524 CMR 26.00: CERTAIN ELEVATOR EQUIPMENT USED AS MOTOR VEHICLE PARKING DEVICES

Section

26.01: General

524 CMR 26.00 has been developed in response to demands for a separate section of 524 CMR to cover the installation of certain elevator equipment used exclusively for the parking of motor vehicles.

26.02: Reference to Safety Codes

Installations shall be in accordance with accepted standards of engineering practice and, except as provided in 524 CMR 26.00, shall conform to the minimum requirements of 524 CMR, as applicable.

26.03: Scope

524 CMR 26.00 applies only to elevators used exclusively for the parking of motor vehicles, such as elevators where, during the parking process, each motor vehicle is moved either under its own power, or by means of a power driven parking device onto and off the elevator directly into parking spaces or cubicles in line with the elevator, as well as devices used exclusively for the raising or lowering of motor vehicles for storage on the device itself.

EXCEPTION: 524 CMR 26.00 does not apply to the design of the structure of a crane or similar device on which the elevator may be mounted, or the design of any motor vehicle parking dolly or mechanism, except the interlocking of the control of such device with the elevator control.

26.04: Classification

Elevators subject to 524 CMR 26.00 shall be classified as follows:

(1) Class I. Elevators on which, during the parking process, one attendant rides for the purpose of operating the elevator and a power driven parking device or dolly to move the motor vehicle onto and off the elevator, but is not required to get off the elevator.

(2) Class II. Elevators on which, during the parking process, one attendant rides for the purpose of operating the elevator and driving the motor vehicle, under its own power, onto and off the elevator.

26.04: continued

(3) Class III. Elevators operated from a central dispatching station or stations and on which the garage attendants do not ride during the parking process, and the operation of the elevators and the entire process of parking the motor vehicle is automatically controlled.

26.05: Construction of Hoistways and Hoistway Enclosures

Hoistway and hoistway enclosures shall be constructed as follows:

(1) Where hoistway enclosures are provided, regardless of classification under 524 CMR 26.04, they shall be provided at all portions of the hoistway accessible to the public, including but not limited to all floors at which the customer delivers or receives his or her motor vehicle.

Note: Enclosures may be perforated for their entire height and need not be higher than six feet.

(2) For hoistway opening protection at floors where patrons deliver or receive motor vehicles, hoistway gates conforming to 524 CMR 26.06 shall be provided at each hoistway opening.

26.06: Hoistway Gates in Non-fire-resistive Hoistways

Hoistway gates in non-fire-resistive hoistways shall conform as follows:

(1) Gates shall be power operated, or they may be opened under power and may close by gravity if means are provided to limit the closing speed. Power opening and closing devices shall conform to the requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*.

(2) Gates may be perforated for their entire height, and need not be higher than six feet.

(3) Hoistway gates on shall be provided with interlocks, mechanical locks and contacts, or separate mechanical locks.

EXCEPTION: Locking devices are not required on vertically sliding gates for which the unbalanced weight is 65 lbs. or more when the car is not at the landing.

(4) Means shall be provided to prevent movement of the car in either the vertical or horizontal direction away from a landing unless the gate at that landing is in the closed position.

EXCEPTION: The means provided may permit horizontal movement of the car with the gate open in a zone of not more than two feet in either direction, provided that protective guards not less than six feet high and the width of the zone are installed on each side of the tower.

(5) For cars having more than one hoistway or runway opening at a given loading position, a separate closing means shall be provided for each car door or gate and its corresponding hoistway or runway door or gate.

(6) The vertical clearance beneath the lower edge of the gate and the landing shall be not more than eight inches.

26.07: Protection at Other Levels

At levels other than floors where patrons deliver or receive motor vehicles, hoistway opening protection shall conform to the following:

(1) Adequate means shall be provided to retain the motor vehicles in the parking cubicles against the force of the wind or of gravity.

(2) Ropes or other dividers not less than 42" high shall be provided between the parking cubicles.

26.08: Guide Rails, Guide Rail Supports, and Fastenings

Guide rails, guide rail supports and fastenings shall conform to 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*.

26.09: Car and Counterweight Buffers, Counterweights

(1) Car and counterweight buffers shall conform to the following:

(a) For Class I and II elevators, the car and counterweight buffers shall be installed in accordance with the requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*.

