

(5) Access to the machine room or penthouse for elevators hereafter installed shall not be through any toilet room, sleeping room or private quarters.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; r. and recr. (1) intro par. and (4). Register, September, 1967, No. 141, eff. 10-1-67.

Ind 4.21 Machine rooms, penthouses, overhead sheaves and/or governors. New installations. (1) Where the machine and/or controller is located over the hoistway, a floor or grating shall be provided at the top of the hoistway of every power elevator to conform with Wis. Adm. Code section Ind 4.23 and the headroom or working space shall be not less than 7 feet in height.

(a) *Exception.* For new installations in existing machine rooms or penthouses the headroom or working space shall be not less than 6 feet in height.

(2) Where a secondary floor or metal grating is provided below the machine room or penthouse floor and the space contains sheaves and/or governor, a floor or metal grating shall be provided to cover the full area of the hoistway and the headroom or working space shall not be less than 4 feet in height.

(3) Where the elevator machine room is located below or at the side of the hoistway, the headroom or working space shall be not less than 7 feet in height.

(4) A floor or metal grating shall be provided below all overhead sheaves and/or governors and shall cover the full area of the hoistway and shall conform with the requirements outlined in this subsection.

(a) *Exception:* Providing there are no other access openings from outside the hoistway, a floor or grating is not required where the governor and sheaves can be serviced while standing on top of the car or car structure, and the governor is of a type that can be released by movement of the car in the up direction.

(b) The headroom or working space shall be not less than 4 feet in height.

(c) Access to the sheaves and/or governor from the roof shall be by means of a hinged door with latch; this door shall be not less than 20 inches by 24 inches.

1. Where the access is 4 feet or more above the roof, a stairway-type ladder shall be provided to the access door.

(5) Where a new elevator terminates below an occupied floor and the headroom or working space in the machine room cannot be provided as required in subsection (1) the headroom or working space may be decreased if approved in writing.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; r. and recr. (4). Register, September, 1967, No. 141, eff. 10-1-67; am. (4) (a). Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.22 Construction of machine rooms and penthouses. (1) The construction of walls, ceilings or roofs and openings of all machine rooms and penthouses shall be of equivalent construction as required for hoistway enclosures. Where exposed walls and roofs are of non-fire-resistive construction, the penthouse shall in all cases be covered with incombustible material, or not less than 1-hour, fire-resistive construction.

(2) Machine rooms shall be provided with adequate heating and provided with natural or mechanical ventilation to insure safe and normal operation of elevators hereafter installed.

(3) For every existing elevator installation access to the machine room or penthouse shall be horizontal and shall be made safe and easy from outside the hoistway by means of a stairway (with hand-rail), or stairway type ladder (with handrail), inclined not more than 75 degrees with the horizontal.

(a) *Exception.* Scuttle openings through the roof on existing installations for access to the machine room or penthouse will be accepted, provided the arrangement is reasonably safe and easy.

(4) For every elevator hereinafter installed, access to the machine room or penthouse shall be made from outside the hoistway by means of an unobstructed stairway (with handrails), inclined not more than 60 degrees with the horizontal and the treads shall not be less than 24 inches in width. Openings through the roof to serve the machine room or penthouse shall be completely protected from the weather. This protection shall be fitted with a door not less than 6 feet in height to permit horizontal entrance. Access to the machine room or penthouse may be under the same roof. One such stairway may serve a group of machine rooms or penthouses on the same roof.

(5) All stairways or stairway type ladders to the roof of the building, and all stairways or stairway type ladders having a rise of more than 6 feet above the roof, shall be protected from the weather or shall be of standard fire escape construction.

(a) Where access to the machine room or penthouse is from the roof and its entrance door opens outward a platform shall be provided not more than 8 inches below the entrance door sill. The platform shall be not less than 2 feet wide and shall project not less than 2 feet beyond the "lock" jamb of the door. A guard rail shall be provided at the edge of this platform, except where the stairs join the platform.

(6) Elevator penthouses shall not be used as public thoroughfares. Doors to elevator penthouses shall be fitted with locks which permit the door to be opened from the inside without a key.

