(5) Subsection (1) shall not apply in cities where permits are issued by the city in the manner approved by the department of industry, labor and human relations.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; r. and recr., Register, October, 1970, No. 178, eff. 11-1-70; am. (4), Register, October, 1976, No. 250, eff. 11-1-76.

Ind 4.05 Tests and inspections; new installations. (1) Every elevator, power dumbwaiter, material handling elevator, moving walk or moving ramp, or escalator shall be tested and inspected in conformance with the code requirements by a representative of the industrial commission before the installation is placed in service.

(a) The party installing such an installation shall give notice to the industrial commission not less than 10 days prior to the time the installation is complete and ready for inspection.

(b) A representative of the elevator company shall be present during the final inspection of each installation.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; renum. from Ind 4.08 to be Ind 4.05, Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.06 Inspection fee. A charge in accordance with the fee schedule established by Wisconsin Adm. Code, chapter Ind 69, Fee Schedule, will be made by the department of industry, labor and human relations of each inspection of each elevator, power dumbwaiter, material handling elevator, moving walk or moving ramp, or escalator.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; renum. from Ind 4.07 to be Ind 4.06, Register, October, 1970, No. 178, eff. 11-1-70; am. Register, December, 1970, No. 180, eff. 1-1-71.

Ind 4.07 Registration numbers. (1) All new elevators, dumbwaiters, escalators, moving walks and ramps shall be assigned a unit number.

(2) The registration number shall be located as follows:

(a) For elevators—on the car crosshead.

(b) For dumbwaiters—in or on dumbwaiter car structure.

(c) For escalators, moving walks or ramps—in the machine room at a location easily recognized from access opening.

(3) The registration number shall be on a metal plate, which shall include state of Wisconsin identification.

(4) All existing elevators, dumbwaiters, escalators, moving walks or ramps shall retain unit number previously assigned and in existing locations.

History: Cr. Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.08 Inspection by cities. In any city which provides a competent inspector, the department of industry, labor and human relations will accept inspections by such city, provided the conditions of subsections Ind 4.09 (4) (a), (b), (c), (d) and (e) are complied with, substituting "city" for "insurance company".

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; renum. from Ind 4.06 to be Ind 4.08, Register, October, 1970, No. 178, eff. 11-1-70; am. Register, December, 1970, No. 180, eff. 1-1-71; am. Register, October, 1976, No. 250, eff. 11-1-76.

Ind 4.09 Inspections; existing installations. (1) The authorized inspectors of the department, upon presenting appropriate credentials to the owner, operator, or agent in charge, are authorized—

(a) To enter without delay and at reasonable times any factory, plant, establishment, construction site, or other area, workplace or environment where work is performed by an employee of an employer; and

(b) To inspect and investigate during regular working hours and at other reasonable times, and within reasonable limits and in a reasonable manner, any such place of employment and all pertinent conditions, structures, machines, apparatus, devices, equipment, and materials therein, and to question privately any such employer, owner, operator, agent or employee.

(2) The inspector before making his inspection shall contact a representative of the employer and a representative authorized by his employees who shall be given an opportunity to accompany the inspector during the physical inspection of any workplace under subsection (1) for the purpose of aiding such inspection.

(a) Where there is no authorized employe representative, the inspector shall consult with a reasonable number of employees concerning matters of health and safety in the workplace.

Note: The department policy is not to give advance notice, but in the scheduling and in the act of inspecting it may not always be possible to avoid advance notice or to obtain accompaniment as, for example, inside boilers or in precarious locations of elevator installations, but otherwise these rules will be diligently observed.

(3) INTERVAL. Every elevator, power dumbwaiter, material handling elevator, moving walk or moving ramp, or escalator operated in the state of Wisconsin shall be subjected to a regular inspection once every 12 months.

(4) INSPECTION BY INSURANCE COMPANIES. The industrial commission may accept inspections of elevators, power dumbwaiters, material handling elevators, moving walks or moving ramps, and escalators reported by certified inspectors subject to the following conditions:

(a) Each installation shall be inspected at least once every 12 months.

(b) A detailed report of each unit inspected shall be filed with the commission within 14 days after inspection on a printed form approved by the commission. Such report shall show all respects in which the installation fails to comply with the code requirements.

(c) A certificate of inspection on a form approved by the commission shall be posted by the insurance company in a conspicuous place in the elevator car, dumbwaiter cage, material handling elevator, moving walk or moving ramp, or escalator, as the case may be, and shall show the date of inspection, name of insurance company, name of inspector, and rated capacity.

(d) The insurance company shall use all reasonable diligence to secure compliance with the commission's rules. If unsuccessful, it shall so report to the department. If it then becomes necessary for the

department to make an inspection, the statutory fee for each unit inspected will be charged. (See section Ind 4.06.)

(e) The competency of each elevator inspector shall be certified by each insurance company to the commission in writing prior to making inspections. Insurance company inspectors will be approved by the commission only after the receipt of acceptable evidence of competency and a satisfactory examination has been passed consisting of written tests.

1. Evidence of approval noted under subsection (4) (e) shall be confirmed on form SB-12 "Certificate of Competency Elevator Inspector" issued by the department to qualified inspectors after their competency has been examined and approved.

(5) A certificate for operation will be issued by the department of industry, labor and human relations upon finding said equipment meeting the applicable safety standards covered in this code.

(a) Certificates shall be effective for one year following the date of issuance.

(6) The department may revoke the certificate for operation if said equipment is found to be in non-compliance with the applicable safety rules.

(7) Whenever the department under the authority of subsection (6) revokes a certificate, the department shall immediately notify the owner, defined in section 101.01 (2) (i), Wis. Stats., of the equipment in writing and shall afford him an opportunity for a hearing within 30 days time after revocation of certificate.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; renum. from Ind 4.05 to be Ind 4.09, Register, October, 1970, No. 178, eff. 11-1-70; am. (2) (d), cr. (3), (4) and (5), Register, December, 1970, No. 180, eff. 1-1-71; am. (2) (d) and recr. (2) (e) 1., Register, May, 1971, No. 185, eff. 6-1-71; renum. (1), (2), (3), (4) and (5), to be (3), (4), (5), (6) and (7) and cr. (1) and (2), Register, April, 1973, No. 208, eff. 5-1-73; am. (4) (e) 1 and (7), Register, October, 1976, No. 250, eff. 11-1-76.

