

524 CMR: BOARD OF ELEVATOR REGULATIONS

524 CMR 35:00: SAFETY CODE FOR ELEVATORS AND ESCALATORS A17.1-2004 and THE MASSACHUSETTS MODIFICATIONS OF THAT CODE

Massachusetts incorporates by reference ASME A17.1-2004 with the following modifications for new installations. Existing elevators installed after July 1, 1989, shall be inspected in accordance with 524 CMR 35.00 Massachusetts modifications to the A17.1 addition in effect at the time of their installation.

Massachusetts also incorporates by reference ASME A17.1-1996, Parts XX and XXI with modifications as contained in 524 CMR 35.00.

524 CMR 1.00, 3.00, 7.00, 8.00, 9.00, 26.00, 27.00, 29.00, and 31.00, continue to apply to new installations, some provisions of 524 CMR 17.00 apply when referenced to in 524 CMR 35.00.

524 CMR 1.00, 3.00, 7.00, 8.00, 9.00, 10.00, 11.00, 15.00, 17.00, 18.00, 19.00, 20.00, 22.00, 23.00, 25.00, 26.00, 27.00, 29.00, 31.00, 33.00, and 34.00, continue to apply to existing installations.

521 CMR 28.00: *Elevators*, Architectural Access Board Regulations apply to all new installations.

527 CMR 12.00: *The Massachusetts Electrical Code* shall apply in all cases where installation of electrical equipment and wiring is referenced to NFPA 70 or CSA-C22.1.

PART 1 GENERAL

SECTION 1.1 SCOPE

1.1.3 Application of Parts. Add additional sentence as follows: “Where parts of ASME A17.1-2004 applying to existing elevators conflict with sections of 524 CMR, the sections of 524 CMR shall prevail.”

PART 2 ELECTRIC ELEVATORS

SECTION 2.1 CONSTRUCTION OF HOISTWAYS AND HOISTWAY ENCLOSURES

2.1.1.2 Non-Fire-Resistive Construction

2.1.1.2.2 (a) Delete: “2000 mm (79 in.)” and Insert: “2100 mm (84 in.)”.

2.11.4 Multiple Hoistways Delete: Entire paragraph and Insert: “Not more than four elevators shall be installed in the same hoistway.”

2.1.3.5 Area to Be Covered by Floor

2.1.3.5.1 Delete: Entire paragraph and Insert: “Where a floor over a hoistway is required by 2.1.3.1, the floor shall extend over the entire area of the hoistway and cover the entire machine room.”

2.1.4 Control of Smoke and Hot Gases Delete entire section and add: “Ventilation requirements in Massachusetts shall be follows:”

(1) “All passenger, freight, private residence, and limited use/limited access elevators, as well as dumbwaiters, escalators and moving walks, require a means of ventilation to the outer air from enclosed elevator hoistways and machine rooms and shall also conform to the energy conservation requirements of the 780 CMR: *The Massachusetts State Building Code*.

(2) “Pressurizing the elevator hoistway and machine room is an acceptable alternate to ventilation.”

(a) “A positive pressure must exist in the hoistway and machine room with the elevator(s) at a floor with the doors open.”

(b) “Where air pressurization of the hoistway is utilized as a means of smoke and hot gas control, the air shall not be introduced into the hoistway in such a manner as to cause movement of selector tapes, governor ropes, compensating ropes and other components.”

(3) “Area of hoistway vents: The area of the vents shall not be less than 3½% of the area of the hoistway, nor less than three square feet, which ever is greater, for each elevator car.”

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- (4) “Temperature: The temperature of the elevator machine room shall be maintained at not less than 50°F and not more than 90°F by natural air circulation or by an HVAC system. Make up air supply when needed into a fire rated enclosure must have a fusible link/shutter or other method to close it in case of fire, smoke detector actuation, or power failure. Penetrations of a fire rated assembly for the purpose of makeup-air/exhaust shall be protected in accordance with 780 CMR: *The Massachusetts State Building Code*.”
- (5) “Ventilation for traction elevators, with machine(s) above the hoistway (at the top of the building) shall be as follows:”
- (a) “When hoistway ventilation is below the machine room floor, apply **2.1.4(3)**.”
 - (b) “The bottom of the vent outside the building must be a minimum of three feet above the roof.”
 - (c) “The bottom of the vent shall be not more than two feet below the top of the hoistway.”
 - (d) “The vent shall not be located adjacent to the hoist ropes, governor rope, selector tape, or traveling cable.”
 - (e) “When hoistway ventilation passes through the machine room via floor grilles or ducts and then to the outer air, those grilles and ducts shall conform to **2.1.4(3)** above for size.”
 - (f) “When the ventilation system in **2.1.4(5)(e)** exits the machine room **2.1.4(5)(b)** applies.”
 - (g) “When the hoistway ventilation is located below the machine room floor, the machine room shall also be vented to a minimum of 1% of the area of the machine room or one square foot whichever is greater.”
- (6) “Ventilation for a traction elevator with a machine room at an intermediate floor level shall be as follows:”
- (a) “When the hoistway(s) or machine room(s) does not have an exterior wall, ventilation shall be accomplished with ducts sized by **2.1.4(3)** and fire-rated in accordance with the 780 CMR: *The Massachusetts State Building Code* .”
 - (b) “If the ducts are horizontal, a blower or exhaust fan shall be used to expel the gases or smoke, which is activated by a fire alarm initiating device.”
 - (c) “If the provisions of **2.1.4(6)(b)** are used normal power as well as emergency or standby power must be automatically available.”
- (7) “Ventilation for a traction elevator with a machine at the lowest landing shall be as follows:”
- (a) “**2.1.4(3)** applies at the top of the hoistway.”
 - (b) “**2.1.4(5)(b)** and **(5)(c)** apply.”
 - (c) “The machine room can be vented to the hoistway or directly to the outer air.”
- (8) “Ventilation for a hydraulic elevator with the machine room adjacent to the hoistway at the lowest landing shall be as follows:”
- (a) “**2.1.4(3)** applies at the top of the hoistway.”
 - (b) “**2.1.4(5)(b)** and **(5)(c)** apply.”
 - (c) “The machine room can be vented to the hoistway via a grille on each side of the penetrated wall at a minimum machine room height of six feet above the floor and a minimum size of 1% of the area of the machine room or one square foot whichever is greater.”
- (9) “Ventilation for a hydraulic elevator with a remote machine room shall not be more than ten feet away from the hoistway.”
- (a) “Hoistway ventilation **2.1.4(3)** applies.”
 - (b) “**2.1.4(5)(b)** and **(c)** apply to the hoistway.”
 - (c) “Machine room ventilation can be via an inclined duct fire rated in accordance with 780 CMR: *The Massachusetts State Building Code*, between the machine room and the hoistway, equal to a minimum of 1% of the area of the machine room, or one square foot whichever is greater.”
 - (d) “Machine room ventilation can be directly vented to the outer air or by a duct fire rated in accordance with 780 CMR: *The Massachusetts State Building Code*, in the amount of 1% of the area of the machine room, or one square foot whichever is greater.”

