

Chapter Ind 4

ELEVATOR CODE

Ind 4.001	Definitions	Ind 4.35	Freight elevator. Car entrances. New and existing installations
Ind 4.01	General scope	Ind 4.36	Freight elevator. Car doors or gates
Ind 4.02	Renewing of elevators, dumbwaiters and escalators	Ind 4.37	Freight elevator hoistway landing doors or gates
Ind 4.03	Exemptions	Ind 4.38	Freight elevator hoistway landing gate construction
Ind 4.04	Plans. New installations	Ind 4.39	Freight elevator landings. New installations
Ind 4.05	Inspections	Ind 4.40	Power freight elevator hoistway landing doors and gates; locking devices
Ind 4.06	Inspection by cities	Ind 4.41	Factors of safety for cables. New and existing installations
Ind 4.07	Inspection fees	Ind 4.42	Cable data
Ind 4.08	Tests and inspection. New installations	Ind 4.43	Renewing of cables. New and existing installations
Ind 4.10	Hoistway enclosures. New installations	Ind 4.44	Number and size of cables required
Ind 4.12	Guarding hoistway of elevators. New and existing installations	Ind 4.45	Cable guards for sheaves and idlers
Ind 4.13	Combined stairways and elevator hoistway enclosures. New and existing installations	Ind 4.46	Cable terminal fastenings and turns required on drums
Ind 4.14	Guards for outside windows in hoistways. New and existing installations	Ind 4.47	Governor cables
Ind 4.15	Guards for projections in hoistways	Ind 4.48	Drum and car counterweights
Ind 4.16	Car clearances	Ind 4.50	Protection of counterweight cables. Existing installations
Ind 4.17	Depth of pit and overhead clearance including access to pits and stop switch in pits	Ind 4.51	Bolting of counterweights. New installations
Ind 4.18	Construction of pits	Ind 4.52	Capacities and loadings for passenger elevators
Ind 4.19	Buffers. New installations	Ind 4.53	Capacity plates. New and existing installations
Ind 4.20	Hoistways, penthouses, machine rooms and pits unobstructed. New and existing installations	Ind 4.54	Stresses allowed in design. New installations
Ind 4.21	Headroom in machine rooms and overhead machinery spaces of power elevators. New installations	Ind 4.55	Guide rails. General requirements
Ind 4.22	Construction of machine rooms and penthouses	Ind 4.56	Sizes and construction of guide rails. New installations
Ind 4.23	Floor over hoistways of power elevators. New installations	Ind 4.57	Fastening of guide rails. New installations
Ind 4.25	Guards for counterweight runways. Guards between adjacent pits, new and existing installations	Ind 4.58	Minimum sizes of drums and sheaves. New installations
Ind 4.26	Spreader brackets and counterweight stops	Ind 4.59	Machinery. General requirements
Ind 4.27	Construction of cars. New installations	Ind 4.60	Prohibited installations
Ind 4.28	Passenger elevator. Car enclosure	Ind 4.61	Power attachments to hand elevators. New and existing installations
Ind 4.29	Passenger elevator. Car furnishings. New and existing installations	Ind 4.62	Slack cable devices
Ind 4.30	Passenger elevator. Car door or gate	Ind 4.63	Limit stops. New and existing installations
Ind 4.31	Passenger elevator. Hoistway landing doors	Ind 4.64	Car safety devices and speed governors
Ind 4.32	Passenger elevator. Hoistway landing door interlocks	Ind 4.65	Brakes
Ind 4.33	Passenger elevator landings. New installations	Ind 4.69	Warning chains. New and existing installations
Ind 4.34	Freight elevator. Car enclosure	Ind 4.70	Control mechanisms
		Ind 4.71	Automatic and continuous pressure operation elevators. New and existing installations
		Ind 4.72	Electrical protection

Ind 4.73	Switches and wiring	Ind 4.86	Safety equipment. New and existing installations
Ind 4.74	Grounding	Ind 4.87	Plunger type elevators. New installations
Ind 4.75	Signal systems. New and existing installations	Ind 4.88	Maintenance
Ind 4.76	Lighting	Ind 4.89	Recabling hydraulic elevators
Ind 4.77	Operation of elevators. New and existing installations	Ind 4.90	Construction
Ind 4.78	Maintenance. New and existing installations	Ind 4.91	Strength of trusses or girders
Ind 4.79	Dumbwaiters	Ind 4.92	Track arrangement
Ind 4.80	Sidewalk elevators	Ind 4.93	Capacity and loading
Ind 4.81	Special type freight elevators	Ind 4.94	Factors of safety
Ind 4.82	Special requirements	Ind 4.95	Limits of speed
Ind 4.83	Stage elevators	Ind 4.96	Application of power
Ind 4.85	Construction and general requirements. New installations	Ind 4.97	Safety devices
		Ind 4.98	Lights and access
		Ind 4.99	Tests

Ind 4.001 Definitions. (1) ANNUNCIATOR, ELEVATOR CAR. An electrical device in the car which indicates visually the landing at which an elevator landing signal registering device has been actuated.

(2) APPROVED. Means approved by the Industrial Commission.

