or power facilities shall be in compliance with this Part (rule).

(e) *Trenching.* Material shall not be pushed manually into the path of trenching machines.

(f) *Stopping or parking excavating machines.* The operator of any excavating machine shall not leave the controls of such machine until he has lowered the bucket or blade into firm contact with the ground or grade surface.

(g) *Backing.* Every mobile power-operated excavating machine except for crawler mounted equipment shall be provided with an approved warning device so installed as to automatically sound a warning signal when such machine is backing. Such warning signal shall be audible to all persons in the vicinity of the machine above the general noise level in the area.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.6 Aerial baskets. (a) *Equipment inspection.* Prior to the use of an aerial basket the operator shall make a daily inspection of the equipment.

(1) Such daily inspection shall include the following:

(i) All attachment welds between the actuating cylinders and the boom or pedestal.

(ii) All pivot pins for security of their locking devices.

(iii) All exposed ropes, sheaves and leveling devices for both excessive wear and security of attachment.

(iv) Hydraulic systems for leaks and excessive wear.

(v) Boom and basket for cracks and abrasions.

(vi) The lubrication and fluid levels.

(2) A test operation of the boom from the ground controls through one complete cycle shall be performed by the operator. The basket controls shall be tested to make sure that they are in proper working order. The truck driver shall test the truck brakes and other automotive operating accessories.

(3) A record of such inspection and testing shall be made by the operator. Such record shall be kept on the job site available for examination by the commissioner.

(4) All defects, malfunctions or any other conditions found during such inspection and test which may affect the safe operation of the aerial basket shall be corrected before such aerial basket is placed in operation.

(b) *Aerial basket safeguards.* (1) Where aerial basket controls are so located that they may come into contact with obstructions, such controls shall be protected by guarding or equivalent protection shall be provided.

(2) The lower controls at ground or grade level shall be capable of overriding the controls located in the basket.

(c) *Driving or moving of aerial basket truck.* (1) Aerial basket truck drivers and aerial basket operators shall be competent designated persons who have been trained in the operation and use of such equipment.

(2) The instrument panel of the truck cab shall be equipped with an automatic warning device, such as a light or similar device, to warn the driver when the boom is raised.

(3) Driving or moving the aerial basket truck while any person is elevated in the basket is prohibited.

(d) *Truck placement.* Prior to aerial basket operation, the truck shall be placed only on solid ground or equivalent surface to provide a substantially sound footing for the truck wheels and outriggers. The truck shall be so located that both front and rear axes are approximately horizontal, though they may be at different elevations, so that the truck does not lean sideways. Before the operation of the basket, a person stationed on the ground shall, by signaling, the truck driver, position the truck and maneuver the empty basket into the proper working position. The basket shall then be returned to the ground or cradled in its traveling position. Such person shall also examine the outriggers for proper positioning and truck stability. Before such outriggers are lowered or extended, such person shall make sure that no obstructions or other persons are in the way.

(e) *Aerial basket operation.* (1) The use of an aerial basket as an anchoring point for a block and tackle, or as a make-shift boom on a straight lift is prohibited.

(2) Aerial basket equipment designed for use as a derrick shall be equipped with an approved boom angle indicator so that the operator will know the boom angle at all times. A capacity chart showing safe loads, boom heights and horizontal reach distances at various boom angles shall be installed next to the operating controls clearly legible to the operator from his operating position.

(3) Before the basket is moved, the operator shall observe the location of all obstructions and any other hazards which may be in the vicinity. The operator shall always face the direction in which the basket is moving or is about to move.

(4) The operation of an aerial basket near power lines or power facilities shall be in compliance with this Part (rule).

(5) All air or oil supply hoses for power tools used from the aerial basket shall be free of any conductive material.

(6) The truck and the aerial basket vehicle shall be adequately grounded at all times when in use or the basket shall be isolated from the truck by insulation.

(7) Where aerial baskets are operated near power lines and power facilities, materials and tools shall not be passed between a person on the ground or grade level and a person in the basket, unless both such persons are wearing high-voltage rubber gloves and other protective equipment, such as rubber sleeves and safety hats or caps. During such use of an aerial basket, persons shall not enter or leave the truck while the boom or basket is near or in contact with electrically energized equipment and no person on the ground or grade level shall be suffered or permitted to touch the truck.