Ind 4.10 Hoistway enclosures. (1) EXISTING INSTALLATIONS. (a) The hoistway of every existing passenger or freight elevator or power dumbwaiter where the travel does not exceed 2 stories, and where a fire-resistive enclosure is not required, shall be solidly enclosed with wood or metal to not less than 6 feet in height, and shall withstand a horizontal force of 100 pounds with not more than 1 inch deflection at any point.

(2) NEW INSTALLATIONS. (a) The hoistway of every passenger elevator shall comply with the requirements as described in this subsection.

1. The hoistway enclosure in buildings of ordinary or frame construction shall be not less than 1-hour, fire-resistive construction. (See subsection (2) (c) and (d) and Wis. Adm. Code section Ind 4.31 for hoistway landing doors.)

2. The hoistway, regardless of travel in buildings of fire-resistive or mill construction, shall be enclosed with not less than 2-hour, fire-resistive construction. (See Wis. Adm. Code section Ind 4.31 for hoistway landing doors.)

(b) The hoistway of every freight elevator or power dumbwaiter shall comply with the requirements as described in this subsection.

1. The hoistway in buildings of ordinary or frame construction, where the travel does not exceed 2 stories, shall be solidly enclosed with wood or metal and shall withstand a horizontal force of 100 pounds with not more than 1 inch deflection at any point. (See subsection (2) (d).)

2. The hoistway in buildings of ordinary or frame construction 3 stories or more in height, shall be enclosed with not less than 1-hour, fire-resistive construction. (See Wis. Adm. Code sections Ind 4.38 and 4.79 for hoistway landing doors.)

3. The hoistway regardless of travel in buildings of fire-resistive or mill construction shall be enclosed with not less than 2-hour, fire-resistive construction. (See Wis. Adm. Code sections Ind 4.38 and 4.79 for hoistway landing doors.)

a. *Exception* 1. An elevator or power dumbwaiter hoistway which is placed in a fire-resistive stair enclosure, need not have an additional fire-resistive enclosure, but the hoistway shall be solidly guarded above each floor and every stairway with incombustible material and shall withstand a horizontal force of 100 pounds with not more than 1 inch deflection at any point.

b. *Exception* 2. Elevators installed in power plants or similar buildings where landings consist of grille work, perforated metal or catwalks, the hoistway may be enclosed to a height of not less than 7 feet above each landing, provided the space in front of each car entrance opening shall be enclosed with a solid guard the full height of the hoistway. This guard shall be in a plane not more than 7 inches from the edge of the car.

(c) Where a passenger or freight elevator or power dumbwaiter is installed in a building which includes a theatre or assembly hall the hoistway enclosure shall be not less than 2-hour, fire-resistive construction. (See Wis. Adm. Code sections Ind 4.31, 4.38 and 4.79 for hoistway landing doors.)

(d) Where a passenger or freight elevator or power dumbwaiter is installed in an apartment building, hotel, dormitory, convent, monastery, hospital, nursing home, or place of detention, the hoistway shall comply with the requirements described in this subsection.

2. The car and hoistway freight doors are operable from within the car only, and;

3. The controls for freight landing are key operated from the car only.

4. Only authorized personnel shall be issued keys for freight landing controls.

(4) For existing installations, the upper sections of such doors may be solid metal or of wire glass provided the glass pane is not less than ¼ inch thick nor greater than 720 square inches and not more than 54 inches vertical and 48 inches horizontal dimension.

(5) Existing installations. (a) Every elevator controlled from the car only, shall be provided with a service key to open the hoistway door from the landing side where the car is normally parked out of service. This key shall open this door only when the car is within 12 inches of the landing sill and shall open no other hoistway door.

1. The use of devices other than the service key to open the parking floor door or any other entrance to the elevator shaft is prohibited and means shall be provided to prevent use of other devices.

(b) For every automatic operation elevator where an emergency key opening, or any similar means has been provided for opening a hoistway landing door, the key opening or similar means shall be provided with a securely fastened cover.

1. *Exception:* Where keys are of special design for opening the hoistway door and their operation cannot be duplicated with common tools.

(c) The emergency operating key for unlocking hoistway doors shall be located adjacent to the lowest landing or be on the premises and made readily available by the building owner or his authorized representative.

1. The key shall be kept in a receptacle having a breakable red cover.

a. The receptacle shall be clearly marked "Fire Department and Emergency Use Only."

(6) New installations. (a) In a single hoistway, access shall be provided for emergency, inspection, maintenance or repairs at all openings.

(b) In multiple hoistways, access shall be provided for emergency, inspection, maintenance or repairs at the top terminal landing and the 2 lowest landings.

1. Where additional access to multiple hoistways is provided, such access shall be by a hoistway door unlocking device as specified in subsection (6) (c).

(c) The means of access shall be a hoistway door unlocking device as follows:

1. The device shall unlock and permit the opening of the hoistway door from the access landing irrespective of the position of the car.

2. The means to operate the device shall be not easily duplicated and in no case shall the design permit operation with common tools.

3. The emergency operating key for unlocking hoistway doors shall be located adjacent to the lowest landing or be on the premises and made readily available by the building owner or his authorized representative.

a. It shall be kept in a receptacle having a breakable red cover. The receptacle shall be clearly marked "Fire Department and Emergency Use Only."

(7) Hoistway access switches are not required, but, where installed shall conform with the requirements and operation outlined as follows:

(a) Hoistway access switches shall be installed at the top and/or bottom terminal landings. The top terminal landing car travel shall be limited to the full door opening to permit access to the top of the car; and the bottom terminal landing car travel shall be limited to the full door opening to permit access to the pit. These switches shall be located immediately adjacent to the hoistway doorways at these landings and shall not be installed at any other landings or in the car.

(b) The hoistway access switch shall be of the continuous-pressure spring-return type and shall be operated by a cylinder type lock having not less than a 5 pin or 5 disk combination with the key removable only when the switch is in the "off" position. The lock shall not be operable by any key which will operate any other lock or device which is used for any other purpose in the building. The key shall be available to and used only by inspectors, maintenance men, and repairmen.