(7) Where an elevator installation has a scuttle opening provided in the machine room floor, the opening shall be equipped with a substantial hinged cover so arranged that the opening cannot be conveniently used as an entrance to the machine room.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; am. (4), Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.23 Floor over hoistways of power elevators; new installations.

(1) A floor shall be provided to conform with the requirements outlined in this subsection.

(a) Above or level with the top of the machine beams where the machine is located over the hoistway.

(b) Below the overhead sheaves where the machine is not located over the hoistway. (See Wis. Adm. Code section Ind 4.21.)

(2) The floor shall be capable of sustaining a concentrated load of 300 pounds on any 4 square inches, and where it constitutes the floor of a main or secondary-machinery space, it shall be designed for a live load of not less than 125 pounds per square foot in all open areas.

(a) Where the elevator machine is supported solely by the machine floor slab, the floor slab shall be designed in accordance with the requirements of the Wisconsin Building Code, Wis. Adm. Code sections Ind 51.001 and 51.01.

(3) Overhead beams, floors and their supports shall be of steel or reinforced concrete and shall be designed for not less than the sum of the following loads:

(a) The load resting on the beams and supports which shall include the complete weight of the machine, sheaves, controller, governor, and other elevator equipment together with that portion, if any, of the machine room floor supported thereon.

(b) Twice the sum of the tensions in all wire ropes passing over the sheaves or drums supported by the beams with the rated load in the car.

Note: Tensions are doubled to take care of impact, acceleration, stresses, etc.

(4) Floors may be of concrete, or of metal construction with or without perforations. Perforated metal floors shall conform with the following:

(a) If of bar-type grating, the openings between bars shall reject a ball $\frac{3}{4}$ of an inch in diameter.

(b) If of perforated sheet metal or of fabricated openwork construction, the openings shall reject a ball 1 inch in diameter.

(c) Wood floors not less than 2 inches thick may be used in buildings of ordinary or frame construction.

(d) The openings in floors, through which cables pass shall be fitted with suitable guards at least 2 inches high to prevent any loose material from coming in contact with such cables, and to prevent any loose parts from dropping through the openings.

(e) Where there is a difference in levels of machine room and machinery space floors exceeding 15 inches, a standard guard rail 42 inches in height with an intermediate guard rail shall be provided at the edge of the higher level. A stairway shall be provided for access between levels. Stairways having more than 3 risers shall be provided with handrails.

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

Ind 4.24 Guards for counterweights. (1) Solid metal guards shall be installed in the pit on the open side or sides of all counterweights of elevators hereafter installed as follows. (See subsection (2) for exceptions.)

(a) Guards shall extend from a point 12 inches above the pit floor to a point not less than 7 feet nor more than 8 feet above such floor.

(b) Guards shall be fastened to a metal frame properly reinforced, braced and be at least equal in strength and stiffness to No. 14 U.S. gauge sheet steel.

(2) The requirements of subsection (1) shall not apply to:

(a) Hand powered elevators.

(b) Where a chain of not less than $\frac{5}{16}$ inch diameter wire is properly attached to the car and counterweight as a movement warning device.

(3) Where a counterweight runway is located in an elevator hoistway which is not solidly enclosed, the outside (the side away from the elevator) shall be protected the full height with a solid guard,

properly reinforced, braced and be at least equal in strength and stiffness to No. 14 U.S. gauge sheet steel.

(4) On existing installations where the counterweight runway is located outside the elevator hoistway, the runway shall be solidly enclosed on all sides and a removable panel 12 inches longer than the counterweight stack shall be provided on the outside at the bottom.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; r. and recr. Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.25 Counterweights; existing drum type installations. (1) The counterweight guide rails of every power drum type elevator shall be strongly fastened together every 4 feet from the top of the guide rails, to a point opposite the bottom of the counterweight stack when it is at the upper limit of normal travel.

(2) For every power drum type elevator, there shall be an I-beam or other obstruction, strongly secured at the upper limit of travel of the counterweights so that they cannot be drawn out of the runway. Such obstruction shall be so arranged that the counterweights will be stopped squarely, without distortion.