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- (10) “Ventilation for a private residence elevator shall be as follows:”
- (a) “No ventilation is required when there is no fire separation between floors in a single family home.”
 - (b) “When floors are fire separated the hoistway and machine room shall be ventilated at a minimum of 1% of the area of the hoistway or machine room, or one square foot, whichever is greater.”
 - (c) “The hoistway shall be vented if the elevator serves the garage.”
- (11) “Ventilation for limited use/limited access elevators shall be as follows: Enclosed hoistways and machine rooms shall be ventilated to a minimum of 1% of the area of the hoistway or machine room, or one square foot, whichever is greater.”
- (12) “Ventilation for dumbwaiters shall be as follows: Units that pass through fire rated floors shall be ventilated to a minimum of 1% or the area of the area of the hoistway or one square foot whichever is greater.”
- (13) “Ventilation for escalators and moving walks shall be as follows: Escalator and moving walk machine rooms shall be ventilated. Venting need not be to the outside air.”
- (14) “Energy conservation regulations apply as follows: All open ventilation must be sealed in conformance with 780 CMR: *The Massachusetts State Building Code*.”
- (15) “If machine room venting of smoke and gases is accomplished by the use of a horizontal duct with the same fire rating as the hoistway and in accordance with 780 CMR: *The Massachusetts State Building Code*. The duct shall contain an exhaust fan powered from a normal and emergency power source activated by a thermostat and the smoke detector in the machine room.”

2.1.5 Windows and Skylights. Delete entire section and substitute: “Windows in hoistway walls or elevator cars are prohibited. If the elevator hoistway is completely outside the general outline of the building, the rear wall of the car and the related hoistway wall can be of laminated safety glass with a maximum window frame depth of two inches. Curtain walls or window walls cannot enclose the hoistway. Windows and skylights and their frames and sashes in machine rooms shall conform to the requirements of 780 CMR: *The Massachusetts State Building Code* and 527 CMR: *Fire Prevention Regulations*.”

2.1.6 Projections, Recesses, and Setbacks in Hoistway Enclosures

2.1.6.2(b) Delete: “100 mm (4 in.)” and Insert: “50 mm (2 in.)”.

2.1.6.2(d) Delete: “100 mm (4 in.)” and Insert: “50 mm (2 in.)”.

SECTION 2.2 PITS

2.2.2 Design and Construction of Pits

2.2.2.5 On the third line delete the word “shall” and substitute the word “may”.

SECTION 2.7 MACHINE ROOMS AND MACHINERY SPACES

2.7.1.2 Non-Fire-Resistive Construction

2.7.1.2.1 Delete: “2000 mm (79in.)” and Insert: “2100 mm (84 in.)”.

2.7.2.1 Equipment in Machine Rooms

Delete entire paragraph and substitute: “No machinery, equipment, water lines, drainage lines, air conditioning units, radio transmitters, antennas, or any piping or wiring for equipment other than elevator equipment shall be located in or pass through the machine room, except as required by modification to **2.8.2**.”

All flammable/combustible liquids shall be kept in approved containers and secured in an approved flammable liquids locker. The amount stored shall be regulated by 527 CMR: *Fire Prevention Regulations*.

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2.7.2.2 Maintenance Clearance

2.2.2.2 Delete: Entire paragraph and insert: “A clearance of not less than 450 mm (18 in.) shall be provided on all sides and above the elevator equipment. Basement traction type installations are exempt on the side facing the hoistway. Governors are to be no less than six inches from the adjacent wall or other equipment.”

2.7.3.4.1 Add a new (e)

2.7.3.4.1(e) be identified with a sign that will read “ELEVATOR MACHINE ROOM NO STORAGE ALLOWED”. The letter size shall be a minimum of ¾ inch high and shall be of a contrasting color with that of the background.

2.7.3.4 Access Doors and Openings

2.7.3.4.3(b) Delete entire paragraph and Insert: “(b) of maximum width of “750 mm (30 in.)” and a maximum height of 750 mm (30in.)”

2.7.5 Lighting, Temperature, and Humidity in Machine Rooms and Machinery Spaces

2.7.5.1 Lighting. Delete the words: “Where practicable”. Add new additional sentence: “Motion or heat detecting devices used to turn (on or off) the lights in the machine room, pit, car, or the car top are prohibited.”

2.7.5.2 Temperature and Humidity. Add: “A minimum temperature of 50°F, and a maximum temperature of 90°F shall be maintained.”

SECTION 2.8 EQUIPMENT IN HOISTWAY AND MACHINE ROOM

2.8.2 Pipes, Ducts, Tanks and Sprinklers

2.8.2.2 Add the following sentence: “The bottom of all ducts shall be not less than 2100 mm (84 in.) above the finished floor.”

2.8.4 Air Conditioning

2.8.4.1 Delete entire paragraph and add: “Air conditioning equipment shall not be located directly above or within 600 mm (24 inches) of the footprint (horizontally) of the elevator equipment.”

2.8.4.3 Delete entire paragraph and add: “Means shall be provided to collect and drain condensation water from these spaces. Condensation drains shall not be located above or within 600 mm (24 inches) of the footprint (horizontally) of the elevator equipment. Drains connected directly to sewers shall not be installed.”

2.8.4.4 Add: “Should access be necessary in or through elevator machine rooms, or machinery spaces, air conditioning maintenance personnel shall be accompanied by a licensed elevator mechanic.”

SECTION 2.11 PROTECTION OF HOISTWAY OPENINGS

2.11.1.2 Emergency Doors in Blind Hoistways.

Add paragraph (f) (3) “only be operated with the use of the Massachusetts Fire Fighters 3502 key.”