(3) BASEMENT. A basement is a story, the floor line of which is below the grade at any entrance or exit, and the ceiling of which is not more than 5 feet above such grade at any exit or entrance. The number of stories of a building includes all stories except the basement.

(4) BUFFER. A buffer is a device designed to absorb the impact of the car or counterweight at the extreme lower limits of travel.

(5) CAPACITY. See Contract Load, or Rated Load.

(6) CAR, ELEVATOR. An elevator car is the load carrying unit including its platform, car frame, and enclosure.

(7) CAR DOOR OR GATE. A car door or gate is the door or gate in or on the elevator car ordinarily used for entrance and exit.

(8) CAR GATE, COLLAPSING. A collapsing gate is one that is distorted in opening and closing.

(9) CAR DOOR OR GATE ELECTRIC CONTACT. An electrical device, the function of which is to prevent operation of the driving machine by the normal operating device unless the car door or gate is in the closed position.

(10) CAR ENCLOSURE. The car enclosure or cab of an elevator is the enclosure consisting of walls and the top or cover built up on the platform.

(11) CAR FRAME (SLING). The supporting frame to which the car platform, upper and lower sets of guide shoes, car safety and the hoisting ropes or hoisting-rope sheaves, or the plunger of a direct plunger elevator are attached.

(a) *Car frame, overslung.* A car frame to which the hoisting-rope fastenings or hoisting-rope sheaves are attached to the crosshead or top member of the car frame.

(b) *Car frame, underslung.* A car frame to which the hoisting-rope fastenings or hoisting-rope sheaves are attached at or below the car frame.

(c) *Car frame, sub-post.* A car frame all of whose members are located below the car platform.

(12) **CAR PLATFORM.** The car platform is the structure, including the floor of the car, which directly supports the load.

(13) **CLEARANCE, BOTTOM CAR.** The clear vertical distance from the pit floor to the lowest structural or mechanical part, equipment or device installed beneath the car platform, except guide shoes or rollers, safety jaw assemblies and platform aprons or guards, when the car rests on its fully compressed buffers. (See *Overtravel, Bottom*)

(14) **CLEARANCE, TOP CAR.** The shortest vertical distance between the top of the car crosshead, or between the top of the car where no crosshead is provided, and the nearest part of the overhead structure or any other obstruction when the car floor is level with the top terminal landing. (See *Overtravel, Top*)

(a) *Clearance, top counterweight.* The shortest vertical distance between any part of the counterweight structure and the nearest part of the overhead structure or any other obstruction when the car floor is level with the bottom terminal landing.

(15) **COMPENSATING-ROPE SHEAVE SWITCH.** A device which automatically causes the electric power to be removed from the elevator driving-machine motor and brake when the compensating sheave approaches its upper or lower limit of travel.

(16) **CONTRACT LOAD, OR RATED LOAD, (CAPACITY).** Contract load, or rated load, is the approved safe live load specified in application and plans submitted for permit.

(17) **RATED SPEED.** The speed at which the elevator, dumbwaiter, escalator is designed to operate under the following conditions:

(a) *Elevator or dumbwaiter.* The speed in the up direction with rated load in the car.

(b) *Escalators.* The rate of travel of the steps or carriage, measured along the angle of inclination, with rated load on the steps or carriage. In case of a reversible escalator the rated speed shall be the rate of travel of the steps in the up direction, measured along the angle of inclination, with rated load on the steps.

(18) **CONTROL.** The system governing the starting, stopping, direction of motion, acceleration, speed, and retardation of the moving member.

(a) *Generator-field control.* A system of control which is accomplished by the use of an individual generator for each elevator or dumbwaiter wherein the voltage applied to the driving-machine motor is adjusted by varying the strength and direction of the generator field.

(b) *Multi-voltage control.* A system of control which is accomplished by impressing successively on the armature of the driving-machine motor a number of substantially fixed voltages such as may be obtained from multi-commutator generators common to a group of elevators.

(c) *Rheostatic control.* A system of control which is accomplished by varying resistance and/or reactance in the armature and/or field circuit of the driving-machine motor.

(d) *Two-speed alternating current control.* A control for a 2-speed driving-machine induction motor which is arranged to run at 2 different synchronous speeds by connecting the motor windings so as to obtain a different number of poles.

(19) **CABLE LOCK.** A cable lock is a device installed and maintained so that the operating cable can be locked at any landing.

(20) **CENTERING ROPE.** A centering rope is used in connection with hand cable control which, when pulled, will throw the operating device to the stop position.

(21) **DOOR OR GATE DEVICE, POWER OPERATED.** A power operated door or gate device is a device or assemblage of devices, the purpose of which is to open and/or close the hoistway door and/or car door or gate by power other than by hand, gravity, springs, or the movement of the car.

Doors: See Hoistway Door or Gate, Section Ind 4.001 (Definition 36).

(22) **DUMBWAITER.** A dumbwaiter is a hoisting and lowering mechanism equipped with a car, which moves in guides in a substantially vertical direction, the floor area of which does not exceed 9 square feet, whose internal compartment height does not exceed 4 feet, the capacity of which does not exceed 500 pounds, and which is used exclusively for carrying freight.

(23) **DUMBWAITER, ELECTRIC.** An electric dumbwaiter is one in which the motion of the car is obtained through an electric motor directly applied to the dumbwaiter machinery.