(3) For every hand type elevator which does not have a limit stop at the top, a solid footing shall be provided on which the counterweight will rest when the car is not more than 6 inches above the highest landing.

(4) Drum and car counterweights shall be made of metal, shall run in substantial guides, and shall be provided with not less than 4 guide shoes or slots.

(5) If 2 sets of counterweights run in the same guides, the car counterweight shall be above the machine counterweight, and there shall be a clearance of not less than 8 inches between them.

(6) Where an independent car counterweight is used, the weight shall not cause slack in the hoist cables at any time.

(7) Where the cables of one set of counterweights pass through, or by, another set of counterweights, the cables shall be so protected as to prevent chafing or wearing.

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

Ind 4.26 Counterweights and compensating devices. New installations. (1) Counterweights shall be located only in the hoistway of the elevator which they serve.

(2) Counterweight weight sections for all elevators over 100 feet per minute shall be mounted and secured in structural metal frames so designed as to prevent shifting of the weight by an amount which will reduce the running clearance to not less than $\frac{3}{4}$ inch.

(a) At least 2 tie rods shall be provided which shall pass through all weight sections. Tie rods shall be provided with lock nuts and cotter pins at each end.

(b) Counterweight frames shall be guided on each end by upper and lower guiding members attached to the frame.

(c) Frames and rods shall be of steel or other metals conforming to Wis. Adm. Code section Ind 4.54. Where metals other than steel are used, a factor of safety of not less than 5 shall be included in the design with the car at rest and the counterweight at the top of its travel.

(d) When a hoisting sheave is mounted in the frame, provisions shall be made to maintain the strength of the member supporting the

shaft and the reduction in area shall not reduce the strength of the member below that required. The bearing pressure shall in no case exceed that for bolts in clearance holes as indicated in Wis. Adm. Code section Ind 4.54.

(3) Counterweight weight sections may be installed without frames for passenger and freight elevators up to 100 feet per minute providing the sections are securely fastened together with not less than 4 tie rods equipped with washers, lock nuts and cotter pins at each end. All rods shall pass through all weight sections. Suitable means shall be provided to limit the movement of the weight sections and to prevent the reduction in running clearance to not less than $\frac{3}{4}$ inch.

(a) The weight stacks shall be guided on each guide rail by upper and lower guide members.

(b) For every counterweight stack over 8 feet in height, there shall be a middle guide weight.

(4) Compensating chains or cables shall be fastened to or on brackets to the counterweight frame or bottom guide weight and shall not be fastened on individual tie rods.

(5) Compensating-cable sheaves shall be provided with a switch, mechanically opened to remove the electric power from the elevator driving-machine motor and brake before the sheave reaches its limits of travel.

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

Ind 4.27 Car Construction. New installations. (1) Every elevator suspended by wire ropes shall have a car frame.

Note: See Ind 4.001 (11).

(2) Car frames shall be guided on each guide rail by upper and lower guide members attached to the frame.

(3) The frame and its guiding members shall be designed to withstand the forces resulting under the loading conditions for which the elevator is designed. (See Wis. Adm. Code section Ind 4.52 (1) and (2) for capacity and loading of elevators.)

(4) For freight type car frames which are located entirely below the car platform, the vertical distance between the top and bottom car guide shoes shall be not less than 40% of the distance measured between the guide rails.

(5) Where multiple sheaves are mounted on car frame members on separate sheave shafts, provisions shall be made to take the compressive forces, developed by tension in the hoist ropes between the sheaves, on a strut or struts between the sheave-shaft supports, or by providing additional compressive strength in the car frame or car-frame members supporting the sheave shafts.

(a) Where the sheave shaft extends through the web of a car-frame member, the reduction in area of the member shall not reduce the strength of the member below that required, where necessary, reinforcing plates shall be welded or riveted to the member to provide the required strength. The bearing pressure shall in no case be more than that permitted in Wis. Adm. Code section Ind 4.54 for bolts in clearance holes.