Delete paragraph (h).

2.11.1.4 Access Openings for Cleaning of Car and Hoistway Enclosures.

Delete entire paragraph.

2.11.2 Types of Entrances

2.11.2.1(d) Delete.

2.11.6 Opening of Hoistway Doors

2.11.6.2 Add a new (e) “any exit leading from any elevator hoistway door to the outside of the building.”

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SECTION 2.12 HOISTWAY DOOR UNLOCKING DEVICES AND ELECTRIC CONTACTS, AND HOISTWAY ACCESS SWITCHES

2.12.6 Hoistway Door Unlocking Devices

2.12.6.1 General. Delete entire paragraph and substitute: "Hoistway door unlocking devices shall be provided for use by Massachusetts licensed elevator mechanics and trained firefighters at every landing where there is a passenger entrance. The types of hoistway door unlocking devices are subject to prior approval of the Massachusetts Board of Elevator Regulations. The use of unlocking device special tools by anyone other than Massachusetts licensed elevator mechanics and trained firefighters is prohibited."

2.12.6.2.3 Delete.

2.12.6.2.4 Delete entire paragraph.

2.12.7 Hoistway Access Switches

2.12.7.3.6 Delete entire paragraph and substitute: "The movement of the car initiated and maintained by the access switch at the lowest landing, if this landing is the normal means of access to the pit, shall not be limited in the up direction."

SECTION 2.14 CAR ENCLOSURES, CAR DOORS AND GATES, AND CAR ILLUMINATION

2.14.1.10 Side Emergency Exits

2.14.1.10.2(f) Delete last sentence and substitute: "Keys shall be available only to Massachusetts licensed elevator mechanics and inspectors only."

2.14.2.6 Access Panels. Delete entire section.

2.14.3 Freight Car Enclosures

2.14.3.1 Enclosure Material Delete entire section and substitute: "Cab enclosure walls and the car top shall be made of metal without perforations, except for car gate(s) and the area above them."

2.14.4.5 Location

2.14.4.5.1(d) Delete entire section.

2.14.7 Illumination of Cars and Lighting Fixtures

Add a new "**2.14.7.3.7** All passengers and freight elevators shall have battery operated emergency lights."

SECTION 2.16 CAPACITY AND LOADING

2.16.4 Carrying of Passengers on Freight Elevators

2.16.4 Delete entire section and substitute 524 CMR 17.15(4).

2.16.5 Signs Required in Freight Elevator Cabs

Delete section **2.16.5.1.3**.

SECTION 2.26 OPERATING DEVICES AND CONTROL EQUIPMENT

2.26.1.4.4 Machine Room Inspection Operation.

Delete on first line: "When machine room inspection operation is provided, it shall conform to...." and substitute: Machine room inspection operation shall be provided and shall conform to....."

2.26.4 Electrical Equipment and Wiring

2.26.4.1 Add the following:

- (a) "The main line disconnect switch or circuit breaker shall be located inside the machine room door on the lock jamb side of that door and not more than 450 mm (18 in.) from the jamb to the operating handle, it shall be at a height of not more than 1700 mm (66 in.) above the finished floor. "In the case of multi-car machine rooms the switches shall be grouped together as close as possible to that location."

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- (b) "In the case of a machine room with double swing doors, the doors shall swing out and the switch(s) shall be on the wall adjacent to the hinge side of the active door panel."
- (c) "The switches shall be so designed that they may be locked out and tagged in the open position."
- (d) "If the fused disconnect switch or circuit breaker is not visible from the elevator machine to which it is connected, a second disconnect switch shall be installed that is visible from the machine."

SECTION 2.27 EMERGENCY OPERATION AND SIGNALING DEVICES

2.27.2 Emergency or Standby Power System

2.27.2.4.5 Add to: "Where an emergency or standby system is required by 780 CMR: *The Massachusetts State Building Code*, it shall operate the elevator or elevators in the event of normal power failure, and the requirements of **2.27.2.1** through **2.27.2.5** shall be complied with. If an emergency or standby system is not required by building code but exists and operates the elevator or elevators, the requirements of **2.27.2.1** through **2.27.2.5** shall be complied with. If less than all cars can be run at the same time, all cars shall be sequenced one or more at a time to the fire recall floor automatically, after which the selector switch located at that floor, can designate a preferred car."

2.27.3.1.1 Add a new "(d) The phase I hall key switch shall be marked with the off position vertical and in the center. The key shall be inserted with the cut side facing up."

2.27.3.1.6 Delete (j) and insert a new "(j) When an elevator(s) has gone to the alternate level due to the activation of a fire alarm initiating device at the designated level, the manual activation of the fire-recall switch at the designated level shall cause the car to recall to that level."

2.27.3.3 Phase II Emergency In-car Operation. Delete first sentence of the second paragraph and substitute: "The key shall be removable in each position. The hold position in the center shall be vertical. The key shall be inserted with the cut side facing up."

2.27.3.3.7 Delete the first sentence of the second paragraph and add in its place "For all installations performed under ASME A17.1-2004, the firefighters' operation panel cover shall be openable with the use of a 3502 key. The key switch grooves shall be constructed and installed with the cut side facing up by July 1, 2009."

2.27.8 Switch Keys

Delete entire section and substitute: "Firefighter's Emergency Operation" shall only be activated with the use of the 3502 key and cylinder. The possession of the Massachusetts Fire Fighters Key number 3502 shall be limited to fire department personnel, licensed elevator mechanics and elevator inspectors and used only in the performance of their official duties.

This key shall not operate any other switch unless specifically described in these regulations and shall not be a part of a building master key system."

2.27.9 Fire Emergency Hall Buttons Signs

Add a new **2.27.9** as follows: "Signs shall be securely fastened to the wall over every hall button station. Sign shall be as described in 524 CMR 17.39 (3). This information may be engraved on the hall station faceplate."

2.27.10 Medical Emergency Elevators

"All new buildings, or complete new additions to existing buildings in which an elevator is being installed, shall be provided with medical emergency elevators as described in 524 CMR 17.40. Complete new additions to existing buildings shall mean a hoistway constructed outside the confines or footprint of the existing building."

SECTION 2.28 LAYOUT DRAWINGS

2.28.1 Information Required on Layout Drawings

Add: "Applications and elevator layouts must be filed and approved before any work can begin."