(24) **ELEVATOR.** A hoisting and lowering mechanism equipped with a car or platform which moves in guides in a substantially vertical direction, and the travel exceeds 56 inches.

(a) *Passenger elevator.* An elevator used primarily to carry persons other than the operator and persons necessary for loading and unloading.

(b) *Freight elevator.* An elevator primarily used for carrying freight and on which only the operator and the persons necessary for unloading and loading the freight are permitted to ride.

(c) *Hand elevator.* An elevator utilizing manual energy to move the car.

(d) *Power elevator.* An elevator utilizing energy other than gravitational or manual to move the car.

(e) *Electric elevator.* A power elevator where the energy is applied by means of an electric motor.

(f) *Electro-hydraulic elevator.* A direct-plunger elevator where liquid is pumped under pressure directly into the cylinder by a pump driven by an electric motor.

(g) *Carriage elevator.* An elevator which is supported by cables attached to the platform at four or more points in such a manner that the supporting cables are relied upon to maintain the platform substantially level.

(h) *Sidewalk elevator.* A freight elevator which operates between a sidewalk or other area exterior to the building and floor levels inside

the building below such area, which has no landing opening into the building at its upper limit of travel and which is not used to carry automobiles.

(i) *Hydraulic elevator*. A power elevator where the energy is applied, by means of a liquid under pressure, in a cylinder equipped with a plunger or piston.

(j) *Direct-plunger elevator*. A hydraulic elevator having a plunger or piston directly attached to the car frame or platform.

(25) **ELEVATOR, EXISTING INSTALLATIONS**. Existing installations include all those elevators or parts of elevators installed before the effective date of this code.

(26) **ELEVATOR, DUMBWAITER, NEW INSTALLATIONS**. By new installations or elevator or dumbwaiter hereafter installed, is meant:

(a) Every elevator or dumbwaiter for which the contract was let after the effective date of this code.

(b) Every elevator or dumbwaiter which, after the effective date of this code, is moved to a new location.

(c) Any complete part of an existing installation which is materially altered or replaced with new after the effective date of this code.

(d) Every elevator that is changed from freight to passenger service, or from passenger to freight service, or from hand to power and every hand dumbwaiter changed to power, after the effective date of this code.

(e) Every elevator hoistway which is enlarged or the travel extended.

Note: Ordinary repairs necessary to maintain elevators in safe condition are not considered material alterations.

(27) **ESCALATOR**. A power-driven, inclined, continuous stairway used for raising and lowering passengers.

(28) **EMERGENCY DOOR RELEASE**. An emergency release is a device, the purpose of which is to make inoperative door or gate electric contacts or door interlocks in case of emergency.

(29) **EMERGENCY STOP SWITCH**. An emergency stop switch (safety switch) is a device in the car used to cut off the power from the elevator machine independently of the operating devices.

(30) **FIRE-RESISTIVE WALL CONSTRUCTION**. (a) Refer to Wisconsin Building Code, section Ind 51.05.

(b) Other materials, assemblies and thicknesses of necessary strength and durability for the use intended, and which have successfully performed under tests made by a recognized laboratory in accordance with the requirements of the "Standard Specifications for Fire Tests of Building Construction and Materials" (C19-33) of the American Society for Testing Materials, shall be accepted for specific ratings in addition to those prescribed in section Ind 51.05 of the Wisconsin Building Code.

(c) The wired glass in any hoistway enclosure shall have no pane 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.

(31) **FIRE DOORS**. See Hoistway doors: See Wisconsin Building Code, section Ind 51.09 for class B and C type doors.

Note: The Underwriters' Laboratories List of Inspected Materials is obtainable from the Fire Insurance Rating Bureau and Fire Insurance Companies.

(32) **FULL-AUTOMATIC DOOR OR GATE**. A full-automatic door or gate is a vertically-moving door or gate which is opened directly by the motion of the elevator car approaching any landing and closed by gravity as the car leaves any landing.

(33) **HOISTWAY, ELEVATOR OR DUMBWAITER**. A shaftway for the travel of one or more elevators or dumbwaiters. It includes the pit and terminates at the underside of the overhead machinery space floor or grating, or at the underside of the roof where the hoistway does not penetrate the roof.

(34) **HOISTWAY ENCLOSURE**. The fixed structure, consisting of vertical walls or partitions, which isolates the hoistway from all other parts of the building or from an adjacent hoistway and in which the hoistway doors and door assemblies are installed.

(35) **HOISTWAY ACCESS SWITCH**. A switch, located at a landing, the function of which is to permit operation of the car with the hoistway door at this landing and the car door or gate open, in order to permit access to the top of the car or to the pit.

(36) **HOISTWAY DOOR OR GATE**.

(a) *Door*. A hoistway landing door is one which completely fills the door opening giving access to the elevator car at any landing and is of solid construction, with or without vision panels, regardless of design or method of operation.

(b) *Gate*. A hoistway landing gate is one which gives access to the elevator car at any landing and consists of slats, bars, spindles, wire screen or expanded metal regardless of the method of operation. See section Ind 4.37 and 4.38.