(6) Where side bracing and similar members are attached to car-frame uprights, the reduction in area of the upright shall not reduce

the strength of the upright due to the attachment and/or added forces imposed on the upright below that required in Wis. Adm. Code section Ind 4.54.

(7) Where cars are suspended by hoisting cables attached to the car frame by means of rope shackles, the shackles shall be attached to steel hitch plates or to structural steel shapes. Such plates or shapes shall be secured to the underside or to the webs of the car-frame member with bolts or rivets so located that the tensions in the hoisting ropes will not develop direct tension in the bolts or rivets.

(8) Every elevator car shall have a platform consisting of a solid floor attached to a platform frame supported by the car frame and extending over the entire area within the car enclosure. The platform frame members and the floor shall be designed to withstand the forces developed under the loading conditions for which the elevator is designed and installed.

(9) Materials used in the construction of car frames and platforms shall conform to the following:

(a) Car frames and outside members of platform frames shall be made of steel or other metals and shall conform with Wis. Adm. Code section Ind 4.54.

(b) Platform stringers for freight elevators designed for Class B or C loading shall be of steel or other metals. (See Wis. Adm. Code section Ind 4.52 (2).)

(c) Platform stringers for freight elevators designed for Class A loading shall be of steel or other metals or of wood.

(d) Platform stringers for passenger elevators shall be of steel or other metals or of wood.

1. Where wood is used, the underside exposed wood surface shall be covered with one of the following:

a. Not less than No. 26 U.S. gauge sheet steel.

b. An approved fire-retardant paint having a flame spread rating not over (25) applied in accordance with instructions of the manufacturers. Such ratings shall be based on the test procedure specified in A.S.T.M. E84-61. (Available for inspection at the offices of Industry, Labor and Human Relations, the Secretary of State, and the Revisor of Statutes, or may be procured for personal use from American Society for Testing and Materials, 1916 Race St., Philadelphia, Pennsylvania 19103.)

(e) Where wood is used for platform stringers or for platform floors and subfloors, it shall be properly cured clear structural quality lumber.

Note: Guards below the car platform, where elevators have leveling or inching devices. (See Wis. Adm. Code section Ind 4.15 (4).)

(f) Cast iron shall not be used for any part subject to tension, torsion or bending.

1. *Exception.* Guiding supports, guide shoes or compensating cable anchorage.

(10) Where there is a railroad track installed on an elevator car, the tops of the rails shall be flush with the car floor.

(11) The car frame members of every elevator car shall be securely welded, bolted and/or riveted and braced.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; r. and recr. (9) (d), Register, September, 1967, No. 141, eff. 10-1-67; r. and recr. (1) and (9) (d), Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.28 Passenger elevator. Car enclosures. (1) Every existing passenger elevator car shall be solidly enclosed with wood or metal on all sides from floor to car top or ceiling, except for the entrance opening.

(2) For every elevator hereafter installed, the car enclosure shall be constructed of solid incombustible panels to the full height of the car top or ceiling, except for the entrance sides, and shall conform with the requirements outlined in this subsection.

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

(b) No passenger elevator car enclosure shall deflect more than 1 inch when subjected to a force of 75 pounds when applied horizontally at any point, nor with such deflection shall the actual running clearance be less than $\frac{3}{4}$ inch.

(3) The material for passenger car enclosures shall conform with the requirements outlined as follows:

(a) Metal shall be equal in strength and as fire-resistive as $\frac{1}{8}$ inch thick sheet steel.

(b) Fire-retardant-treated-wood, wood or wood materials of equivalent combustible characteristics provided all exterior surfaces of the enclosure are covered with sheet metal not less than 26 U. S. gauge.

(c) Any other construction which is approved by the industrial commission as equal in strength and fire-resistivity to conform with subsections (3) (a) and (b), based on tests submitted from a recognized testing laboratory.

(d) Slow-burning combustible materials for insulating, sound deadening or decorative purposes may be used for lining enclosures if firmly bonded to the enclosure. Such materials shall not be padded or tufted.

(4) Where vent openings are installed in the car enclosure they shall conform with the requirements outlined as follows:

(a) Lower vents shall not be extended more than 1 foot above the floor and shall reject a ball 1 inch in diameter.