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After **2.28.1(i)**, add additional information as follows:

- (j) “all plans for elevator installations shall be signed by a registered professional engineer or a registered architect and shall bear his registering stamp certifying that he has examined the plans and finds that the building will structurally support the elevator contract load plus its tare as they are shown on the elevator drawing. The architect or engineer shall not be responsible for any material on the elevator drawing. The complete installation shall comply with 524 CMR: *Massachusetts Elevator Code* at the time of filing;
- (k) type of hoistway material to be used;
- (l) height of hoistway in regard to roof of building. Fire rating of building roof;
- (m) location of hoistway and machine room vents, size of vents;
- (n) location of machine room;
- (o) type of hoistway doors, fire rating of doors must be shown on the layout, filling around hoistway door frames and headers for proper fire rating, grouting of landing sills;
- (p) type of approved interlock;
- (q) buffers, type and rating;
- (r) governor, type and name plate data depicting tripping speed of the governor and that of the overspeed switch, construction of material of governor rope and size;
- (s) hoist rope, size, number of, and breaking strength;
- (t) type of safeties and location;
- (u) type of drive machine, speed and capacity;
- (v) type of control. Voltage and amperes.”

PART 3 HYDRAULIC ELEVATORS

SECTION 3.1 CONSTRUCTION OF HOISTWAYS AND HOISTWAY ENCLOSURES

Under **SCOPE**, Add in the first sentence: “as modified by 524 CMR 35.00.”

SECTION 3.2 PITS

Delete first sentence and add: “Pits shall conform to section **2.2**, including Massachusetts modification to **2.2.2.5**.”

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SECTION 3.7 MACHINE ROOMS AND MACHINERY SPACES

3.7.1 Location of Machine Rooms

After the last paragraph add a new paragraph as follows:

“When it is not possible to locate the machine room adjacent to the hoistway, in addition to all normal requirements, the following provisions shall apply:

- (a) “The oil pipeline shall have a minimum of schedule 80.”
- (b) “The pipe shall have no fittings, bends or welding in it from the hoistway to the machine room.”
- (c) “The distance from the hoistway to the machine room shall not exceed three meters (ten ft.).”
- (d) “The oil line pipe shall be visible for inspection after installation.”
- (e) “A over speed (rupture) valve shall be installed on the jack casing.”
- (f) “Two-way voice communication shall be installed between the car and the machine room.”
- (g) “If machine room ventilation is accomplished by the used of a horizontal duct, the duct shall have the same fire-rating as the hoistway, and contain an exhaust fan powered from a normal and an emergency source activated by a thermostat or fire alarm initiating device in the machine room. Make-up air supply when needed shall be as described in 524 CMR 35.00 2.1.4 (4).”

Add a new 3.7.2 Clearance Around Hydraulic Machines

Hydraulic elevator power units shall have a minimum of two feet clearance on at least two sides of the unit; the other two sides shall be a minimum of two inches from the machine room walls or other units. If this cannot be obtained, an oil cooling system shall be installed.”

SECTION 3.8 ELECTRICAL EQUIPMENT, WIRING, PIPES, AND DUCTS IN HOISTWAY AND MACHINE ROOMS

Delete sentence and add: “Electrical equipment, wiring, pipes and ducts shall conform to 2.8 with Massachusetts modifications to 2.8.2 and 2.8.4.”

SECTION 3.11 PROTECTION OF HOISTWAY-LANDING OPENINGS

Delete first sentence and add: “Protection of hoistway-landing openings shall conform to 2.11 with Massachusetts modifications to 2.11.2, 2.11.6.”

SECTION 3.14 CAR ENCLOSURES, CAR DOORS AND GATES, AND ILLUMINATION

Add to the first sentence the words: as modified by 524 CMR 35.00:

SECTION 3.16 CAPACITY AND LOADING

3.16.4 Carrying of Passengers on Freight Elevators

3.16.4 Delete entire sentence and substitute: “The requirements of 524 CMR 17.15(4) shall apply.”

3.16.5 Signs Required in Freight Elevator Cabs

3.16.5 Delete entire sentence and substitute: “The requirements of 2.16.5 shall apply except 2.16.5.13”

SECTION 3.17 CAR AND COUNTERWEIGHT SAFETIES

3.17.1 Car Safeties Add an additional sentence in the first paragraph as follows: “On roped hydraulic elevators with governor-operated safeties, access to the governor may be omitted if the governor is self-resetting, releases when the car is raised, and can be electrically tripped from the machine room. Governor operation of roped hydraulic safeties may be omitted if a safety valve is installed at the jack casing. The safeties will continue to function as broken rope safeties.”

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SECTION 3.18 HYDRAULIC JACKS

3.18.3.8.3 Delete (a), (c) and (d) and add to (b): “All new cylinders installed below ground shall be provided with schedule 40 or greater PVC liner surrounding it for corrosion protection as described by **3.18.3.8**.”

SECTION 3.19 VALVES, PRESSURE PIPING, AND FITTINGS

3.19.3.3 Flexible Hydraulic Connections

Delete entire section including **3.19.3.3.1** and **3.19.3.3.2**, and substitute: “Flexible connections between the jack and the power unit are prohibited in Massachusetts.”

3.19.4.7 Overspeed Valves

Delete the first sentence and substitute: “Unless the hydraulic elevator is installed with a governor-operated safety, an overspeed (rupture) valve shall be provided and their connections and attachments shall conform to **3.19.4.7.1** through **3.19.4.7.6**, with modification to **3.19.4.7.3**.”

3.19.4.7.3 Installation of Overspeed Valves

At the end of the section add a new sentence: “On all hydraulic elevators installed after July 25, 2008, the piping between the overspeed valve and the hydraulic jack shall be welded or threaded.”

SECTION 3.26 OPERATING DEVICES AND CONTROL EQUIPMENT

3.26.4 Electrical Protective Devices

Add the following:

- (a) “The main line disconnect switch or circuit breaker shall be located inside the machine room door on the lock jamb side of that door and not more than 450 mm (18 in.) from the jamb to the operating handle, which shall be at a height of not more than 1700 mm (66 in.) above the finished floor. “In the case of multi-car machine rooms the switches shall be grouped together as close as possible to that location.”
- (b) “In the case of a machine room with double swing doors, the doors shall swing out and the switch(s) shall be on the wall adjacent to the hinge side of the active door panel.”
- (c) “The switches shall be so designed that they may be locked out and tagged in the open position.”