(c) *Hoistway door or gate electric contact*. A hoistway door or gate electric contact is a device, the purpose of which is to open the control circuit or an auxiliary circuit, unless the hoistway door or gate at which the car is standing is in the closed position, and thus prevent operation of the elevator in a direction to move the car away from the landing.

1. Door Unit System is a contact system which meets the requirements of the contact definition above, but does not require all the hoistway doors to be closed.

2. Hoistway Unit System is a contact system which meets the requirements of the contact definition above, and also requires that all hoistway doors are closed.

(d) *Hoistway bi-parting door or gate*. A bi-parting door or gate is a vertical slide, horizontal slide, or swing door or gate consisting of 2 or more sections so arranged that the sections, or pairs of sections, open away from each other, and so interconnected that both sections operate simultaneously.

(e) *Hoistway full automatic door or gate*. A full automatic door or gate is a vertically moving door or gate which is opened directly

by the motion of the elevator car approaching any landing and closed by gravity as the car leaves any landing.

(f) *Hoistway semi-automatic door or gate.* A semi-automatic door or gate is a door or gate which is opened manually, and which closes automatically as the car leaves the landing.

(g) *Hoistway manually operated door or gate.* A manually operated door or gate is a door or gate which is opened and closed by hand.

(h) *Hoistway power operated door or gate.* A power operated door or gate is one which is opened and closed by power other than by hand, gravity, springs, or the movement of the car.

(i) *Hoistway power-opened self-closing door or gate.* A power-opened, self-closing door or gate is a door or gate which is opened by power other than by hand, gravity, springs, or the movement of the car, and when released by the operator is closed by energy stored during the opening operation.

(j) *Hoistway power operated door or gate, automatically opened.* A power operated door or gate, automatically opened, is a door or gate which is opened by power other than by hand, gravity, springs, or the movement of the car, the opening of the door being initiated by the arrival of the car at or near the landing. The closing of such door or gate may be under the control of the elevator operator or may be automatic.

(k) *Hoistway power operated door or gate, manually controlled.* A power operated door or gate, manually controlled, is a door or gate which is opened and closed by power other than by hand, gravity, springs, or the movement of the car, the door movement in each direction being controlled by the elevator operator.

(l) *Hoistway, telescoping gate.* A telescoping door or gate is a door or gate in which the sections slip together without distortion of the section.

(m) *Hoistway door, fire-resistive.* See Wisconsin Building Code, section Ind 51.09.

(37) HOISTWAY DOOR OR GATE INTERLOCK, PASSENGER AND FREIGHT ELEVATORS. (a), *Existing Installations.*

1. Mechanical interlock. A mechanical interlock for a hoistway landing door or gate is a device, the purposes of which are:

a. To prevent the normal operation of the elevator machine unless the hoistway landing door or gate opposite which the car is standing is latched within 4 inches of the fully closed position, and

b. To prevent the opening of a hoistway landing door or gate from the landing side, except by special apparatus unless the car is at the landing.

2. Electro-mechanical interlock. An electro-mechanical interlock for a hoistway landing door or gate is a combination of electrical and mechanical devices, the purposes of which are:

a. To prevent the operation of the elevator machine by the operating device in a direction to move the car away from the landing unless all hoistway landing doors or gates are latched within 4 inches of the fully closed position; and

b. To prevent the opening of a hoistway landing door or gate from the landing side except by means of a key or other special apparatus.

(b) *New Installations.*

1. Hoistway door interlock. A hoistway door interlock is a device, the purposes of which are:

a. To prevent the operation of the elevator machine by the operating device in a direction to move the car away from the landing unless the hoistway door at that landing at which the car is stopping or is at rest is locked in the closed position.

b. To prevent the opening of the hoistway door from the landing side except by special key, unless the car is at rest within the landing zone, or is coasting through the landing zone, with its operating device in the stop position.

2. Door unit system. A door unit system is an interlock system which meets the requirements of the interlock definition above, but does not require all the hoistway doors to be locked in the closed position.

3. Hoistway unit system. A hoistway unit system is an interlock system which, in addition to fulfilling the requirements given under the definition of interlock, will also prevent the operation of the car by the operating device unless all hoistway doors are locked in the closed position.

Note: The "closed position" for hoistway landing doors or gates for various types of elevators is specified in section Ind 4.32 and 4.37.

(38) LANDING ZONE. The car is considered within the meaning of this code, as being within the landing zone when the car floor is not more than 18 inches above or below the landing.

(39) LEVELING DEVICE, CAR. A car leveling device is any mechanism or control which will move the car within a limited zone toward, and stop the car at, the landing.

(40) OPERATING DEVICE. The operating device is the car switch, push button, rope, wheel, lever, treadles, etc., employed to enable the operator to actuate the controller.

(41) OVERTRAVEL, BOTTOM.

(a) Bottom overtravel of the elevator car is the distance the car floor can travel below the level of the lower terminal landing until the weight of the fully loaded car rests on the buffers, and includes the resulting buffer compression.

(b) Bottom overtravel of the counterweight is the distance the counterweight can travel below its position when the car platform is level with the upper terminal landing until the full weight of the counterweight rests on the buffers, and includes the resulting buffer compression.

(42) OVERTRAVEL, TOP. Top overtravel of the elevator car is the distance provided for the car floor to travel above the level of the upper terminal landing until the car is stopped by the normal terminal stopping device.