EXCEPTION: Spring buffers may be used under the following conditions:

1. For electric elevators whose rated speed is not more than 300' per minute.
2. For hydraulic elevators whose maximum speed in the down direction with rated load is not more than 300' per minute.
3. The stroke of spring buffers for car speeds exceeding 200' per minute shall be equal to or greater than the following:
   a. 201 to 250 ft. per min.: 6¼"
   b. 251 to 300 ft. per min.: nine inches

(b) For Class III Elevators, the car and counterweight buffers shall be required only where there are occupied spaces or passageways underneath the hoistway, in which case both car and counterweight buffers shall be installed in accordance with the requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code* provided that such buffers may be located at each side of the car frame.

(2) Counterweights, where provided, shall conform to 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*.

26.10: Car Frames and Platforms

In Class I, II, and III elevators, car frames, car platforms, and their guiding members shall conform to the requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*.

EXCEPTIONS:

(a) The flooring may be of Class I, II, and III elevators perforated provided that the openings will reject a ball having a diameter of two inches or more.

(b) Where a parking dolly is used, the portion of the floor where the dolly travels may be depressed.

(c) Four corner suspension roped hydraulic elevators are not required to have car crossheads.

26.11: Car Enclosures and Car Gates

(1) Cars shall be enclosed on all sides not used for entrance and exit, with enclosures conforming to 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code* provided that the enclosure need be only six feet high, may be of openwork construction for its entire height, and no car top shall be required.

EXCEPTIONS:

(a) For Class I and II Elevators the enclosures may be omitted, provided that:

1. The car can be operated from the car only, and the car operating device is permanently located and will return automatically to the stop position.
2. The operator's station is protected on the outside with an openwork metal enclosure at least six feet high which will reject a ball 1½" in diameter, and, where no car gate is provided, the enclosure is located not less than four feet from the nearer end of the platform.
3. A metal railing at least 42" high is provided, on the sides of the car not used for entrance and exit.

(b) For Class III Elevators the enclosure specified may be omitted if a metal railing at least 42" high is provided on the sides of the car not used for entrance and exit.

26.11: continued

(2) A car gate shall be provided at each car entrance and shall be equipped with means to prevent the movement of the car in either the vertical or horizontal direction away from a landing unless the gate is in the closed position.

EXCEPTIONS:

(a) The means provided to prevent movement of the car may permit horizontal movement of the car with the gate open in a zone of not more than two feet in either direction provided that protective guards not less than six feet high and the width of the zone are installed on each side of the tower.

(b) The car gate may be omitted provided the following conditions are met:

1. Where a dolly is used, means are provided to prevent operation of the elevator unless the dolly is properly positioned on the car platform.

2. When the motor vehicle is on the car platform means are provided to prevent operation of the elevator, unless the motor vehicle is properly centered on the platform so that no portion of the vehicle projects beyond the platform.

3. For Class I and II elevators where the elevator can be operated from the car only by means of a permanently located operating device that will return automatically to the stop position.

26.12: Car and Counterweight Safeties and Speed Governors

(1) Car safeties conforming to 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code* shall be provided. All operating parts of the safety shall be protected from the elements.

EXCEPTIONS:

(a) Car safeties may be omitted on:

1. Direct plunger elevators.

2. Class III elevators where there is no occupied space or passageway underneath the hoistway.

(b) The car safety device may be located in the upper part of the car frame instead of beneath the platform, provided that the car frame, car platform, car safety and the guide rails and their supports are designed to withstand the forces from loading and unloading, and from application of the car safety at governor tripping speed with rated load on the platform within the stresses and deflections permitted by 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*.

(2) Counterweight safeties shall be provided where there is an occupied space or passage underneath the hoistway.

(3) Car or counterweight safeties, where required or used, shall be operated by speed governors conforming to 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*.

EXCEPTIONS: The tripping speed of speed governors for roped hydraulic elevators shall be based on the maximum speed attained by the elevator car in the down direction with rated load on the platform instead of on rated speed.

26.13: Driving Machines

Electric driving machines shall conform to the requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*. Hydraulic driving machines, valves, piping, connections and tanks shall conform to the requirements of 524 CMR 35.00.

EXCEPTION: Roped hydraulic driving machines may be used provided that they conform to the applicable requirements of 524 CMR 26.14.