3.26.10.3 Add: “The door open button shall remain operative.”

SECTION 3.27 EMERGENCY OPERATION AND SIGNALING DEVICES

Add a second paragraph as follows: “Massachusetts modifications **2.27.3.1.1** (d), **2.27.3.1.6** (n), **2.27.3.3**, **2.27.8**, **2.27.9**, and **2.27.10** shall apply to all hydraulic elevators.”

SECTION 3.28 LAYOUT DATA

3.28.1 Information Required on Layout Drawing

Add: “Applications and elevator layouts must be filed and approved before any work can begin.”

After **3.28.1(o)**, add additional information as follows:

- (p) all plans for elevator installations shall be signed by a registered professional engineer or a registered architect and shall bear his registering stamp certifying that he has examined the plans and finds that the building will structurally support the elevator contract load plus its tare as they are shown on the elevator drawing. The architect or engineer shall not be responsible for any material on the elevator drawing. The complete installation shall comply with 524 CMR: *Massachusetts Elevator Code* at the time of filing;
- (q) type of hoistway material to be used;
- (r) height of hoistway in regard to roof of building. Fire rating of building roof;
- (s) location of hoistway and machine room vents, size of vents;

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- (t) location of machine room, relative to the hoistway;
- (u) type of hoistway doors, fire rating of doors must be shown on the layout, filling around hoistway door frames and headers for proper fire rating, grouting of landing sills;
- (v) type of approved interlock;
- (w) buffers, type and rating;
- (x) governor, type if any and nameplate data depicting tripping speed of the governor and that of the over-speed switch, construction of material of governor rope and size;
- (y) hoist rope, size, number of, and breaking strength;
- (z) type of safeties and location;
- (aa) type of valve unit, pressure relief setting, piston size and travel;
- (bb) capacity and speed, voltage and current.”

**PART 5
SPECIAL APPLICATION ELEVATORS**

SECTION 5.2 LIMITED-USE/LIMITED-APPLICATION ELEVATORS

All Limited use/Limited Application Elevators in Massachusetts are required to comply with the provisions of 521 CMR 28.1 through 28.13.5 (Architectural Access Board Regulations).

5.2.1.1 Construction of Hoistway and Hoistway Enclosures.

Add new sentence as follows: “All hoistways and machine rooms shall be ventilated not less than 1% of both areas with a minimum of one square foot.”

5.2.1.1.2 (a). Delete entire paragraph.

5.2.1.4.2 Alternate to Bottom Car Clearance Requirements. Delete entire section and comply with **2.4.1**.

5.2.1.7 Machine Rooms and Machinery Spaces. Delete entire paragraph and add: “Machine rooms and machinery spaces shall conform to the requirements of section **2.7** except as modified by 524 CMR 35.00.”

Delete the following sections: **5.2.1.7.1, 5.2.1.7.2, 5.2.1.7.3, 5.2.1.7.4, 5.2.1.7.5, 5.2.1.7.6, 5.2.1.7.7, 5.2.1.7.10, 5.2.1.7.11, and 5.2.1.7.12.**

5.2.1.11 Protection of Hoistway Landing Openings.

Add a new **5.2.1.11(f)** “Landing door panels must be a minimum of 915 mm (36 in.) wide. Note: A tolerance of 16 mm (⁵/₈ in.) is permitted.”

Add a new **5.2.1.11(g)** “Landing doors shall be set no more than the following dimensions from the hoistway edge of the landing sill, and shall be rated in conformance with the Massachusetts State Building Code 780 CMR.”

- (1) For swing doors – 19 mm (³/₄ in.).
- (2) For horizontal sliding doors – 57 mm (2¼ in.), and shall have sight guards.”

Add a new **5.2.1.11 (h)** Vision panels shall be installed in all swing doors per **2.11.7.1**, except **2.11.7.1.6**. The inside face of the glass must be substantially flush with the inside face of the door. If laminated safety glass is used the Z97.1 marking on each piece of glass must be visible after installation.”

5.2.1.13 Power Operation of Hoistway Doors and Car Doors and Gates. Delete **5.2.1.13** and substitute: “Power operation shall be as described in 521 CMR 28.12.3 (Architectural Access Board Regulation).”

5.2.1.14 Car Enclosures, Car Doors, and Car Illumination.

5.2.14 (f) Delete on the second and third line the words: “accordion, or bifold type”

Add a new **5.2.1.14 (o)** Emergency battery operated lighting shall be provided in all Limited-use/Limited-application elevators in accordance with 524 CMR 18.18(7).”

35.00: continued

5.2.1.27 Emergency Operations and Signaling Devices. Delete entire paragraph and substitute: “Emergency operation and signaling devices shall conform to **2.27.1** and **2.27.2** except **2.27.1.2**. All Limited use/Limited application elevators shall be provided with a means of two-way conversation between the car and a point outside the hoistway or building attended 24 hours a day.”

5.2.2.8 Valves, Pressure piping and Fittings. Delete sentence and substitute: “Valves, pressure piping, and fittings shall conform to **3.19** except **3.19.3.3 Flexible Hydraulic Connections**. Flexible hose is prohibited between the power and unit and the jack.”

5.2.2.14. Emergency Operations and Signaling Devices. Delete entire paragraph and substitute: “Emergency Operations and Signaling Devices shall conform to **5.2.1.27** as modified in 524 CMR 35.00.”

5.2.2.16 Governor Operated Safeties with use of a Safety Valve. Add new **5.2.2.16**. “When a roped hydraulic unit is installed that requires a governor-operated safety, the governor operation of the safeties may be omitted if a safety valve is installed at the hydraulic cylinder, the safeties will continue to operate as a broken rope device. This valve shall stop the flow of oil at no less than 110% of the car speed and must be sealable after adjustment. This provision does not apply to dual jack installations.”

SECTION 5.3 PRIVATE RESIDENCE ELEVATORS

5.3.1.1 Construction of Hoistway and Hoistway Enclosure. Delete entire section **5.3.1.1** and substitute: “Hoistways and machine rooms shall conform to **2.1.1.1** and **2.7.1.1**.”