(43) AUTOMATIC OPERATION. Automatic operation is operation by means of buttons or switches at the landings, with or without buttons or switches in the car, the momentary pressing of which will cause the car to start and automatically stop at the landing corresponding to the button pressed.

(44) **NON-SELECTIVE COLLECTIVE AUTOMATIC OPERATION.** Non-selective collective automatic operation is automatic operation by means of one button in the car for each landing level served and one button at each landing, wherein all stops registered by the momentary pressure of landing or car buttons are made irrespective of the number of buttons pressed or of the sequence in which the buttons are pressed. With this type of operation the car stops at all landings for which buttons have been pressed, making the stops in the order in which the landings are reached after the buttons have been pressed but irrespective of its direction of travel.

(45) **SELECTIVE COLLECTIVE AUTOMATIC OPERATION.** Selective collective automatic operation is automatic operation by means of one button in the car for each landing level served and by "Up" and "Down" buttons at the landings, wherein all stops registered by the momentary pressure of the car buttons are made as defined under non-selective collective automatic operation, but wherein the stops registered by the momentary pressure of the landing buttons are made in the order in which the landings are reached in each direction of travel after the buttons have been pressed. With this type of operation, all "Up" landing calls are answered when the car is traveling in the "Up" direction and all "Down" landing calls are answered when the car is traveling in the "Down" direction, except in the case of the uppermost or lowermost calls, which are answered as soon as they are reached, irrespective of the direction of travel of the car.

(46) **SINGLE AUTOMATIC OPERATION.** Single automatic operation is automatic operation by means of one button in the car for each landing level served and one button at each landing, so arranged that if any car or landing button has been pressed the pressure of any other car or landing operating button will have no effect on the operation of the car until the response to the first button has been completed.

(47) **CAR-SWITCH OPERATION.** Car-switch operation is operation wherein the movement of the car is directly and solely under the control of the operator by means of a switch in the car.

(48) **CAR-SWITCH AUTOMATIC FLOOR-STOP OPERATION.** Car-switch automatic floor-stop operation is operation in which the stop is initiated by the operator from within the car with a definite reference to the landing at which it is desired to stop, after which the slowing down and stopping of the elevator is automatically effected.

(49) **CONTINUOUS-PRESSURE OPERATION.** Continuous-pressure operation is operation by means of push buttons or switches in the car and at landings, any one of which may be used to control the movement of the car so long as the button or switch is manually held in the operating position.

(50) **DUAL OPERATION.** Dual operation is a system of operation whereby the elevator controller is arranged for either automatic operation by means of landing and car buttons or switches, or for manual operation by an operator in the car, who may either use a car switch or the buttons provided in the car. When operated by an operator, upon the throwing of a suitable switch or switches, the car

can no longer be started by the landing buttons, which buttons may, however, be used to signal the operator that the car is desired at certain landings.

(51) **PRE-REGISTER OPERATION.** Pre-register operation is operation in which signals to stop are registered in advance by buttons in the car and at the landings. At the proper point in the car travel the operator in the car is notified by a signal, visual, audible, or otherwise, to initiate the stop, after which the landing stop is automatic.

(52) **SIGNAL OPERATION.** Signal operation is operation by means of single buttons or switches (or both) in the car, and up or down direction buttons (or both) at the landings, by which predetermined landing stops may be set up or registered for an elevator or for a group of elevators. The stops set up by the momentary pressure of the car buttons are made automatically in succession as the car reaches those landings, irrespective of its direction of travel or the sequence in which the buttons are pressed. The stops set up by the momentary pressure of the up and down buttons at the landing are made automatically by the first available car in the group approaching the landing in the corresponding direction, irrespective of the sequence in which the buttons are pressed. With this type of operation the car can be started only by means of a starting switch or button in the car.

(53) **POTENTIAL SWITCH, ELEVATOR.** An elevator potential switch is a switch which disconnects the power from the elevator apparatus when the supply voltage fails or decreases below a definite value and which is usually opened by various electrical safety devices. These switches are of the magnetic type.

(54) **SAFETY, CAR OR COUNTERWEIGHT.** A car or counterweight safety is a mechanical device attached to the car or counterweight frame to stop and hold the car or counterweight in case of predetermined overspeed, free fall, or slackening of the cables.

(55) **SLACK-CABLE SWITCH, ELEVATOR.** An elevator slack-cable switch is a device for automatically cutting off the power in case the hoisting cables become slack.

(56) **FACIA PLATE.** A metal plate not less than 1/16" in thickness, securely fastened, and extending flush from the top of the hoistway landing door frame to the landing sill above and run the full width of the door opening.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57; am. (5), (16) and cr. (56), Register, December, 1957, No. 24, eff. 1-1-58.

Scope of the Elevator Code

Ind 4.01 General scope. The requirements of this code shall apply to all elevator, dumbwaiter and escalator installations in public buildings and places of employment as defined by the statutes. The requirements apply to both existing installations and those hereafter installed unless otherwise specified.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57.

Ind 4.02 Renewing of elevators, dumbwaiters and escalators. Where the part or parts of equipment of an elevator, dumbwaiter or escalator are impaired through ordinary wear, damage or deterioration

by fire or other causes, to less than 50 per cent of the original condition, the equipment shall be repaired or rebuilt in conformance with the requirements for new installations.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57.