(c) The operation of the hoistway access switch at either terminal landing shall permit movement of the car with the hoistway door at this landing unlocked or open and with the car door or gate open, subject to the following:

1. The operation of the access switch shall not render ineffective the hoistway door interlock or electric contact at any other landing.

2. The car shall not operate at a speed greater than 100 feet per minute.

3. For automatic operation elevators the normal operation shall first be made inoperative by means other than the access switch and the power operation of the hoistway door and/or car door or gate shall be inoperative.

4. Automatic operation by a car-leveling device shall be inoperative.

5. The operating device on top of the car as of Wis. Adm. Code section Ind 4.70 (3) shall be inoperative.

(8) Vision panels shall be provided in all hoistway landing doors of every automatic operated elevator except at landings where a hall position indicator is provided or where car and landing doors are power operated. All swing type hoistway doors shall be provided with vision panels. Where required or used, vision panels shall comply with the requirements as described in this subsection.

(a) The total area of any single panel shall not be less than 25 square inches or more than 80 square inches, and no single glass panel shall have a width exceeding 6 inches.

(b) Where mullions or division strips are used between panels, they shall be of fire-resistant material and of substantial construction.

(c) Panel openings shall be of glazed clear wire glass not less than ¼ inch thick, and shall be substantially flush with the surface of the landing side of the door.

(d) The center of a panel shall be not less than 54 inches nor more than 66 inches, above the elevator landing.

(9) On existing installations where the glass vision panel is in excess of 80 square inches, mullion or division strips shall be provided and no single glass panel shall have a width exceeding 6 inches.

(10) Where an elevator is installed in a single blind hoistway there shall be installed in the blind portion of the hoistway an emergency door at every third floor but not more than 36 feet apart and shall comply with the requirements outlined in this subsection.

(a) It shall be not less than 30 inches wide and 6 feet 6 inches in height and easily accessible and free from fixed obstructions.

(b) It shall be either of the horizontally sliding or swinging type irrespective of the type of door installed at the other landings.

(c) It shall be self-closing and self-locking and shall be marked in letters not less than 2 inches high, "DANGER ELEVATOR HOISTWAY".

(d) It shall be provided with a hoistway door electric contact. It shall be unlocked only from the landing side through the use of a cylinder type lock having not less than a 5 pin or 5 disk combination. The cylinder lock shall:

1. Be located not less than 5 feet above the floor.

2. Not be unlocked by any key which will open any other lock or device used for any other purpose in the building.

3. Be so designed that the key shall be removable only in the locked position and shall be kept where it is accessible only to authorized persons.

(11) Hoistway doors shall be so arranged that they can be opened manually from the hoistway side when the car is within the interlock unlocking zone.

History: Cr. Register, October, 1964, No. 106, eff. 11–1–64; r. and recr. (6) (b), Register, December, 1967, No. 144, eff. 1–1–68; r and recr. (3), (5) and (6), and cr. (11), Register, October, 1970, No. 178, eff. 11–1–70.

Ind 4.32 Passenger elevator, (hoistway landing door interlocks). (1) EXISTING INSTALLATIONS. (a) Interlocks, either mechanical or electro-mechanical shall be provided on the door of every passenger elevator installation as described in this subsection.

1. A mechanical interlock when provided shall prevent the operation of the driving machine by the normal operating device unless the hoistway landing door at that landing is locked within 4 inches of the fully closed position; and prevent the opening of a hoistway landing door from the landing side, except by means of a special key.

2. An electro-mechanical interlock (a combination of electrical and mechanical devices) when provided shall prevent the operation of the driving machine by the normal operating device unless the hoistway landing door at that landing is locked within 4 inches of the nearest face of the jamb and, provided that the door will eventually be closed and locked within ⅜ inch of the nearest face of the jamb; and prevent the opening of a hoistway landing door from the landing side, except by means of a special key.

3. The functioning of the landing door interlock shall prevent the movement of the car and shall not be dependent solely on the action of a spring or springs in tension, nor solely upon gravity, nor shall it be dependent on the closing of an electric circuit.

(2) NEW INSTALLATIONS. (a) *Interlock.* A hoistway door interlock shall be provided on the door of every passenger elevator installation as described in this subsection.

1. Interlock contacts shall be positively opened by the locking member or by a member connected to and mechanically operated by the locking member, and the contacts shall be maintained in the open position by the action of gravity or by a restrained compression spring, or by both, or by means of the opening member.

2. The interlock latching mechanism shall hold the door in the closed and locked position by means of gravity or by a restrained compression spring or by both, or by means of a positive linkage.

3. The interlock shall lock the door in the closed position before the driving machine can be operated by the normal operating device.

4. The interlocks shall prevent the operation of the driving machine by the normal operating device unless all hoistway doors are closed and locked within ⅜ inch of the fully closed position.

a. *Exception.* The interlock is not required to prevent the operation of the car when being moved within the leveling zone or by means of the access switch as described in Wis. Adm. Code in section Ind 4.31 (7).

(b) Interlocks, used with multi-section doors, shall conform with the requirements outlined as follows:

1. They shall lock all sections of the door, but may be applied to only one section of the door provided the device used to interconnect the door sections is so arranged that locking one section will prevent the opening of all sections.

(c) Interlock systems employing a single master switch for more than one door is prohibited.

(d) Retiring cams used to actuate an interlock shall exert a force at least double the average force required to operate the interlock and shall have a movement at least ½ inch more than the average movement required to operate the interlock.

(e) Interlocks shall be so located that they are not accessible from the landing side when the hoistway doors are closed .

Note: Hoistway door interlocks to be accepted as satisfactory, are subject to evidence that they meet requirements based on tests outlined by the Safety Code for Elevators approved by American Standards Association and by tests made by a recognized testing laboratory.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64.

Ind 4.33 Landing sills and hinged or movable trucking sills. (1) Metal sills shall be provided of sufficient strength to support the load to be carried by the sill when loading and unloading the car and shall be permanently secured in place at each hoistway door opening. Sills shall be substantially level with the floor surface of the elevator landing or shall be beveled to meet the floor surface and for passenger elevators shall be so designed and maintained as to provide secure foothold for the entire width of the door opening.