Add new **5.3.1.1.1**. Each residential elevator shall have its own machine room, control space, or control room. Such machine room, control space or control room shall meet the following requirements:

- (1) it shall be enclosed with materials of the same fire rating as that required for the hoistway in the building in which they are installed;
- (2) it shall be kept locked at all times when not being accessed by licensed or authorized personnel;
- (3) it shall not be located within, or at the top of, the hoistway;
- (4) it shall be provided with self-closing, self locking doors not less than 30 inches wide by 6 feet 6 inches high equipped with spring-locks that can be opened by hand from the inside of the machine room, control space or control room;
- (5) elevator controller and main line voltage disconnect equipment located within the control space shall conform to the NFPA 70 code regulation in effect at time of installation;
- (6) it shall be located at a maximum distance of ten feet from the hoistway;
- (7) minimum equipment clearances within 524 CMR and the National Electric Code may be calculated and obtained with the machine room, control space, or control room doors in the fully open position with flexible cords that adhere to NEC 400.4 to all external connections so equipment may be repositioned to meet the clear working space requirements of NEC 110.26(A);
- (8) all doors shall be identified with a sign that reads "ELEVATOR CONTROL SPACE"; and,
- (9) it shall have a light fixture(s) containing a minimum illuminance of 19 foot candles measured at floor level.

35.00: continued

Add new **5.3.1.1.2.** “When the hoistway is enclosed and the elevator services a garage or penetrates any fire separated floors, the hoistway must be ventilated to the atmosphere not less than one percent of the area of the hoistway with a minimum of one square foot.”

5.3.1.7 Protection of Hoistway Openings.

5.3.1.7.2 Clearance Between Hoistway Doors or Gates and Landing Sills and Car Doors or Gates. Delete: “shall not exceed 75 mm (three in.)” and substitute: “19 mm (¾ in.)” Also delete: “shall not exceed 125 mm (five in.) and substitute: “75 mm (three in.)”

5.3.1.7.4 Locking Devices for Hoistway Doors and Gates. Delete **5.3.1.7.4** and substitute: “Landing doors shall be provided with UL listed hoistway door interlocks.”

5.3.1.8.3 Light in Car. Add a new sentence: “Emergency battery operated car lighting shall be provided in all private residence elevators as described in 524 CMR 17.18(7).”

5.3.2.2 Driving Machines, Sheaves and Supports for Direct Plunger and Roped Hydraulic Driving Machines. Add a new **5.3.2.2.3:** “Flexible hose shall not be installed between the power unit (pump) and the jack.”

SECTION 5.10 ELEVATORS USED FOR CONSTRUCTION

Add the following:

“Devices included under the requirements of **SECTION 5.10**

(1) Workman’s Hoists and other similar equipment shall be considered temporary workman’s elevators and shall be installed by a person holding a Commonwealth of Massachusetts license for the construction, maintenance and repair of elevators. Either a licensed Massachusetts elevator mechanic or a licensed Massachusetts hoisting engineer only, shall operate them.

(2) Overhead Protection: There shall be installed on all workman’s hoists or similar devices including open platforms used for the installation of elevators under construction or modernization, a roof to protect the workers from falling objects. The roof shall be constructed of solid material. Debris netting or similar overhead protection may be used up to three floors or 30 feet, whichever is greater.

(3) Workman’s Hoists and other similar devices must be equipped with one the following safety devices:

- (a) a safety device, which acts on a wire rope, which is supported independently from the rigging used to support and hoist the working platform;
- (b) a safety device, which grabs the wire rope, used to support and hoist the working platform;
- (c) instantaneous safeties.

(4) Workman’s Hoists and other similar devices must be provided with a 42” guard rail completely around the platform area and a 12” kick-plate completely around the platform area.

(5) Inspection and Load Tests: Once a piece of equipment has been approved and released by a private elevator contractor, it shall be re-classified and designated as a temporary workman's elevator and must be inspected by a state elevator inspector. The state inspection shall consist of a load and safety test. No non-elevator construction personnel shall be transported on such equipment until the releasing elevator contractor has faxed over an intended designation change to the Department of Public Safety. (Exception: non-elevator trade persons may be conveyed to perform work in or around the elevator hoistway.) Once the designation change is date stamped submitted to the Department of Public Safety, the equipment may be operated prior to the state inspection to convey construction personnel for a period not to exceed 30 days, if operated by a duly licensed elevator mechanic. Once the designated equipment passes inspection, the state elevator inspector shall issue a temporary use certificate which shall be valid for 90 days.

35.00: continued

(6) Inspection and Load Test is not required by the State on open platforms used for the installation of elevators under construction or modernization.

**PART 6
ESCALATORS AND MOVING WALKS**

SECTION 6.1 ESCALATORS

6.1.2.1 Protection Required Add: “See Massachusetts Modification **2.1.4** (13).”

6.1.7.4 Electrical Equipment and Wiring

6.1.7.4.1 Add additional sentence: “A fused disconnect switch or circuit breaker shall be installed and connected into the power supply line of each escalator. Disconnect switches or circuit breakers shall be of the manually closed multi-pole type and be located with the upper machinery space of the escalator. Where circuit breakers are used a disconnecting means, they shall not be of the instantaneous type and shall not be opened automatically by a fire alarm system.”

6.1.7 Lighting, Access and Electrical Work

6.1.7.3.3 Add:

“(a) All access doors shall be electrically contacted and render the escalator inoperative when open.”

“(b) The key to side access panels shall be restricted to licensed elevator mechanics only.”

SECTION 6.2 MOVING WALKS

6.1.2.1 Protection Required Add: “See Massachusetts Modification **2.1.4**(13).”

6.1.7.4 Electrical Equipment and Wiring

6.1.7.4.1 Add additional sentence: “A fused disconnect switch or circuit breaker shall be installed and connected into the power supply line of each moving walk. Disconnect switches or circuit breakers shall be of the manually closed multi-pole type and be located with the entrance space of the moving walk. Where circuit breakers are used a disconnecting means, they shall not be of the instantaneous type and shall not be opened automatically by a fire alarm system.”

35.00: continued

6.2.7 Lighting, Access and Electrical Work

6.2.7.3.3 Delete the last sentence and add:

“(a) All access doors shall be electrically contacted and render the moving walk inoperative when open.”

“(b) The key to side access panels shall be kept in a location accessible only to licensed elevator mechanics.”

**PART 8
GENERAL REQUIREMENTS**

SECTION 8.1 SECURITY

8.1.1 General

Delete (c) in its entirety.