Ind 4.03 Exemptions. This code does not apply to belt, bucket, scoop, roller, or similar inclined or vertical freight conveyors, portable tiering or piling machines when not passing through a floor unless serving more than the floor on which the portable tiering or piling machine is located, skip hoists, man hoists, mine hoists, lumber lifts, wharf ramps or apparatus in kindred classes, amusement devices, stage curtain hoists or lift bridges, nor to elevators used only for handling building material during the period of building construction and elevators with a travel less than 56 inches.

(1) For regulations relative to the use of elevators, hoists, derricks and similar equipment during the period of construction of a building or any other structure, see section Ind 35.28 to 35.31 inclusive of the general orders on Safety in Construction issued by the industrial commission.

(2) For man lift requirements, see general orders on Safety.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57.

Plans

Ind 4.04 Plans; new installations. (1) Before starting work on any new installation of an elevator, power dumbwaiter or escalator, 3 copies of the plans shall be submitted to the industrial commission for approval, with 2 copies of application for each unit, properly filled out, on blank forms furnished by the commission.

(a) The form referred to under 4.04 (1) is SB-22 "Application For Construction, Erection And Remodeling Elevators" and may be obtained from the Industrial Commission, 1 West Wilson Street, Madison.

(2) A plan examination fee in the amount established under section 101.10 (13) (g), Wis. Stats., shall be paid for each installation requiring approval.

(3) Section Ind 4.04 (1) shall not apply in cities where elevator permits are issued by the city in a manner approved by the industrial commission. Every elevator manufacturer who furnishes an elevator, power dumbwaiter, or escalator to be installed by the owner, or an agent of the owner, shall submit plans and file an application in compliance with this order.

(4) Plans shall include: (a) Sectional plan of car and hoistway; (b) Sectional elevation of hoistway, machine room (showing machinery) and pit; (c) Plan of machine and supports showing details of materials, size of beams. If the hoistway has more than one entrance on any floor, all entrances shall be clearly shown.

(5) The elevator manufacturer and the architect shall cooperate in preparing plans to avoid discrepancy in design.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57; cr. (1) (a), Register, October, 1957, No. 22, eff. 11-1-57.

Ind 4.05 Inspections. (1) INTERVAL. All elevators, power dumbwaiters, or escalators operated in the state of Wisconsin shall be subjected to a regular inspection at least once every 12 months.

(2) **INSPECTION BY INSURANCE COMPANIES.** The industrial commission may accept inspections of elevators, power dumbwaiters, and escalators reported by certified inspectors, subject to the following conditions:

(a) Each installation shall be inspected 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. If there are any special conditions which, in the inspector's opinion, would require modification of any general order, the facts shall be fully stated in the report, with the inspector's recommendation.

1. Where an insurance company inspects an elevator, power dumbwaiter or escalator within the city limits of Milwaukee, a detailed report of each unit inspected shall be filed with the Inspector of Buildings, City Hall, Milwaukee, 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. If there are any special conditions which, in the inspector's opinion, would require modification of any general order, the facts shall be fully stated in the report with the inspector's recommendation.

Note: Reports required to be submitted to the Inspector of Buildings, Milwaukee, need not be filed with the commission.

(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, or escalator, as the case may be, and shall show the date of inspection, name of insurance company, name of inspector, safe carrying capacity. (See section Ind 4.52)

1. The form referred to under 4.05 (2) (c) is SB-15A "Certificate Of Inspection" and is furnished to insurance companies by the Industrial Commission, 1 West Wilson Street, Madison.

(d) The insurance company shall use all reasonable diligence to secure compliance with the commission's orders. If unsuccessful, it shall so report to the commission. If it then becomes necessary for the commission to make an inspection, the statutory fee for each unit inspected will be charged. (See section Ind 4.07)

(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 oral and written tests.

1. The form referred to under 4.05 (2) (e) is SB-12 "Insurance Company Elevator Inspector" and is furnished by the Industrial Commission to insurance company inspectors after their competency has been examined and approved.

(f) Insurance companies that cover elevators, escalators, or power dumbwaiters which come within the scope of liabilities of workmen's compensation, public liability, or comprehensive coverage in any manner or degree shall report to the industrial commission on January 1 each year the identity, location, and ownership of each such risk.

1. Insurance companies employing inspectors holding valid certificates of competency, inspect all risks annually, and regularly file proper inspection reports shall not be required to file a list of such risks on January 1 of each year.

2. Insurance companies insuring risks in cities of the first class shall not be required to make the above report provided the risks are located within the corporate limits of such cities and provided that such cities have equivalent reporting requirements.

3. Elevators, escalators, or power dumbwaiters covered by insurance companies as in section Ind 4.05^(f) not employing inspectors holding valid certificates of competency shall be subject to inspection by the industrial commission. Fees for performing such inspection services shall be paid in accordance with the provisions of the applicable fee schedule.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57; cr. (2) (c) (1) and (2) (e) (1), Register, October, 1957, No. 22, eff. 11-1-57; am. (2) (e), Register, December, 1957, No. 24, eff. 1-1-58.