(b) Upper vents shall not be located less than 6 feet above the floor and shall reject a ball 2 inches in diameter.

(c) All vent openings greater than $\frac{1}{2}$ inch of the smallest dimension shall be properly guarded on the outside.

(5) Every passenger elevator car shall be provided with a car top or cover constructed of solid material, designed and installed as to be capable of sustaining a load of 300 pounds on any square area 2 feet on a side.

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

(a) 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.

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

(c) For elevators hereafter installed the car lighting shall in no case obstruct the clear top exit opening. False or drop ceilings located below the exit panel shall be designed for clear access to exit panel.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; r. and recr. (6) (a) 1. Register, September, 1967, No. 141, eff. 10-1-67; r. and recr. (6) (a), Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.29 Passenger elevator. Car furnishings; new and existing installations. (1) No glass shall be used in elevator cars except to cover certificates, lighting fixtures, and appliances necessary for the operation of the cars.

(a) No piece of glass, unless laminated, or otherwise shatterproof, shall exceed 1 square foot in area.

(b) Mirrors, other than hall view mirrors, will not be permitted.

(2) Elevators in buildings where occupancies require handrails in corridors, shall have handrails provided in car to satisfy the following requirements:

(a) Handrails shall be provided on each side, except on the entrance side or sides.

(b) Handrails shall be located approximately 3½ feet above the floor of elevator.

(3) No seats except one for the attendant shall be placed in the elevator.

(4) No signs or advertisements shall be posted in any elevator car, other than those required for the operation of the elevator.

(5) Ventilating fans or blowers, if used, shall be securely fastened in place and located above the car ceiling or outside the enclosure.

(6) Apparatus or equipment, other than that used in connection with the operation of the elevator, shall not be installed on or within any elevator except for lighting, heating, ventilating or sealed air conditioning systems.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; r. and recr. (2), cr. (6), Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.30 Passenger elevator. Car door or gate. (1) For elevators hereafter installed car gates are prohibited where the car speed exceeds 100 feet per minute.

(a) Where car gates are permitted they shall be of the horizontal sliding type.

1. The gate when closed shall guard the full opening.

2. The gate shall be provided with a gate electric contact. (See exception under a. below.)

a. Movement of the car is permitted within the leveling zone with the car gate open.

(b) A car door of the horizontal sliding type shall be provided at each entrance to elevator car where the car speed exceeds 100 feet per minute.

1. The door when closed shall guard the full opening.

2. The door shall be provided with a door electric contact. (See exception under subsection (1) (b) 2. a. below.)

a. Movement of the car is permitted within the leveling zone with the car gate open.

(2) Passenger elevators installed in a hoistway having separate landings used exclusively for passengers and other landings for freight

shall not have car gates guarding openings regardless of elevator car speed. (See also, section Ind 4.31 (3)).

(a) Where vertical sliding or vertical biparting hoistway landing doors are permitted under section Ind 4.31 (3) for car entrances used exclusively for freight, either vertical or horizontal sliding solid panel car doors guarding entire opening shall be used.

(3) Electric contacts shall be provided on all elevator car doors or gates installed after August 12, 1926 where the car speed is in excess of 150 feet per minute and the state registration is over 7,000.

(4) Every existing automatic operation elevator shall be provided with a car door or gate at each entrance and equipped with a car door or gate electric contact.

(5) The distance between bars or slats on car gates shall not exceed 3 inches when the gate is fully expanded.

(a) Collapsible-type car gates hereafter installed shall have at least every fourth vertical member of the gate guided at the top and every second vertical member guided at the bottom.

(b) Collapsible-type car gates shall not be power opened to a distance exceeding one-third ($\frac{1}{3}$) of the clear gate opening, and in no case more than 10 inches.

(6) Vision panels when used 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 and the inside surface of the panel shall be substantially flush with the surface of the door.

(7) Door panels shall have a substantially flush surface without recessed or raised moldings.

(8) For automatic operation elevators the car door or gate shall be considered in the closed position when the clear open space between the edge of the door or gate and the nearest face of the closed jamb does not exceed 2 inches, or for center-parting doors or gates when the door panels or gates are within 2 inches of contact with each other.