8.1.2 Group 1: Restricted

Add: “Group 1 keys shall be restricted to Massachusetts licensed elevator mechanics or “inspectors only.”

8.1.3 Group 3: Emergency Operation

Add: 2.27.8, fire-recall switch, 2.27.8, fire operation switch, 2.11.1.2(i), emergency door in blind hoistway, and 8.4.4.1.1, top emergency exits shall be operated by the Massachusetts firefighter’s 3502 key.”

SECTION 8.4 ELEVATOR SAFETY REQUIREMENTS FOR SEISMIC RISK ZONE 2 OR GREATER

Add the following paragraphs: “All new elevator installations in Massachusetts shall meet as a minimum the requirements of seismic risk zone 2.”

“All new installations in existing buildings and material changes per 524 CMR 15.01 shall meet the following seismic requirements:

- (1) On electric traction units:
 - (a) machine rope retainers (**8.4.3.1**).
 - (b) at snag points, protect traveling cables, hoist and governor ropes from rail brackets, vanes, switches, *etc.* (**8.4.3.2**).
 - (c) install a counterweight displacement switch with controls for elevator operation as described in **8.4.10**.
 - (d) install counterweight spreader brackets.
 - (e) if cab is replaced, car top exit must comply with **8.4.4.1** and **8.4.4.1.2**.
- (2) On hydraulic units:
 - (a) a safety valve must be installed at cylinder (**8.4.11.2**).
 - (b) the tank must be secured to floor (**8.4.11.6**).
 - (c) install oil pipeline support brackets per table (**8.4.11.3**).
 - (d) at snag points, protect traveling cables, hoist and governor ropes from rail brackets, vanes, switches, *etc.* (**8.4.3.2**).
 - (e) rope retainers are required on roped hydraulic elevators (**8.4.3.1**).

If other components are replaced the appropriate code requirement shall be followed.”

8.4.4.1 Top Emergency Exits

Delete the last paragraph of **8.4.4.1.1** in its entirety and substitute: “The key and cylinder required to open the top emergency exit in all elevators shall be a Massachusetts 3502 key as described in 524 CMR 17.39(2).”

35.00: continued

SECTION 8.5 ESCALATOR AND MOVING WALK SAFETY REQUIREMENTS FOR SEISMIC RISK ZONE 2 OR GREATER

Add the following paragraph: "All new escalator or moving walk installations in Massachusetts shall meet as a minimum the requirements for seismic risk zone 2 as described in ASME A17.1-2004."

SECTION 8.6 MAINTENANCE, REPAIR AND REPLACEMENT

8.6.1.1.2 Delete (c) and substitute: "524 CMR applies to installations made prior to 1989."

8.6.1.2.1 Delete (b) and substitute: "Annual inspection must be performed in accordance with 524 CMR."

8.6.4.10 Refastening or Resocketing of Car-Hoisting Ropes on Winding-Drum Machines.
Delete entire section and substitute: "Both car-hoisting and counterweight-hoisting ropes shall be resocketed or refastened in accordance with 524 CMR 17.26."

8.6.8 Maintenance of Escalator and Moving Walks

Add: "See 524 CMR for Escalator and Moving Walk installations made prior to the adoption of A17.1-2004."

8.6.10.3 Cleaning Inside the Hoistway

Delete entire section.

SECTION 8.7 ALTERATIONS

8.7.1.1 Delete (c) and substitute: "524 CMR."

SECTION 8.10 ACCEPTANCE INSPECTIONS AND TESTS

8.10.1.1 Persons Authorized to Make Acceptance Inspections and Tests

Delete entire section and substitute: "The acceptance inspection shall be conducted by licensed elevator mechanics witnessed by an inspector employed by the Massachusetts Department of Public Safety."

8.10.1.1.3 Delete entire paragraph.

8.10.1.2 Application of Inspection and Test Requirements. Delete (a) and substitute: "524 CMR."

SECTION 8.11 PERIODIC INSPECTIONS AND TESTS

8.11.1.1 Persons Authorized to Make Periodic Inspections and Tests.

Delete in its entirety and substitute: "Periodic inspections shall be made by licensed elevator mechanics witnessed by an inspector employed by the Massachusetts Department of Public Safety."

8.11.1.2 Applicability of Inspection and Test Requirements.

Delete (c) and substitute: "524 CMR."

8.11.2.2.2 Safeties

In section (b)(1) delete the words: "slowest operating speed" and substitute the words: "rated or contract speed".

8.11.1.3 Periodic Inspection and Test Frequency.

Add: "See 524 CMR 8.01."

8.11.4.2.19 Step/Skirt Performance Index

Add before (a): "The following procedure shall be followed during the acceptance test of the unit, and the result shall be in conformance with same. This procedure shall also be followed during the periodic/annual test of units installed under these regulations, previous ASME codes, and under 524 CMR 22.00 (see 22.11) and the result shall be in conformance with same."

35.00: continued

The following modifications apply to A17.1-1996, Parts XX and XXI:

**PART XX
INCLINED STAIRWAY CHAIRLIFTS & INCLINED
VERTICAL WHEELCHAIR LIFTS**

2000.1a Runway Enclosure Provided

Add to 2000.1a (1)

“Landing door panels on the front and rear of a car (narrow side) shall be 36”. Doors on the side entrance shall be a minimum of 42”. The car platform shall not have more than two openings.”

Delete on line 8 of 2000.1a (2), the words: “combination mechanical lock and electric contract”, and insert the words:

“Hoistway doors or car doors/gates shall be installed with interlocks approved by the Board or a recognized testing laboratory who have conducted their tests of the lock in accordance with the procedures found in UL 104.

The interlock must insure the closed and locked condition of the door before the car moves more than two inches away from the landing.

The contact that indicated the closed condition of the door or gate shall not be of a type that can be made manually without the use of special tools.

If any mechanical operated roller or arms of the hoistway door lock protrudes into the hoistway, they shall not be within six inches of the car platform or the car walls, horizontally.”

Add on line 20 of 2000.1a (2), after the word (surface) the following:

“flush with the hoistway edge of the sill and the wall below it.”

Delete on line 8 of 2000.1a (3), the words “combination mechanical lock and contact” and insert the words:

“Conditions found in 2000.1a(2).”

Add on line 7 of 2000.1a (4), after the word “surface”, the following:

“flush with the hoistway sill and the wall above the door and frame.”