(a) Landing sills of elevators used to carry freight shall be designed and installed to withstand the maximum concentrated sill loads for which the elevator is rated.

(b) The tops of railroad tracks located on elevator landings shall be substantially flush with the floor surface for a distance of at least 6 feet from the sill.

(2) Hinged or movable trucking sills where provided shall conform with the requirements as outlined in this subsection.

(a) Where a hinged or movable trucking sill is provided on the hoistway landing, the hinged or movable section shall be securely fastened to the building floor or landing sill at each hoistway door opening. Each sill may function automatically with the operation of a vertical moving hoistway door or counterbalanced gate.

(b) Where a hinged or movable trucking sill is provided on the car platform, the trucking sill shall be provided with an electric contact to prevent the operation of the elevator by the normal operating device unless the hinged or movable sill is locked within 2 inches of its fully retracted position; provided that when in this position the sill shall not reduce the clearance as outlined in Wis. Adm. Code section Ind 4.16 (1). The elevator may be operated by a releveling device with the sill in any position.

(c) Each sill shall bridge across the entire width of the door opening from the building floor landing to the elevator car platform, or from the car platform to the building landing sill. Each sill shall be properly counterbalanced and the long edges of each sill shall be beveled for smooth trucking surface. Each sill shall be designed to withstand the maximum concentrated loads for which the elevator is rated.

History: Cr. Register, October, 1964, No. 106, eff. 11–1–64.

Ind 4.34 Freight elevator. Car enclosure. (1) EXISTING INSTALLATIONS. (a) Every freight elevator car shall be solidly enclosed on all sides, except the entrance side. The height of every such enclosure shall be at least 6 feet, except as follows:

1. On every elevator the enclosure shall be at least 7 feet in height in front of the counterweight runway, and shall extend from floor to cover on every car where a cover is required or provided.

2. On every hand carriage type elevator traveling not more than 2 stories the enclosure shall be at least 3½ feet in height, except in front of the counterweight runway, where it shall be 7 feet high.

3. On the side of the operating cable, a sufficient open space to operate the cable shall be allowed, but in no case shall the opening be more than 15 inches wide.

4. On hand elevators, the enclosure may be arranged on the pull rope side so as to permit free operation of the pull rope.

5. Every power elevator shall be equipped with a solid or openwork top cover. Openwork top covers shall reject a ball 1½ inches in diameter. The car top or cover shall be sufficiently strong to sustain a load of 300 pounds applied on any square area 2 feet on a side.

a. *Exception.* A car cover is required over only that half of the car next to the entrance opening; on cars 10 feet or more in length with one entrance opening only (except at the lowest landing) and where the travel does not exceed 2 stories; nor more than 30 feet.

b. *Exception.* No cover is required where an elevator travels one story and the bottom rail of the landing gate above the lowest landing extends to the floor.

6. No cover is required over an existing hand elevator car where the bottom rail of every landing gate above the lowest landing rests on the floor. Where a hand elevator is not provided with a cover, a floor or screen shall be provided under the overhead drum and gears.

7. Where any entrance opening in an elevator hoistway is not equipped with a hoistway door, provided with a hoistway door interlock or electric contact and lock or where the entrance side of the car is not equipped with an approved car gate, the cover of the car shall be equipped with a hinged section facing each entrance, unless such entrance occurs only at the lowest landing. This hinged section shall be at least 12 inches wide, shall extend the full width of the entrance to within 5 inches of the landing sill, and shall be constructed so it will rise easily if it meets an obstruction as the car descends.

(2) NEW INSTALLATIONS. (a) Every power freight elevator car shall be solidly enclosed on all sides, except the sides used for entrance and shall conform with the requirements outlined in this subsection.

(b) The enclosure shall be of metal without perforations to a height of not less than 6 feet above the car platform. The enclosure above the 6 foot level shall be of metal with or without perforations. Perforated portions of the enclosure shall reject a ball 1½ inches in diameter.

1. The enclosure in front of the counterweight runway shall be of metal without perforations.

(c) The enclosure shall be of such strength and so designed and supported that when subjected to a force of 75 pounds applied horizontally at any point on the enclosure, the deflection shall not exceed one inch, nor the running clearance be less than ¾ inch.

1. The enclosure shall be securely fastened and supported so that it cannot loosen or become displaced in ordinary service or on the application of the car safety device or on buffer engagement.

(d) Every elevator shall be equipped with a solid or openwork top cover. Openwork top covers shall reject a ball 1½ inches in diameter. The car top or cover shall be so designed and installed as to be capable of sustaining a load of 300 pounds on any square area 2 feet on a side.

(e) An emergency exit with a cover shall be provided in the top of all elevator cars and shall conform with the requirements outlined as follows:

1. The exit opening shall have an area of not less than 400 square inches and shall measure not less than 16 inches nor more than 25 inches on any one side.

2. The exit shall be so located as to provide a clear passageway unobstructed by fixed elevator equipment located in or on top of the car.

3. The exit cover shall open upward and shall be hinged to the car top so that the cover can be opened from both inside and from on top of the car without the use of tools.

(f) Hinged or removable panels shall not be provided in car tops except for emergency exits.

History: Cr. Register, October, 1964, No. 106, eff. 11–1–64.

Ind 4.35 Freight elevator. Car door or gate. (1) EXISTING INSTALLATIONS. (a) A door or gate shall be provided at the car entrance to conform with the requirements outlined in this subsection.

(b) At each entrance of every automatic operation elevator.

(c) At each entrance of every continuous pressure or car switch operation elevator where the contract speed is in excess of 50 feet per minute.

1. *Exception.* Elevators having regular operators and operated from the car only.

(d) At the secondary entrance of every continuous pressure or car switch operation elevator not in excess of 50 feet per minute.

1. *Exception.* This requirement is not applicable to an elevator having but one entrance at the lower landing and the secondary entrance at the upper limit of travel, provided the distance between the edge of the car and the hoistway enclosure at the secondary entrance does not exceed 1½ inches with no projections and the speed does not exceed 50 feet per minute.