Ind 4.60 Prohibited installations. (1) **NEW AND EXISTING INSTALLATION.** (a) No belt or chain driven machine shall be used in any passenger elevator installation.

(b) No friction gearing or clutch mechanism shall be used for connecting the drums or sheaves to the main driving gear of any elevator.

(c) No passenger car shall have more than 2 entrances except in existing installations when approved in writing by the industrial commission.

(d) No passenger elevator shall be installed having continuous pressure button operation.

(e) A drum type freight elevator installation equipped with a mechanical brake shall not have hoistway limit switches, car door or gate electric contacts, hoistway landing door or gate electric contacts, or any combination thereof, except when approved in writing by the industrial commission. See section Ind 4.63 (6).

(f) No emergency release shall be installed on an elevator car which can be started from a landing.

(2) **NEW INSTALLATIONS.** (a) Chains shall not be used for hoisting in connection with a power elevator. Exception: See section Ind 4.82, special requirements.

(b) Sidewalk elevators and sidewalk type elevator installations are prohibited, from the effective date of this code.

(c) Winding drum machines are prohibited except as indicated in section Ind 4.81.

(d) Belt driven freight elevators shall be limited to a travel of not more than 50 feet in any case and to a speed of not more than 50 feet per minute.

(e) No power elevator which consists of the platform or carriage type of car supported by cables attached at 4 or more points shall hereafter be installed.

(f) Cast iron worm gears shall not be used in the hoisting mechanism of any elevator hereafter installed.

(g) No power elevator hereafter installed shall be controlled or operated by a hand cable.

(h) No elevator of any type shall have more than one compartment, nor shall elevator cars counterbalance each other.

(i) No power freight elevator shall have a contract speed in excess of 100 feet per minute except automatic operation and elevators controlled by regular operators. Exception: When controlled by a 2 speed motor, and all requirements complied with, outlined as follows:

1. Speed not to exceed 150 feet per minute.

2. Equipped with automatic floor leveling.

3. Each car entrance to be equipped with an approved car gate and electric contact.

(j) Sheaves or idlers shall not be suspended in cast iron stirrups from the under side of the supporting beam.

(k) Cast iron guide rails shall not be used.

(l) No hand elevator hereafter installed shall exceed 1,500 pounds capacity.

(m) The travel of any hand elevator hereafter installed shall not exceed 30 feet.

History: Cf. Register, April, 1957, No. 16, eff. 6-1-57.

ac
Reg
1959

Ind 4.61 Power attachments to hand elevators. New and existing installations. No power attachment, such as worm reduction units, rope clutch or rope grip devices, belts to improvised rope wheels, or any similar device, shall be installed on any hand elevator unless all requirements for power elevators are complied with. Exception: See section Ind 4.82, special requirements.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57.

Ind 4.62 Slack cable devices. (1) A slack cable device which will automatically shut off the power and stop the machine if the cables loosen or break shall be provided on every drum type power elevator, except on existing belt driven freight elevators where the machines are in good condition and such devices cannot be provided without rebuilding the machines.

(2) Every slack cable switch on elevators shall be so constructed, installed and maintained that it will not automatically reset when the slack in the cable is removed.

(3) Every ceiling drum type elevator machine shall be so located with respect to height that the slack cable device will operate with not more than 6 feet of slack cable. Recommendation: A ceiling type machine should be located not higher than the first story ceiling as this will permit proper lead to the cable and will result in longer service of each cable.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57.

Ind 4.63 Limit stops. New and existing installations. (1) Every elevator which is provided with an electric brake shall be equipped with final terminal stopping devices that will automatically interrupt the power circuit and stop the car in case of over-travel at each terminal of travel, except on electric oil hydraulic elevators.

(2) If multi-phase alternating current is used to operate the motor of any elevator hereafter installed, the terminal stopping devices shall be so arranged and connected that if phase reversal occurs and the car over-travels at either terminal the motor cannot be again started until the phase reversal is corrected, except where the requirements of section Ind 4.72 (1) are met.

(3) Final terminal stopping device for elevators hereafter installed shall consist of limit switches mounted in the hoistway and directly operated by a cam attached to the car.

(4) Every electric elevator hereafter installed shall be equipped with normal stopping device at each terminal of travel. Such device shall consist of stopping switches mounted on the car or in the hoistway and directly operated by the movement of the car.

(5) Every drum type elevator machine shall be equipped with an approved machine automatic terminal stopping device which will automatically stop the machine if the car over-travels either of the terminal landings.

(a) On alternating current drum type elevator machines hereafter installed, the terminal stopping device as outlined in section Ind 4.63 (5) shall also directly open the electric circuit to the motor and brake. This device shall be in addition to the device required by section Ind 4.63 (1).

(6) Every traction type elevator machine with a mechanical brake shall be equipped with an electric brake and limit switches.

case exceed 5 feet at right angles to the curb and 7 feet parallel to the curb. The surface of the covers shall be rough and no part of them shall project above the sidewalk when closed.

(b) Hinged hatch covers may be used on sidewalk elevators hereafter installed only if the elevator car has a clear platform area of not more than 35 square feet. Hinges of hatch covers shall be of sufficient strength and be securely fastened to withstand the service of normal operation.