2000.1b Runway Enclosure Not Provided

Delete on line 8 of 2000.1b (2) the words: “combination mechanical lock and contact” and insert:

“Conditions found in 2000.1b (2).”

Add on line 20 of 2000.1b (2), after the word “surface”, the words:

“flush with the hoistway door landing sill and the wall below it.”

2000.1c Attendant Operated Lifts

Delete on line 3 of 2000.1c (2), the words: “combination mechanical lock and contact” and insert:

“Conditions found in 2000.1a (2).”

2000.1f Electrical Equipment and Wiring

Delete 2000.1f (1) and (2) and insert:

“All electrical equipment and wiring shall conform to the requirements of 527 CMR 12.00: *2002 Massachusetts Electrical Code (Amendments)*”

35.00: continued

2000.7a Limitations of Load Speed and Travel

Delete on line 7 of 2000.7a, the words: “nor penetrate a floor”, and add the following:

“The lift may penetrate a floor when the hoistway meets the fire rating requirements of the building code and fire rated landing doors are installed set flush with the hoistway edge of the landing sill and the wall above and below same. This enclosure must extend to the ceiling or the roof above it and be ventilated. The inside surface of the enclosure will be smooth and flush throughout its height.

Delete 2000.10a and insert:

“In accordance with 28 CFR Parts 36.4.11 and 36.4.27.4, a wheelchair lift may not be equipped with a key switch. If a wheelchair lift governed by 524 CMR 35.00 has a key switch, it shall be removed by November 1, 2011. See 521 CMR 28.00: *Elevators* for further access related requirements.”

2000.13 Intermediate Landing Stop

Add new rule 2000.13 as follows:

2000.13 (1) When an intermediate landing door is installed, that door shall not be unlocked as the platform passes the landing.

2000.13 (2) When a wheelchair lift is enclosed in a hoistway, a manually operated emergency-lowering device operated from outside the hoistway shall be installed. An emergency door opening device shall be installed on the lowest landing door when there is no pit provided.”

2001.1f Electrical Equipment and Wiring

Delete 2001.1f (1) and (2) and insert:

“All equipment and wiring shall conform to the requirements of 527 CMR 12.00: 2002 *Massachusetts Electrical Code* (Amendments).”

2001.10g Electrical Equipment and Wiring

Delete 2001.10a and insert:

“In accordance with 28 CFR Parts 36.4.11 and 36.4.27.4, a wheelchair lift may not be equipped with a key switch. If a wheelchair lift governed by 524 CMR 35.00 has a key switch, it shall be removed by November 1, 2011. See 521 CMR 28.00: *Elevators* for further access related requirements.”

Delete 2001.10g (1) and (2) and insert:

“All equipment and wiring shall conform to the requirements of 527 CMR 12.00: 2002 *Massachusetts Electrical Code* (Amendments).”

Add to 2001.6c (2), a new (d):

“Barrier arms shall surround a passenger during the travel and be located at a minimum height of 34 inches and a maximum height of 36 inches to the top of the arm from the platform.”

2001.13 Operation and Signals

Add new rule 2001.13 as follows:

2001.13 (1) “When the lift can be operated from the platform, an audio and visual signal must be activated whenever the platform is moving. This signal can be located on the lift or on each landing where a turn in the stairway exists.

2001.13 (2) When the unit is called from any landing call station, the audio and visual signal must be activated prior to any motion, and the lift must be in folded position.

2001.13 (3) Attendant call buttons shall be located at each landing call station in the sight of the operator and connected to a location that can send assistance.”

35.00: continued

Delete 2002.10a and insert:

“In accordance with 28 CFR Parts 36.4.11 and 36.4.27.4, a wheelchair lift may not be equipped with a key switch. If a wheelchair lift governed by 524 CMR 35.00 has a key switch, it shall be removed by November 1, 2011. See 521 CMR 28.00: *Elevators* for further access related requirements.”

**PART XX1
PRIVATE RESIDENCE INCLINED STAIRWAY
CHAIRLIFTS & INCLINED & VERTICAL WHEELCHAIR LIFTS**

Add to 2100.1a (1)

“Landing door panels on the front and rear (narrow side) shall be 35”. Doors on the side entrance shall be a minimum of 42”. The car platform shall not have more than two openings.”

Responsibility of the Fire Department. On completion of the elevator installation and safety test, the elevator contractor shall notify the local fire department to have an authorized representative available to receive instructions by the elevator manufacturer or his agent on the purpose, operation, and use of the firefighter's keyed switch. This rule shall also apply to witness a demonstration from the elevator manufacturer, or agent thereof, relative to the purpose, operation and use of the hoistway door unlocking device. The unlocking device for that manufacturers' door shall be secured at a location in the building that is readily accessible to the fire department. If all the door panels and interlocks are replaced on a new or existing elevator, hoistway door unlocking devices for use only by Massachusetts licensed elevator mechanics and trained firefighters are required.

The fire department shall utilize a Lock-out Tag-out (LOTO) procedure on the electrical main line of the elevator equipment during fire department operations including extrications. A written procedure relative to removal of the lock shall be printed on the affixed LOTO tag to facilitate speedy removal for an incoming Massachusetts licensed elevator mechanic.

2100.7a Capacity, Speed, and Travel

Delete on line 9 of 2100.7a, after the words, “nor penetrate a floor”, and add the following:

“The lift may penetrate a floor when a fire-rated hoistway equal to the fire-rating of the building as required by Massachusetts State Building Code encloses the wheelchair lift through its height and fire-rated landing doors are set flush with the hoistway edge of the landing sill and the wall above and below same. This enclosure must extend to the ceiling or the roof above it and be ventilated. The inside surface of the enclosure will be smooth and flush throughout its height. A key switch shall be provided on the platform, that when placed in the on position, control from the landings shall be inoperative.

2100.10i Electrical Equipment and Wiring

Delete 2100.10i (1) and (2) and insert:

“All equipment and wiring shall conform to the requirements of 527 CMR 12.00: *2002 Massachusetts Electrical Code (Amendments).*”

2101.10f Electrical Equipment and Wiring

Delete 2102.10f (1) and (2) and insert

“All equipment and wiring shall conform to the requirements of 527 CMR 12.00: *2002 Massachusetts Electrical Code (Amendments).*”

REGULATORY AUTHORITY

524 CMR 35.00: M.G.L. 143, § 69.

NON-TEXT PAGE