(8) Persons shall enter or leave an aerial basket only when such basket is resting on the ground or grade level or cradled in the traveling position. Persons shall stand clear of the path of the basket and boom when such basket is being lowered. Any movement of the vehicle while persons are elevated in the basket is prohibited.

(9) While persons are in the elevated basket, persons on the ground or grade level shall not enter the area directly beneath such basket except when required by the persons in the basket.

(10) Tools, equipment and materials shall not be thrown from or to the elevated basket.

(11) All tools not in use shall be adequately secured in trays in the baskets, or adequately secured in suitable belt holsters.

(12) Standing on the rim of the basket, placing and standing on boards across the rim of the basket or placing and standing on ladders in the basket is prohibited.

(13) Unless in an emergency situation, or upon request of a person in the aerial basket, the controls to lower the boom shall be operated only by persons in the elevated basket.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.7 Motor trucks. (a) *Brake maintenance.* The brakes of every motor truck shall be so maintained that such truck with full load may be securely held on any grade that may be encountered in normal use on the job.

(b) *Blocks.* (1) Provision shall be made to apply wheel blocks to any truck ascending any ramp with a slope steeper than one in 10 to prevent the truck from sliding in case of stall.

(2) No person shall work under the raised body of a dump truck unless such body is securely blocked to prevent accidental lowering.

(c) *Loading.* Trucks shall not be loaded beyond their rated capacities and all loads shall be trimmed before the trucks are moved. Loads that are apt to become dislodged in transit shall be securely lashed in place.

(d) *Backing.* Trucks shall not be backed or dumped in places where persons are working nor backed into hazardous locations unless guided by a person so stationed that he sees the truck drivers and the spaces in back of the vehicles.

(e) *Riding.* No person shall be suffered or permitted to ride on running boards, fenders or elsewhere on a truck or similar vehicle except where a properly constructed and installed seat or platform is provided.

(f) *Dumping.* No person shall be located within the body (load-carrying portion) of a truck while the dumping mechanism is being operated.

(g) *Cab protector.* Dump truck bodies which are loaded by mechanical means shall be equipped with suitable steel cab protectors which cover at least the rear quarter of the tops of such cabs.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.8 Lift and fork trucks. (a) *Capacity.* A metal plate with legible etched or stamped figures giving the capacity rating in pounds shall be attached to every lift or fork truck. A pouch firmly secured to the truck and containing a document having the following information may be used as a means of identifying the load rating of the truck: truck make, model, serial number, and load rating in pounds.

(b) No lift or fork truck shall be loaded beyond its capacity rating.

(c) *Brakes and load-elevating mechanisms.* Every power-operated fork and lift truck shall be provided with a lockable brake. The load-elevating mechanism shall be capable of being locked at any elevation.

(d) *Hand-lift handles.* Every pallet truck having a hand-lift handle shall be provided with an automatic device to retain the raised load and free the handle until it is re-engaged by the operator.

(e) *Operating surfaces.* No lift or fork truck shall be used on any surface that is so uneven as to make upsetting likely.

(f) *Packaged masonry units.* No masonry units packaged by means of wire or metal tape shall be handled by a lift or fork truck when any part of such wire or tape binding is broken.

(g) *Loose masonry units.* Unless palletized masonry units are securely bound in package form, provisions shall be made to prevent spillage.

(h) *Support of pallets.* Loaded pallets shall be kept level at all times. Masonry units used as pallet supports shall be securely lashed to the pallet and shall be of proper quality and number to provide stable footing for the load. Loose material and other unstable supports for pallets shall not be used.

(i) *Protection of operator.* Every fork lift truck shall be provided with a substantial overhead canopy or screen to protect the operator from falling objects and materials.

(j) *Prohibited use.* No lift or fork truck shall be in motion when the loaded forks are elevated higher than necessary to clear floor obstructions except as required for positioning to deposit the load.

(k) *Riding on forks.* No person shall stand or ride on the forks of a moving fork lift truck.