(e) At the secondary entrance of every power elevator having more than one entrance and having a difference in the floor landing levels in excess of 30 inches.

(f) At the secondary entrance of every elevator where the distance between the edge of the car and the hoistway enclosure on the side of the secondary entrance is more than 7 inches at any point or the hoistway enclosure on that side shall be altered so that it will come within the required limit.

(g) Every door or gate shall be not less than 6 feet in height; shall extend to within 1 inch of the car floor and when closed shall guard the full width of the opening; and the distance between bars or slats shall not exceed 3 inches, and each door or gate shall be provided with a door or gate electric contact to prevent movement of the car unless the door or gate is within 2 inches of being in the fully closed position.

1. *Exception.* This door or gate electric contact is not required to prevent the operation of the car when being moved within the leveling zone.

(2) NEW INSTALLATIONS: (a) A door or gate shall be provided at each car entrance.

1. *Exception.* Car doors or gates are not required on elevators of the continuous pressure operating type having but one entrance at the lower landing provided the travel does not exceed 14 feet or more than one story; the speed does not exceed 35 feet per minute; and the distance between the edge of the car and the hoistway enclosure at the secondary entrance does not exceed 1½ inches with no projections; and the car operating buttons located not less than 24 inches from the edge of the car sill.

(b) Doors and gates, when in the closed position, shall guard the full width of the car opening and shall extend from a point not more than 1 inch above the car floor and to a height of not less than 6 feet. Each door or gate shall be provided with a door or gate electric contact to prevent the movement of the car unless the door or gate is within 2 inches of being in the fully closed position.

Exception. The door or gate electric contact is not required to prevent the operation of the car when being moved within the leveling zone.

1. Gates shall be of the horizontal sliding collapsing type or vertical sliding type. Collapsible type gates when fully closed shall reject a ball 3 inches in diameter; and at least every fourth vertical member shall be guided at the top and every second vertical member guided at the bottom. Vertical sliding gates shall be of hardwood or metal and shall reject a ball 3 inches in diameter, and shall be designed to

withstand a lateral force of 100 pounds concentrated at the center of the gate without deflecting the gate past the line of the threshold, and a force of 250 pounds, without forcing the gate from the guides.

2. Collapsible type gates shall not be power opened.

3. Doors shall be of the horizontal or vertically sliding type. There shall be no openings in doors, except for vision panels.

4. Vision panels in car doors shall not exceed 80 square inches in area and no single panel shall exceed 6 inches in width and shall be laminated or wire glass.

(c) Vertically sliding car doors or gates shall be counterbalanced from two sides. Balance (counterweight) weights for vertical operating doors or gates shall be located outside the car enclosure and shall run in guides or boxed in. Guides shall be of metal, and the bottom of the guides or boxes shall be so constructed as to retain the weight if the suspension member fails.

(d) Car door or gate electric contacts shall be positively opened by the movement of the door or gate and shall be maintained in the open position and shall be so located that they are not readily accessible from inside the car.

History: Cr. Register, October, 1964, No. 106, eff. 11–1–64; r. and recr. (1) (c), Register, September, 1967, No. 141, eff. 10–1–67; am. (1) (e), Register, October, 1970, No. 178, eff. 11–1–70.

Ind 4.36 Freight elevator hoistway landing entrance openings. Every freight elevator entrance opening in the hoistway enclosure shall be protected with a door or gate and when closed shall guard the opening as outlined in Wis. Adm. Code section Ind 4.37 and Ind 4.38.

History: Cr. Register, October, 1964, No. 106, eff. 11–1–64.

Ind 4.37 Freight elevator hoistway landing gates. (1) EXISTING INSTALLATIONS. (a) Hoistway landing gates where provided shall conform with the requirements outlined in this subsection. (See Wis. Adm. Code section Ind 4.38 for hoistway landing doors.)

1. Where the car speed does not exceed 75 feet per minute, gates shall be not less than 3½ feet in height; and semi-automatic operation at each landing or full-automatic at terminal landings or balanced type gates with electric contacts and locks. For elevators equipped with an electric brake (See subsection (1) (a) 6.).

2. Every semi-automatic gate for power elevators shall be equipped with an approved gate lock so arranged that the gate cannot be opened unless the car is at the landing. This lock shall be so constructed and located that it cannot be easily reached from the floor when the gate is closed.

Note: Balanced gates with electric contacts are prohibited on elevators with mechanical brake. (See Wis. Adm. Code section Ind 4.60 (1) (f).)

3. Where the car speed exceeds 75 feet per minute, gates shall be not less than 5½ feet in height; and shall be semi-automatic at each landing or balanced type with electric contacts and locks or interlocks.

4. Where electric contacts are provided on the hoistway landing gates, the lock or latch and contact shall be so arranged as to insure the gate being in a position to be locked or latched before the contact is closed.

5. Hoistway landing gate electric contacts shall be opened by the movement of the gate and shall be maintained in the open position

and shall be so located that they are not readily accessible from the landing.

6. Every hoistway landing gate shall be provided with electric contacts and locks or interlocks on all elevators having an electric brake.

7. Hoistway landing gates are prohibited on elevators where the car speed exceeds 100 feet per minute.

8. Hoistway landing gates for hand-operated elevators shall be semi-automatic at each landing or full automatic at terminal landings.

a. *Exception.* On hand elevators where doors are used, the doors shall be equipped with self-acting locks designed to prevent opening the doors from the landing except by means of a key.

9. Every full-automatic gate shall be fully closed when the car has traveled a distance of not more than 8 feet from the landing.

10. No collapsible type gate shall be installed at any hoistway landing.

(2) GATE CONSTRUCTION. EXISTING INSTALLATIONS. (a) Every hoistway landing gate shall be so constructed and guided as to withstand a lateral force of 100 pounds concentrated at the center of the gate without being deflected beyond the line of the landing sill and a force of 250 pounds without separating the gate from its guides or without causing it to break or be permanently deformed.

1. Slats or bars when used shall be spaced not more than 3 inches apart.

a. *Exception.* A 5-inch gate opening will be permitted on existing cable controlled elevators to permit operation of the cable.