(9) For car switch operation elevators an electric contact on the car door or gate may permit the starting of the car when the clear open space does not exceed 4 inches.

(10) 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.

(11) For automatic operation passenger elevators having power-closed or automatically released self-closing car doors or gates and manually closed or self-closing hoistway doors, the closing of the car door or gate shall be prevented unless the hoistway door is in the closed position.

(12) For elevators hereafter installed when both the car and the hoistway doors are power operated, they shall be equipped with a re-open device which will function to stop and reopen both car and hoistway doors in the event the doors are obstructed while closing.

Note: It is permissible to close power operated car and hoistway doors at reduced speed and power when they have been delayed for prolonged periods through the use of the reopening device.

History: Cr. Register, October, 1964, No. 106, eff. 11-1-64; r. and recr. Register, October, 1970, No. 178, eff. 11-1-70.

Ind 4.31 Passenger elevator hoistway landing doors. (1) Each landing of every passenger elevator hereafter installed shall be equipped with a door. These doors may be horizontally sliding of the single or multi-section type or single section horizontal swinging and shall fill the entire opening of the hoistway.

(a) Where a 1-hour fire-resistive constructed hoistway is required, all hoistway landing entrances shall have minimum fire-resistive rating of $\frac{3}{4}$ hour. Wood doors of solid flush type $1\frac{3}{4}$ inches thick are acceptable. (See Wis. Adm. Code section Ind 4.10.)

(b) Where a 2-hour fire-resistive constructed hoistway is required all hoistway landing entrances shall have a minimum fire-resistive rating of $1\frac{1}{2}$ hours. The doors shall be marked or identified to indicate that the entrance construction meets the fire rating requirements of this subsection. These identifying marks may be labels or certifications based on tests submitted from a recognized testing laboratory. (See Wis. Adm. Code section Ind 4.10.)

(c) The section of each hoistway door 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 door, without causing the door to break or to be permanently deformed.

1. Horizontally sliding doors shall be so hung and guided that the doors will not be displaced from their guides or tracks when in normal service. Bottom guide shoes shall be made of or reinforced with metal so that in case of fire the guide shoe will prevent the door from being displaced from its guides.

2. Hangers for horizontally sliding doors shall be provided with means to prevent the doors from jumping the tracks. Stops shall be provided to prevent the hanger from leaving the ends of the track. Hangers and tracks shall be so designed and installed as to support the door in case of fire.

3. The hangers, tracks and their supporting brackets and fastenings for horizontally sliding power operated doors shall be constructed to withstand without damage of appreciable deflection, an imposed load equal to 4 times the weight of the door as applied successively downward and upward at the vertical center line of the assembled door or of each door section.

4. The leading edge of all horizontally sliding doors shall be smooth and free of sharp projections. The meeting edges of center-opening doors may be provided with a fire-resistive member on one or both doors to form a shallow overlap. Single and two-speed doors shall lap the strike jambs but shall not close into pockets in the strike jambs. The clearance between the corridor face of the doors and the bucks and header, and the clearance between overlapping faces of two-speed doors shall not exceed $\frac{3}{8}$ inch.

(2) Horizontally sliding or swinging doors of automatic operation elevators hereafter installed shall be provided with door closers.

(3) Vertical sliding or vertical biparting doors shall not be used to protect passenger landing openings.

(a) Passenger elevators used also for freight may have vertical sliding or vertical biparting doors at landing openings used exclusively for freight providing:

1. The car freight door is equipped with a zone interlock and;

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 $\frac{1}{4}$ 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 $\frac{3}{4}$ 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 $\frac{3}{8}$ 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 $\frac{3}{8}$ 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 $\frac{1}{2}$ 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 releveing 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 435 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 $1\frac{1}{2}$ 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 $1\frac{1}{2}$ 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. Where keys are of special design for opening the hoistway door 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 $\frac{3}{4}$ hour. Wood doors of solid flush type $1\frac{3}{4}$ 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 $1\frac{1}{2}$ 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.