(l) *Warning devices.* Every power-operated fork lift truck shall be equipped with a horn, whistle, gong or similar warning device which can be actuated by the operator. Such device shall be clearly audible above the normal noise level in the work area.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.9 Power buggies. (a) *Assigned operator.* No person other than a trained and competent operator designated by the employer shall operate a power buggy.

(b) *Defective machines.* No power buggy shall be operated unless it is in compliance with this Part (rule) and is in good operating condition.

(c) *Mechanical requirements.* (1) *Stability.* Every power buggy shall be so designed and constructed as to withstand without tilting the following:

(i) A 45 degree turn at full rated load and maximum designed forward speed.

(ii) A collision stop against wheel blockage on a level grade at full rated load and one-half maximum designed forward or full reverse speed.

(iii) Lateral traversal of 10 percent grade slopes at full rated load and maximum designed speed.

(2) *Braking power.* (i) Every power buggy shall be provided with brakes and tire surfaces capable of bringing such buggy to a full stop within 25 feet on a level dry plank surface or frictional equivalent at full rated load and maximum designed speed.

(ii) Brakes shall be capable of being fixed in engagement to hold the full load stationary on a 25 percent grade.

(3) *Accidental starting.* The controls of every power buggy shall be so arranged, shielded or located that they cannot be accidentally engaged.

(4) *Warning devices.* Every power buggy except those having maximum speeds of three miles per hour and upon which no person rides shall be equipped with an easily operable horn or other audible warning signal. Such audible horn or other signal shall be capable of being heard above the normal noise level in the area.

(5) *Seats and visibility.* Every power buggy of the riding type shall be provided with an operator's seat or standing platform designed and secured to prevent slipping off and located that the operator may have maximum practicable driving visibility.

(6) *Speed.* Every power buggy of the riding type shall be designed or equipped that it cannot travel faster than 12 miles per hour on a level surface.

(d) *Operation.* (1) *Parking on grades.* No power buggy shall be left unattended on any grade sufficiently steep to cause such buggy to coast if free of engine and brake resistance.

(2) *Prohibited operation.* No power buggy shall be operated:

- (i) at a speed greater than 12 miles per hour;
- (ii) when carrying more than its full rated load;
- (iii) on insecure or slippery surfaces or on surfaces so inclined or uneven as to endanger stability;
- (iv) on grades steeper than 25 percent; or
- (v) on ramps, runways or other surfaces not in compliance with this Part (rule).

(e) *Special requirements for runways and ramps.* Runways, ramps, platforms and other surfaces upon which power buggies are operated shall conform to the following requirements:

(1) They shall be substantially constructed and securely supported, braced and fastened to prevent movement.

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

(3) The minimum width inside of curbs for any ramp, runway or platform for single lane power buggy traffic shall be two feet wider than the outside width of any power buggy operated thereon and two feet wider than twice such buggy width in places where passing or two lane traffic occurs.

(4) Ramps shall be limited to maximum grades of one on four.

(5) All runways shall be substantially level transversely.

(6) Curbs in compliance with this Part (rule) shall be provided along the edges of surfaces upon which power buggies are operated as follows:

(i) Curbs shall be furnished along all edges which are nearer than 10 feet horizontally to the edge of any unenclosed floor area, shaft or other open space into or through which a fall from such surface of more than 24 inches vertically is possible, except as set forth in subparagraph (iii) below.

(ii) Where curbs are not required because the buggy is operated on a surface not over 24 inches above any floor or equivalent surface below, such lower surface shall be strong enough to sustain the loaded power buggy in event of a fall thereon.

(iii) Curbs may be omitted at actual dumping points more than 24 inches above any floor or equivalent surface below if the edge over which the dumping occurs is provided with bumpers or other means which will effectively stop the buggy from running over the edge while dumping.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.10 Pile drivers. (a) *Footing.* Before placing or advancing a pile driver, the ground shall be inspected and, where necessary for firm and level footing, cribbing or timber mats shall be provided to assure stability for the pile driver. After

placing or advancing a pile driver, inspection and correction of the footing shall be made as necessary to maintain such stability.

(b) *Inspection.* All pile driving equipment shall be inspected daily before the start of work and every defect or unsafe condition shall be immediately corrected before pile driving operations are begun.