2. The main horizontal cross members shall extend into the guides or against the vertical members at the gate post, or the gate shall be provided with guide shoes fastened to the gate frame, so that the pressure on the gate from the landing side will not cause the gate to move into the hoistway in case the fastenings become loose.

Note: Where overhead rails are used on cars, center slots or openings in the hoistway gates will be permitted to allow passage of the trolley.

3. The bottom cross member of each landing gate shall extend to within 12 inches of the sill when the gate is closed.

a. *Exception 1.* At landings where conditions require more space to secure sufficient headroom, a clearance of not more than 20 inches between the bottom cross member and the sill when the gate is closed will be permitted.

b. *Exception 2.* At basement landings where conditions will not permit a standard gate a clearance of not more than 30 inches between the bottom cross member and the sill when the gate is closed will be permitted provided the speed does not exceed 50 feet per minute. Self-closing or balanced type gates with electric contact and locks will be acceptable.

4. The bottom cross members of each landing gate at an opening in an outside wall shall be not more than 1 inch above the sill when closed.

5. Every gate guide post or track shall be securely fastened to the supporting wall or structure in such a manner to withstand the lateral pressure applied to the gate as specified in subsection (2) (a). The use of wood plugs and/or metal expansion bolts in brick, tile or plaster walls for fastening guide posts or track is prohibited.

6. Every gate shall be properly balanced and hung with substantial sash cord, flexible cable or chain over pulleys and not less than 3 inches in diameter.

7. Gate counterweights shall be boxed in, or shall run in metal guides which cannot be dislodged. The bottom of the boxes or guides shall be of such construction that the counterweight will be retained if the sash cord, cable or chain breaks.

(3) GATES. NEW INSTALLATIONS. (a) Hoistway landing gates shall conform with the requirements outlined in this subsection.

Note: For fire-resistive constructed hoistways see Wis. Adm. Code section Ind 4.10 (2) (b), (c) and (d) and section Ind 4.38 (2) (a) 3.

1. Where the car speed does not exceed 50 feet per minute; gates shall be not less than 3½ feet in height and shall be of the balanced type equipped with electric contacts and locks or interlocks.

2. Where the car speed exceeds 50 feet per minute; gates shall be not less than 5½ feet in height and shall be of the balanced type equipped with electric contacts and locks or interlocks.

3. Hoistway landing gates are prohibited on elevators where the car speed exceeds 100 feet per minute.

4. Hoistway landing gates shall be equipped with electric contacts and locks or interlocks as outlined in this subsection.

a. Electric contacts and locks or interlocks where the car speed does not exceed 100 feet per minute.

b. Hoistway landing gate electric contacts shall be positively opened by the movement of the gate and shall be maintained in the open position and shall be so located that they are not readily accessible from the landing.

c. Where electric contacts are provided on hoistway landing gates; the lock or latch and contact shall be so arranged as to insure the gate being in a position to be locked or latched before the contact is closed.

5. Hoistway landing gates located at an opening in an outside wall shall be not less than 6 feet in height.

6. No collapsible type gate shall be installed at any landing.

7. Hoistway landing gates shall be provided for hand-operated elevators and shall be of the vertically sliding type, semi-automatic operation at each landing and full-automatic at terminal landings.

(4) GATE CONSTRUCTION. NEW INSTALLATIONS. (a) Hoistway landing gates where provided shall be constructed to conform with all requirements in this subsection, as outlined.

1. Hoistway landing gates shall be so constructed and guided as to withstand a lateral force of 100 pounds concentrated at the center of the gate without being deflected beyond the line of the landing sill and a force of 250 pounds without forcing the gate from its guides or without causing it to break or be permanently deformed.

2. The net width of an opening between wood slats or bars shall not exceed 2 inches.

a. The bottom cross member of each landing gate shall extend to within 1 inch of the sill when closed.

3. Panels of metal constructed gates shall be equal in strength to No. 10 U. S. Standard gauge, with mesh not greater than 2 inches.

a. Each gate panel shall be provided with guide shoes secured to the gate frame in such a manner that pressure on the gate from the

landing side will not cause the gate panel to move into the hoistway if the guide shoes become loose.

4. Every gate guide post or track shall be securely fastened to withstand the lateral pressure as applied to the gate as specified in subsection (4) (a) 1. The use of wood plugs and/or metal expansion bolts in brick, tile or plaster walls for fastening guide posts or tracks is prohibited.

5. Every gate shall be properly counterbalanced from 2 sides and hung with substantial sash cord, flexible cable or chain over pulleys not less than 3 inches in diameter.

6. The gate counterweights shall be boxed in or shall run in metal guides to prevent being dislodged. The bottom of the boxes or guides shall be of such construction that the counterweights will be retained if the suspension means break.

History: Cr. Register, October, 1964, No. 106, eff. 11–1–64.

Ind 4.38 Freight elevator hoistway landing doors. (1) EXISTING INSTALLATIONS. (a) Hoistway landing doors where provided shall conform with the requirements outlined in this subsection.

1. Every semi-automatic door for power elevators shall be equipped with an approved lock so arranged that the door cannot be opened unless the car is at the landing. This lock shall be so constructed and located that it cannot be easily reached from the floor when the door is closed. For elevators equipped with an electric brake see subsection (1) (a) 5.

2. Where electric contacts are provided on hoistway landing doors, the lock or latch and contact shall be so arranged as to insure the door being in a position to be locked or latched before the contact is closed.

3. Hoistway landing door electric contacts shall be positively opened by the movement of the door and shall be maintained in the open position and shall be so located that they are not readily accessible from the landing.

4. On hoistway landing doors, where the glass vision panel is in excess of 80 square inches, mullion or division strips shall be provided and no single glass panel shall have a width exceeding 6 inches.

5. Every hoistway landing door shall be provided with electric contacts and approved locks or interlocks on all elevators having electric brakes.