(c) Every power sidewalk elevator shall be provided with one of the following requirements:

1. A device to prevent its operation until the hatch covers over the top of the hoistway are open, or

2. Flat metal tops or arched bows of sufficient strength to open the hatch covers.

(d) When hatch covers are left open, a full guard not less than 30 inches in height shall be provided in each side of the sidewalk opening not fully protected by the hatch covers. This guard shall be so fastened that it cannot be pushed into the sidewalk opening.

(e) Beveled toe-guards shall be provided under the edges of the sidewalk and under other projections, if any, as required by section Ind 4.15.

1. If the platform of an existing sidewalk elevator rises above the sidewalk, similar toe-guards shall be provided under the platform on all exposed sides.

2. If the platform of a sidewalk elevator rises above the sidewalk, aprons shall be attached to the under side of the platform fully protecting all exposed sides (see section Ind 4.87 (7)).

(f) Every existing power sidewalk elevator traveling not more than 15 feet, or more than one story, shall comply with sections Ind 4.02, 4.05, 4.06, 4.07, 4.12 (1), 4.15, 4.18 (1), 4.36 (3), and sections Ind 4.87 and 4.88 (as applied to the lower landing), 4.73 (5), (6) (5), (7), (8), (11), (12), (18), 4.74, 4.76 (2), 4.78 (1).

(g) Every existing power sidewalk elevator traveling more than 15 feet shall, in addition to section Ind 4.80 (f) comply with section Ind 4.65 (1).

(h) Hydraulic sidewalk elevators shall be subject to sections Ind 4.85, 4.86, 4.87, and 4.88 as may reasonably be applicable to sidewalk elevators.

(i) Every hand chain hoist elevator shall comply with sections Ind 4.12 (1), 4.37 and 4.38 (as applied to lower landing) 4.78 (1) 4.80 (1) and 4.80 (e).

(j) Every hand or existing power sidewalk elevator car platform shall be enclosed to a height of one foot on the sides not used for entrance.

(2) SIDEWALK ELEVATORS INSTALLED BETWEEN SEPTEMBER 7, 1944 and JANUARY 1, 1957. (a) The contract speed of every power sidewalk elevator shall not exceed 20 feet per minute.

(b) Electric sidewalk elevators having a winding-drum machine shall have normal terminal stopping devices on the machine.

(c) The car enclosure on every power sidewalk elevator installed after 1944 shall comply with section Ind 4.34 (1).

(d) A sidewalk elevator having a travel of 30 feet or more shall comply with the requirements of power freight elevators.

(e) A hatch cover of the hinged type may be arranged to open against the building or may be used as a thoroughfare only when there is a space of at least 18 inches between the fully opened covers and any obstruction in the direction of opening.

(f) Guide shoes for sidewalk elevators (except plunger elevators) shall be at least 24 inches long unless 2 sets of shoes are used, spaced 18 inches between center.

1. If vertical lift covers are used (except plunger elevators), the spacing of guide shoes or the length of a single guide shoe remaining on the guide rail when the car platform is level with the sidewalk, shall be at least $\frac{1}{2}$ of the height of the hatch cover stanchions.

2. If single guide shoes not less than 24 inches long are used, 6 inches of the shoe may be off the rail when the platform is level with the top landing.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57.

Ind 4.81 Special type freight elevators. WINDING DRUM MACHINES. Winding drum machines may be used for freight elevators only; shall not have counterweights, and shall be limited to a capacity not to exceed 2500 pounds. The speed shall not exceed 50 feet per minute and the travel not to exceed 35 feet.

History: Cr. Register, April, 1957, No. 16, eff. 5-1-57.

Power Chain or Cable Hoist

Ind 4.82 Special requirements. (1) Every power chain or cable hoist used in connection with an elevator shall comply with the following:

- (a) Capacity shall not exceed 800 pounds.
- (b) Speed shall not exceed 25 feet per minute.
- (c) Travel shall not exceed 15 feet or more than one story, and a broken rope safety shall be provided when the travel exceeds 10 feet.

(d) The elevator shall be operated from the landings only and shall be constant pressure push button operation.

(2) In addition, the following sections or parts of sections with changes as noted shall also apply:

- (a) Section Ind 4.10 (1) Hoistway enclosure.
- (b) Section Ind 4.16 (1) (b) and (d).
- (c) Section Ind 4.17 Pit depth shall be not less than 12 inches.
- (d) Section Ind 4.23 The overhead supports shall be designed and constructed to carry the total load plus twice the load for impact.
- (e) Section Ind 4.34 (1) and (2) Car enclosure.
- (f) Section Ind 4.37 (11) Operation and height of gate.
- (g) Section Ind 4.38 Gate construction.
- (h) Section Ind 4.41 Safety factor.
- (i) Section Ind 4.53 (2) Capacity plate.
- (j) Section Ind 4.62 (2) (a) Slack cable.
- (k) Section Ind 4.63 (4) Limit stops.
- (l) Section Ind 4.65 (1) Brake.
- (m) Section Ind 4.70 (3) Service switch.
- (n) Section Ind 4.73 Wiring.
- (o) Section Ind 4.74 Grounding.
- (p) Section Ind 4.76 (1) Car light.