(c) *Protection of operator.* The operator of every pile driver shall be protected from falling objects or materials, steam, cinders and water by a substantial covering.

(d) *Qualifications of operators.* Each member of the pile driving crew shall be properly instructed in the work he is to perform and the pile driving operation shall be in charge of a trained, designated person who alone shall direct the work and give the operating signals.

(e) *Handling of piles.* The preparation of the piles shall be done at a safe distance from the driving operation. During the hoisting of piles, all persons not actually engaged in operating the equipment and handling the piles shall be kept from the area.

(f) *When not in use.* When any pile driver is not in use the hammer shall be chocked or blocked in the leads or lowered to the ground or grade level.

(g) *Temporary interruption.* The operator of every pile driver shall remain at the controls when the driving is interrupted until the hammer has been chocked or blocked in the leads, or has been lowered and is resting on a driven pile or on the ground.

(h) *Steam and air lines.* Steam and air hose shall be securely fastened in place at couplings and intermediate points to prevent dangerous whipping of such hose in the event of a break. The control valves for steam and air lines shall be located within easy reach of the operator at his operating position.

(i) *Driving plates, cushions and striking heads.* Driving plates, cushions and striking heads shall be securely and positively fastened in such manner as to prevent their dislodgment during the driving operations.

(j) *Ladders.* A ladder extending from the bottom of the leads to the overhead sheaves shall be permanently attached to the structure supporting the leads.

(k) *Working platforms.* Where a structural tower supports the leads, working platforms consisting of planking at least two inches thick, full size, laid tight shall be provided on all levels of the leads at which it is necessary for persons to work. Such platforms shall be provided with safety railings constructed and installed in compliance with this Part (rule) on all sides, except on the hammer or lead side of the platforms. Where such platforms cannot be provided approved safety belts and lifelines shall be provided.

(l) *Mandril support.* Mandrils shall be attached to the leads by safety chains or cables to prevent dislodging or falling during connection to piles.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-9.11 Mixing machines. (a) *Charging skips.* Each time before raising or lowering a charging skip, the operator shall make sure that no person is located in the danger area. In addition, there shall be a safety railing constructed and installed in compliance with this Part (rule) on both sides of the charging skip so arranged as to prevent passage of any person under the raised skip.

(b) *Hoppers.* Hoppers into which a person may fall shall be effectively guarded with a substantial iron grating consisting of crossbars of one-half inch round stock

or its equivalent, spaced not to exceed five inches between bars. Maximum openings in such grating shall be one square foot in size.

(c) *Bucket hoists.* Where a falling hazard exists at the point where a mixer discharges into a bucket hoist, such point shall be guarded by location, by a safety railing constructed and installed in compliance with this Part (rule) or by other equivalent means.

(d) *Flywheels.* Flywheels and power transmission mechanisms shall be kept covered and guarded against accidental contact.

(e) *Trough type mixers.* The revolving blades of trough or batch type mixing machines shall be guarded with a substantial iron grating consisting of crossbars of one-half inch round stock or its equivalent, spaced not to exceed five inches between bars and located at least five inches above the blades.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-10

EXHAUST GASES FROM INTERNAL COMBUSTION ENGINES

Sec.		Sec.	
23-10.1	Prohibited employment	23-10.5	Exhaust piping
23-10.2	Unsafe atmosphere	23-10.6	Special trucks
23-10.3	Maintenance of engines	23-10.7	Environmental requirements
23-10.4	Enclosed spaces		

Historical Note

Subpart added, filed May 30, 1972 eff. June 1, 1972.

Section 23-10.1 Prohibited employment. No employer shall require any person to work in an atmosphere containing exhaust gases in a concentration tending to injure health.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-10.2 Unsafe atmosphere. An atmosphere in which exhaust gases are visible or create irritating or nauseous fumes shall be presumed to contain such gases in a concentration tending to injure health. No contrary presumption shall obtain by reason of the absence of such visibility or of such fumes.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-10.3 Maintenance of engines. All internal combustion engines and their accessories shall, as far as is practicable, be kept in such repair and adjustment as to create no gases other than those incidental to normal operation. Gaskets, manifold, mufflers, exhaust piping and all connections shall be maintained free of leaks and secured against displacement.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-10.4 Enclosed spaces. No stationary internal combustion engine shall be operated under any conditions which allow introduction of its exhaust gases into any occupied enclosed space. The operation of other internal combustion engines within