6. Full automatic doors at terminal landings are prohibited where the car speed exceeds 100 feet per minute.

7. For every freight elevator where an emergency key opening, or any similar means has been provided for opening a hoistway landing door, the key opening or similar means shall be provided with a securely fastened cover. (See a. below for exception.)

a. Exception. Where keys are of special design for opening the hoistway doors and their operation cannot be duplicated with common tools.

b. The emergency operating key for unlocking hoistway doors shall be located adjacent to the lowest landing or be on the premises and made readily available by the building owner or his authorized representative. The key shall be kept in a receptacle having a breakable red cover. The receptacle shall be clearly marked "Fire Department and Emergency Use Only."

8. Single or multi-section vertically sliding doors shall be so counterweighted and vertically sliding, bi-parting counterbalanced doors shall be so counterbalanced that they will not open or close by gravity.

9. Suspension means and their connections for vertically sliding bi-parting counterbalanced doors and for the counterweights of vertically sliding counterweighted doors, shall have a factor of safety of not less than 5. Fastenings shall be provided to prevent the detachment or dislodgment of counterbalancing weights of doors.

10. Each door panel shall be so constructed as to withstand a constant force of 250 pounds applied at right angles to and at approximately the center of the panel, without causing the panel to break or to be permanently deformed.

(2) DOORS. NEW ELEVATOR INSTALLATIONS. (a) Hoistway landing doors where provided shall conform with the requirements outlined in this subsection.

1. Where a 1-hour, fire-resistive constructed hoistway is required all hoistway landing doors or fire shutters shall have a minimum fire-resistive rating of ¾ hour. Wood doors of solid flush type 1¾ inches thick are acceptable.

2. Where a 2-hour, fire-resistive constructed hoistway is required all hoistway landing doors or fire shutters shall have a minimum fire-resistive rating of 1½ hours. The doors shall be marked or identified to indicate that the entrance construction meets the fire rating requirements. These identifying marks may be labels or certifications based on tests submitted from a recognized testing laboratory.

3. Where a fire-resistive constructed hoistway is required and hoistway landing gates are provided, each entrance opening shall be provided with an approved fire door or shutter which shall be equipped to close automatically in case of fire (see Wis. Adm. Code section Ind 4.10).

4. Hoistway doors shall be provided for elevators where the car speed exceeds 100 feet per minute.

5. Hoistway landing doors shall be equipped with electric contacts and locks or interlocks as outlined in this subsection.

a. Electric contacts and locks or interlocks where the car speed does not exceed 100 feet per minute.

b. Interlocks for all elevators where the car speed is in excess of 100 feet per minute.

c. Where interlocks are provided they shall conform with all requirements outlined in Wis. Adm. Code section Ind 4.32 (2) (a).

6. Hoistway landing door electric contacts shall be positively opened by the movement of the door and shall be maintained in the open position and shall be so located that they are not readily accessible from the landing.

7. Where electric contacts are provided on hoistway landing doors, the lock or latch and contact shall be so arranged as to insure the door being in a position to be locked or latched before the contact is closed.

(b) Each door panel shall be so constructed as to withstand a constant force of 250 pounds applied at right angles to and at approximately the center of the panel, without causing the panel to break or be permanently deformed.

1. Single or multi-section vertically sliding doors shall be so counter-

weighted and vertically sliding, bi-parting counterbalanced doors shall be so counterbalanced that they will not open or close by gravity.

2. Suspension means and their connections, for vertically sliding bi-parting counterbalanced doors and for the counterweights of vertically sliding counterweighted doors, shall have a factor of safety of not less than 5. Fastenings shall be provided to prevent the detachment or dislodgment of counterbalancing weights of doors.

3. Bi-parting counterbalanced hoistway doors shall have the lower edge of the upper door section provided with a fire-resistive, non-shearing, non-crushing member to provide a space of not less than ¾ inch between the rigid members of the door sections when closed. Any rigid astragal overlapping the meeting edge and/or any fire-resistive astragal overlapping the door sections when closed is prohibited. Center latches are prohibited.

4. Manually operated vertically sliding bi-parting counterbalanced hoistway doors on elevators which can be operated from the landings shall be provided with pull straps on the inside and outside of the doors.

5. Horizontal sliding doors shall conform with the requirements of Wis. Adm. Code Ind 4.31 (1) (c) to (c) 4., inclusive.

6. Vision panels shall be provided in all hoistway landing doors; except where car position indicators are installed at each floor, or where car and landing doors are power operated. Where required or used, vision panels shall conform with the requirements as described in this subsection.

a. The total area of any single panel shall not be less than 25 square inches or more than 80 square inches, and no single glass panel shall have a width exceeding 6 inches.

b. Where mullions or division strips are used between panels, they shall be of fire-resistive material and of substantial construction.

c. Panel openings shall be glazed clear wire glass not less than ¼ inch thick and shall be substantially flush with the surface of the landing side of the door.

d. The center of a panel shall be not less than 54 inches nor more than 66 inches above the elevator landing.

7. For every new freight elevator with counterbalanced doors and every car switch controlled elevator equipped with horizontally sliding doors where an emergency key opening, or any similar means has been provided for opening a hoistway landing door, the key opening or similar means shall be provided with a securely fastened cover. (See a. below for exception.)

a. Exception. Where keys are of special design for opening the hoistway doors and their operation cannot be duplicated with common tools.

b. The emergency operating key for unlocking hoistway doors shall be located adjacent to the lowest landing or be on the premises and made readily available by the building owner or his authorized representative. The key shall be kept in a receptacle having a breakable red cover. The receptacle shall be clearly marked "Fire Department and Emergency Use Only."

8. Emergency keys not easily duplicated, shall be provided to open certain hoistway landing doors from the landing side regardless of the car position. Emergency key opening shall be provided for landing doors for every automatic or continuous pressure push button

controlled elevator installed with horizontally sliding or swinging doors outlined as follows:

a. Single hoistway—at each floor.

b. Multiple hoistway—the lowest terminal and the landing door immediately above it.

c. All emergency key openings shall be provided with a securely fastened cover. (See d. below for exception.)

d. Exception. Where keys are of special design for opening the hoistway doors and their operation cannot be duplicated with common tools.

e. The emergency operating key for unlocking hoistway doors shall be located adjacent to the lowest landing or be on the premises and made readily available by the building owner or his authorized representative. The key shall be kept in a receptacle having a breakable red cover. The receptacle shall be clearly marked "Fire Department and Emergency Use Only."