26.14: Roped Hydraulic Elevators

(1) Piston rods of roped hydraulic elevators shall be so constructed and so roped that the piston shall be stopped before the car can be drawn into the overhead structure. Travel limiting stops of ample strength shall be provided in the cylinder to bring the piston to rest under full pressure without damage to the cylinder assembly or hydraulic system. Such stops shall be of the solid metal to metal type.

(2) Traveling sheaves of roped hydraulic elevators shall be guided in metal guides. Sheave frames, where used, shall be of structural or forged steel having an elongation of not less than 14% in a length of two inches and shall be designed and constructed with a factor of safety of at least eight. A single continuous strap shall not be used for the sheave frame.

(3) Cylinders, valves, piping, connections and tanks shall conform to the requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*. Piston rods of roped hydraulic elevators shall conform to the following:

(a) Piston rods in compression shall be designed and constructed in accordance with the applicable formula for plungers.

(b)

Piston rods in tension shall be designed and constructed in accordance with the following formula:

$$W = 7500A$$

Where: W =Allowable gross load, pounds applied to piston rod
A = Net cross sectional area at root of threads in square inches

(c) Means shall be provided to prevent eccentric loading on piston rods and to equalize loading on piston rods where two or more are used.

26.15: Requirements for Capacity and Loading

(1) The capacity and loading requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code* shall be met, provided that the minimum rated load shall be based on the maximum weight of the motor vehicles to be parked and shall in no case be less than 5,000 lbs. per vehicle to be carried.

(2) In addition to the information required by 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*, the crosshead data plate or a separate plate attached to the crosshead shall indicate the maximum speed of the car in the down direction with rated load on the platform for which the elevator is designed.

26.16: Terminal Stopping Devices and Operating and Control Devices

(1) Terminal stopping devices shall conform to the requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code* for hydraulic elevators, provided that roped hydraulic elevators shall have a separate automatic stop valve that is both independent of the normal control valve and mechanically operated directly by the movement of the car.

(2) Operating and control devices shall conform to the requirements of 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code* for electric elevators and for hydraulic elevators in addition to the following:

(a) Roped hydraulic elevators may have lever type operating devices provided that they are self-centering when released by the operator.

(b) The following types electrical protective devices shall not be required:

1. Top of car operating device.
2. Stop switch on top of a car.
3. Hoistway door interlocks or electric contacts.
4. Car door or gate electric contacts.
5. Stop switch in pit.
6. Car emergency stop switch for roped hydraulic elevators with lever type operating devices.

26.16: continued

(3) Class III elevator cars shall be provided with a constant pressure operating device for operating the car for inspection, maintenance, and during emergencies, which shall be operative only when the operating device at the control dispatching station is inoperative. Means shall be provided at the central dispatching station for disconnecting the normal operating device and for making the constant pressure operating device in the car operative.

26.17: Requirements for Suspension Means

The suspension means for electric and hydraulic elevators shall conform to 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*. Car platforms may be suspended by wire ropes attached to each corner of the platform, subject to the following:

(1) A center car frame conforming in all respects to 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code* shall be provided except that the car crosshead may be omitted, providing:

(a) The car frame stiles extend partly above and partly below the car platform so that the vertical distance between the top and bottom guide shoes on the car frame is not less than 40% of the distance between guide rails or of the length of the car platform, whichever is greater.

(b) Guiding members or rope connections are so designed and installed as to prevent binding of the car frame in the guide rails when the car is raised and lowered.

(2) The car safety required by 524 CMR 26.12 is mounted on the center car frame located as required in 524 CMR 35.00: *Safety Code for Elevators and Escalators A17.1-2013 and the Massachusetts Modifications of That Code*.

(3) The car safety shall be operated by a speed governor.

26.18: Inspection, Tests, Maintenance, and Alterations

Inspections, tests, maintenance and alterations shall conform to the requirements of 524 CMR and M.G.L. c. 143, § 64.

26.19: Members of the Public Not Allowed Above Receiving Level

No person other than those whose services are necessary for the operation, maintenance, or safety of the premises shall be permitted on an elevator or on any level other than the receiving level.

26.20: Class I and II Operators to Be Licensed

No person shall operate, and no owner, lessee, employer or his or her agent shall cause or permit any Class I or II elevator to be operated except by a person duly licensed for such service by the Office in accordance with 524 CMR 9.00: *Operation of Non-automatic Elevators*.

REGULATORY AUTHORITY

524 CMR 26.00: M.G.L. c. 143, §§ 62 through 71G.