such a space is prohibited except for the necessary entrance and departure of vehicles and except when such space is so ventilated as to assure an atmosphere free from exhaust gases in a concentration tending to injure health.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-10.5 Exhaust piping. The exhaust piping of each internal combustion engine shall be so installed as to discharge exhaust gases away from the operator and any other persons working or passing nearby.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-10.6 Special trucks. (a) Every motor truck used for the transportation of ready mixed concrete or other material, which requires the continuous operation of any engine attached to such truck during loading and unloading, shall be equipped with exhaust piping to discharge above the truck all exhaust gases created during loading or unloading.

(b) The owner, contractor, or his agent or any other person in charge of any job where such trucks are used, shall provide such supplementary piping or other equipment as may be necessary to divert the exhaust gases from the breathing zone of any persons.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-10.7 Environmental requirements. Exhaust gases from internal combustion engines shall be discharged into the atmosphere in accordance with the rules and regulations of appropriate jurisdictional authorities concerned with environmental conditions.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

SUBPART 23-11

USE OF EXPLOSIVES

Sec.

- 23-11.1 General requirements
- 23-11.2 Preparations for blasting
- 23-11.3 Loading or charging operations

Sec.

- 23-11.4 Blasting or firing operations
- 23-11.5 Reentry of blasting area

Historical Note

Subpart added, filed May 30, 1972 eff. June 1, 1972.

Section 23-11.1 General requirements. [Additional statutory authority: Labor Law, §§ 200, 241, 241-a, 242] (a) *Application of Subpart.* The provisions of this Subpart apply to all construction, demolition and excavation operations in which explosives are used in addition to the provisions of Industrial Code Part (rule) 39 relating to the "Possession, Handling, Storage and Transportation of Explosives" as well as the provisions of article 16 of the Labor Law printed with said Part (rule) 39.

Note: The detonation of explosives near pipes conveying combustible gas is subject to the provisions of section 322-a of the General Business Law.

(b) *The blaster.* At each construction, demolition or excavation site where explosives are being used, a person shall be designated by the employer, owner, contractor or his agent to perform the duties of a blaster as specified hereinafter and no person other than the blaster shall perform such duties. Every blaster shall hold a certificate of competence issued by the commissioner pursuant to the provisions of Industrial Code Part (rule) 39.

(c) *Handling explosives.* Only the blaster and competent persons designated by the owner of the explosives or his agent, under the general supervision of the blaster shall handle explosives.

(d) *Prohibited explosives.* Black powder, straight nitroglycerin and deteriorated or frozen dynamite are prohibited for use in any construction, demolition or excavation blasting operations.

Historical Note

Sec. added, filed May 30, 1972; amd. (b).
filed June 22, 1973 eff. Aug. 1, 1973. Amended

23-11.2 Preparations for blasting. (a) *Equipment inspection.* Each day before being used all blasting equipment shall be inspected by the blaster. All equipment defects which may affect the safety of any person shall be corrected before such equipment is used.

(b) *Drilling.* (1) *Drilling area inspection.* The area in which drilling is to be performed shall be inspected for hazards before any drilling is started in such area.

(2) *Drill movement.* When any drill is being moved from one location to another the drill steel, tools and other equipment shall be secured and the mast shall be placed in a safe position.

(3) *Drill crews.* All persons shall stay clear of augers or drill stems which are in motion. Persons shall not pass under or step over any moving auger or drill stem. Persons shall not be located on the mast while the drill is in operation.

(4) *Drill attendants.* Drills shall be attended at all times during operation.

(5) *Power failure.* In all cases of power failure drill controls shall be placed in neutral positions until power is restored.

(c) *Drill holes.* (1) *Size of holes.* All drill holes shall be of sufficient size for the explosives being used. The size shall be such that the explosive cartridges shall easily reach the bottom of the hole without forcing or ramming.

(2) *Hole hazard.* Drill holes large enough to constitute a falling hazard shall be covered or guarded if left unattended prior to blasting.