9. An elevator installed in a single blind hoistway shall conform with Wis. Adm. Code section Ind 4.31 (10).

(c) Every elevator shall have an access provided to its related hoistway at the lowest landing as required in section Ind 4.31 (6) (c) for purposes of emergency, inspection, maintenance or repairs.

1. Where additional access to hoistway is provided, such access shall be by a hoistway unlocking device as specified in section Ind 4.31 (6) (c).

(d) An elevator installed in a single blind hoistway shall conform with Wis. Adm. Code section Ind 4.31 (10).

History: Cr. Register, October, 1964, No. 106, **eff. 11–1–64**; r. and recr. (1) (a) 7., and cr. (2) (c) and (d), Register, October, 1970, No. 178, eff. 11–1–70; am. (1) (a) 7. a., r. and recr. (2) (b) 7., and 8. c. and d., and cr. 8. e., Register, May, 1971, No. 185, eff. 6–1–71.

Ind 4.39 Power door operation. New installations.

(1) (a) Power operation of horizontally sliding car and hoistway landing doors shall conform with the requirements as outlined in this subsection.

1. Both the car and hoistway door shall be of the horizontally sliding type.

2. Power opening of the car door shall occur only when the car is stopping, or is leveling, or is at rest.

3. Power opening of the hoistway landing door shall occur only at the landing where the car is stopping within the leveling zone or is at rest.

4. Where power hoistway doors are automatically opened as the car is leveling, the car shall be at rest or substantially level with the landing before the hoistway door is fully opened.

(b) Where a car door or gate of an automatic operation elevator is closed by power, or is of the automatically self-closing type, and faces a manually operated or self-closing hoistway door, the closing of the car door or gate shall not be initiated unless the hoistway door is in the closed position; and the closing mechanism shall be so designed that the forces necessary to prevent closing of a car door or gate from rest shall be not more than 30 pounds.

(c) A re-opening device shall be provided for every power-operated car door which will function to stop and re-open a car door and the adjacent hoistway door in the event that the car door is obstructed

while closing. Where the hoistway door and the car door are closed in such a manner that stopping either one manually will stop both.

(2) Power operation of vertically rising or vertically bi-parting hoistway doors or gates shall conform with the requirements outlined in this subsection.

(a) Both hoistway door or gate and car door or gate shall be of the vertically sliding type and:

1. Power opening of the car door or gate shall occur only when the car is stopping or is leveling, or is at rest.

2. Power opening of the hoistway landing door or gate shall occur at the landing where the car is stopping within the leveling zone.

3. Where power hoistway doors are automatically opened as the car is leveling, the car shall be at rest or substantially level with the landing before the hoistway door is fully opened.

4. Where a car door or gate of an automatic operation elevator is closed by power, or is of the automatically self-closing type, and faces a manually operated or self-closing hoistway door, the closing of the car door or gate shall not be initiated unless the hoistway door is in the closed position.

(b) Power closing of vertically sliding hoistway doors or gates shall be by means of continuous pressure operation from the car and/or at the landing where the car is stationed.

1. *Exception.* The continuous pressure operation shall be overridden by an automatic operation as specified in Ind 4.95 (1) (d).

(c) The operation of the closing means shall not close the hoistway door or gate or car door or gate when the elevator is at any other landing.

(d) For elevators having more than one hoistway opening at any landing level, a separate closing means shall be provided in the car for each car door or gate and its adjacent hoistway door or gate. Any closing means at a landing shall close only that hoistway door or gate and the car door or gate at the side where such means is located.

(e) Power-operated hoistway landing gates shall be not less than 5½ feet in height.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; cr. (2) (b) 1, Register, October, 1976, No. 250, eff. 11-1-76.

Ind 4.41 Factors of safety for cables. New and existing installations. (1) The factor of safety based on static loads for cables for passenger and freight elevators shall be not less than the values given in Table 8 corresponding to the contract speed of the car.

TABLE 8
FACTORS OF SAFETY FOR HOISTING CABLES

Car Speed in Feet Per Minute	Elevators
50 or less	7.60
100	7.95
200	8.60
300	9.20
400	9.75
500	10.25
600	10.70
700	11.00
800	11.25
900	11.45

Note: Intermediate car speeds and factors of safety can be obtained by interpolation.

(a) Unless the ultimate strength and material of a cable are known, the load shall be limited to the load allowed for an iron cable of the same diameter.

(b) No car or counterweight cable shall be repaired or lengthened by splicing.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64.

Ind 4.42 Cable data. (1) There shall be posted for permanent record in a conspicuous place on the car beam of every elevator hereafter installed a metal sign bearing the following original data:

CABLE SPECIFICATIONS

Kind of Cable	Number of Cables	Diameter in Inches	Rated Ultimate Strength	Date of Installation
Hoisting				

(2) On elevators hereafter installed and thereafter whenever cables are renewed on elevators, there shall be attached to the cable fastening or car beam a tag or plate bearing the following data:

CABLE INSTALLATION DATA

Diameter of Cables----------
Material and Type of Cable----------
Rated Ultimate Strength ----------
Date Installed ----------

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64.

Ind 4.43 Renewing of cables. Cables are considered unsafe and shall be renewed when through broken wires, wear, rust, undue strain, or other deterioration, the strength has decreased more than 25% of the manufacturers rated strength of the cable. When for any reason it becomes necessary to renew one or more cables of a group supporting a common load, all cables in that group shall be renewed.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64.

Ind 4.44 Number and size of cables required. (1) Every elevator which requires hoisting cables shall have not less than 2 hoisting cables.

(a) *Exception.* On existing installations a single hoisting cable will be permitted providing the factor of safety is not less than 10.

(2) Every traction elevator hereafter installed shall have not less than 4 cables.

(a) *Exception.* For 2 to 1 roping where the capacity does not exceed 2500 pounds and the speed does not exceed 100 feet per minute 3 cables may be used.

(b) *Exception.* When the capacity does not exceed 1200 pounds 3 cables may be used.

(3) Hoisting cables less than ½ inch in diameter shall not be used for power elevators.