(3) *Deepening holes.* Drilling in any hole that has at any time contained explosives is prohibited.

(4) *Hole intersection.* Holes shall not be drilled where there is a danger of intersecting any charged or misfired hole.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-11.3 Loading or charging operations. (a) The charging or loading of explosives into holes shall only be performed by or under the general supervision of the blaster.

(b) Explosives shall not be brought into the blasting area until immediately before the holes are to be loaded and when other preliminary work has been completed.

(c) The loading of holes shall be followed by firing without undue delay.

- (d) Explosives shall be kept separated from detonators until loading is started.
- (e) The amount of explosives brought into the blasting area shall be limited to the amount necessary for the blast. If after loading, however, there are any unused explosives or detonators, they shall be removed to a safe distance from the blasting area.
- (f) No activity of any nature other than that is required for loading holes with explosives shall be permitted in a blasting area.
- (g) Explosives shall not be removed from original wrappers before being loaded into the holes except when irregularities of holes prevent the use of whole cartridges with safety or in blockholing where small charges are desirable. This subdivision shall not apply to free running explosives.
- (h) The blaster shall be responsible for the control of explosives and detonators in the blasting area to prevent theft or loss and for the return of unused explosives and detonators to the magazine.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-11.4 Blasting or firing operations. (a) *Firing.* The firing of any explosive shall be performed only by the blaster.

(b) *Detonator connection.* (1) All detonator connections shall be made by the blaster or a designated competent person under his direct supervision.

(2) The leg wires of detonators shall be kept short-circuited until connected to a blasting circuit or to leading wires. The power source end of such blasting circuit or leading wires shall be short-circuited during the time connections are being made at the holes and until attached to the blasting machine or to the power circuits.

(c) *Blasting circuits.* (1) All electric circuits used for the firing of explosives shall be ungrounded circuits and shall be thoroughly insulated. Deteriorated or damaged wire shall not be used in any blasting circuit.

(2) *Testing of blasting circuits.* Before firing, electric blasting caps and blasting circuits shall be tested. Such tests shall be performed only by the blaster. Such testing shall be performed by the use of a blasting galvanometer designed for the testing of blasting circuits.

(3) *Firing switch.* When firing explosives by means of a blasting circuit, such firing shall be controlled by a switch located outside the danger zone. Such switch shall be fixed in position and wholly enclosed in a tight box which shall be kept locked at all times except when firing. No person other than the blaster shall have access to the switch. Such switch shall be provided with a short-circuit in the "OFF" position and shall be so arranged that the box can be locked only when the switch is in the "OFF" position.

(4) *Blasting circuit plugs.* Each blasting circuit shall be broked in at least one place on the incoming side of the switch by a gap of at least five feet at all times during the firing operation. The connections at such gap shall be made by means of plugs.

(d) *Blasting machine.* Blasting machines of any type and leading wires shall be under the direct supervision of the blaster. Every blasting machine shall be located a safe distance from the blasting area. Such safe distance shall be determined by the blaster. The leading wire shall not be connected to a blasting machine until immediately before the time of firing and shall be disconnected and short-circuited immediately after such firing.

(e) *Firing by means of fuses.* Firing of explosives by means of fuses shall be in compliance with the following requirements:

- (1) Fuses shall not be less than 48 inches in length.
- (2) Fuses shall not be kinked, bent sharply or handled in a rough manner.
- (3) Fuses shall be cut and capped in safe, dry locations.
- (4) Blasting caps shall be crimped to fuses only by means of tools specifically designed for such purpose.
- (5) The blaster and at least one other person shall be present when lighting fuses.

(f) *Blasting mat.* Wherever any person may be endangered from the material being blasted, such material shall be covered on all exposed sides with a strong woven matting of wire rope not less than one-half inch in diameter, or other equivalent covering which will be effective in preventing particles from being projected into the air by the blast.

(g) *Blasting operations during electrical storms.* All use and handling of explosives shall be stopped immediately upon the approach of an electrical storm and all persons in the blasting area shall immediately retire to a place of safety in a proper location designated by the blaster.

(h) *Warning and retreat.* Before the firing of any explosives all means of access to the blasting area shall be effectively guarded to exclude all unauthorized persons. The blaster shall then sound a warning distinctly audible to all persons within the blasting area. All such persons shall retire to a safe distance or to a safe shelter. Such safe locations shall be designated by the blaster. The blaster shall then examine the blasting area to make certain that all persons have retired therefrom to a designated place of safety. No blast shall be fired while any person is in the blasting area.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

23-11.5 Reentry of blasting area. (a) *Permission required.* No person shall return to a blasting area subsequent to firing until permitted to do so by the blaster as announced by an audible signal.

(b) *Misfires.* Immediately following the firing, the blasting area shall be examined by the blaster for evidence of misfired charges. In case of any misfired charge, all persons in the blasting area shall return immediately to the safe locations. The blaster shall report such misfire to his immediate superior. Such misfire shall be disposed of by the blaster in a safe and proper manner. Where a fuse has been used for firing, persons shall not return to misfired holes for at least 30 minutes. Where electric blasting caps have been used for firing, persons shall not return to misfired holes for at least 15 minutes.

(c) *Reloaded holes.* If it is necessary to reload and refire a hole for any reason, such reloading is permissible providing the temperature of such hole has been reduced to 150 degrees Fahrenheit or less either by water or by other means.

Historical Note

Sec. added, filed May 30, 1972 eff. June 1, 1972.

PART 24**FIRE DRILLS**

(Statutory authority: Labor Law, §§ 51-a, 52*)

Sec.	Sec.
24.0 Application	24.4 Use of elevators
24.1 General provisions	24.5 Duties of persons in charge of building
24.2 Duties of persons conducting drills	24.6 Employers', owners' responsibilities
24.3 Substitutes	

Section 24.0 [Application.] Part 24 is not applicable in New York City.

24.1 General provisions. (a) It shall be the duty of the owner or tenant of a factory building to conduct fire drills monthly, as required by the provisions of subdivision 2 of section 279 of the Labor Law and at such other times as the commission may direct; and all occupants of such building shall participate therein.

(b) For the purpose of conducting such fire drills, the owner or tenant shall designate floor captains, male and female searchers, squad monitors and exit guards; he may also designate watchmen. This provision shall apply only where there are 25 or more persons employed on a floor. Where less than 25 persons are employed on a floor, there shall be at least two persons designated to perform, so far as possible, all of the duties assigned to the persons herein set forth.

24.2 Duties of persons conducting drills.

(a) [*Floor captain.*] (1) The floor captain shall, under the supervision of his employer, have full charge of the fire drill organization on his floor. Before work is begun each day, he, or such assistants as the employer may designate, shall see that all aisles are free from obstruction, that exit doors are unlocked, and windows affording egress to places of safety unfastened; that hallways and stairways are properly lighted and all obstructions removed therefrom; that outside stairways and fire escapes are made free from snow and ice, and any dangerous condition that may exist remedied; he shall also examine extinguishers, fire hose, fire buckets, etc. Immediately after work is commenced, he shall check up the fire drill organization list and note if the regularly assigned persons are present; if any are found to be absent, he shall assign other employees, if practicable, to perform their duties.

(2) Where new employees are taken on, he shall immediately notify them of the existence of the fire drill organization and give them the necessary instructions as to the duties they are to perform, etc.

(3) He shall be familiar with the location of the interior alarm signal box or boxes on his floor and know how they are operated.

(4) He shall listen for the test signal each morning at the appointed hour and in the event of the test signal not being heard he shall communicate with the superintendent or other person in charge of the building and advise him of the fact.

(5) During the progress of the fire drill, the orders of the floor captain shall be final as to the carrying out of the drill on his particular floor.

(b) [*Watchman.*] The watchman shall see that all doors and windows are closed and when necessary shall use other effective means to retard the spread of fire. The watchmen shall be the only persons permitted to remain on the floor during the progress of a fire drill. For ordinary purposes, only one watchman and a substitute may be designated. In special cases, however, extra watchmen may be assigned, but in no instance shall the number of watchmen exceed three to a floor.

(c) [*Searchers.*] (1) The male and female searchers shall search all toilets,

* L. 1921, ch. 50 transferred substance of § 51-a to § 28, and substance of § 52 to § 29.