

## Chapter Ind 4

## ELEVATOR CODE

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Note: Chapter Ind 4 as it existed on January 31, 1983 was repealed and a new chapter Ind 4 was created effective February 1, 1983.

## PURPOSE AND SCOPE

**Ind 4.01 Purpose.** The purpose of this chapter is to protect the health, safety and welfare of the public and employes by establishing

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minimum standards for the design, construction, installation, operation, inspection, testing, maintenance, alteration and repair of machines and mechanical devices installed in all public buildings and places of employment.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.02 Scope. (1) SPECIFIED EQUIPMENT.** This chapter shall apply to the following equipment installed in public buildings and places of employment:

- (a) Elevators;
- (b) Power dumbwaiters;
- (c) Escalators;
- (d) Moving walks;
- (e) Stage and orchestra lifts;
- (f) Material lifts and dumbwaiters with automatic transfer devices;
- (g) Special purpose personnel elevators;
- (h) Lifts for the physically disabled.

**(2) EXEMPTED EQUIPMENT.** This chapter shall not apply to the following equipment:

- (a) Conveyors complying with ANSI B20.1;
- (b) Tiering or piling machines used to move material to and from storage, and located and operated entirely within one story;
- (c) Equipment for feeding or positioning materials at machine tools, printing presses and similar types of equipment;
- (d) Hoists for raising or lowering materials and which are provided with unguided hooks, slings and similar means for attachment to the materials;
- (e) Skip or furnace hoists;
- (f) Wharf ramps;
- (g) Amusement devices, except equipment specified in sub. (1);
- (h) Stage curtain hoists;
- (i) Lift bridges;
- (j) Railroad car lifts or dumpers;
- (k) Mechanical lifts serving only the floor level on which the lift is located and used only for the transfer of material or equipment;
- (l) Mechanized parking garage equipment and automotive hoists used only for maintenance or repair of motor vehicles;

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(m) Personnel hoists and belt manlifts covered by chs. Ind 1000-2000, Wis. Adm. Code.

*Note:* Conveyors, personnel hoists and manlifts located in the private sector are covered by the Occupational Health and Safety Act. In the public sector this equipment is covered by chs. Ind 1000-2000, Wis. Adm. Code.

*History:* Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### INSTALLATIONS, ENFORCEMENT AND PETITION FOR MODIFICATION

**Ind 4.03 Installations and alterations.** (1) **NEW INSTALLATIONS.** Unless otherwise provided in this chapter, all new installations shall conform to the requirements of this chapter.

(2) **EXISTING INSTALLATIONS.** (a) *Applicable code requirements.* All existing installations shall conform to the applicable sections in this chapter and rules in effect on the contract date of the initial installation.

(b) *Maintenance.* All existing installations of equipment under the scope of this chapter shall comply with s. Ind 4.52.

(3) **PROHIBITED INSTALLATIONS.** (a) *New and existing installations.* 1. Belt or chain driven machines. Belt or chain driven machines shall not be used for any passenger elevator installation, except oil hydraulic elevators.

2. Friction gearing or clutch mechanism. Friction gearing or a clutch mechanism shall not be used to connect a driving-machine drum or sheave to the main driving gear of any elevator.

3. Continuous pressure operation. Continuous pressure button operation from the landings shall not be used for passenger elevators.

4. Drum type installations. Drum type freight elevator installations 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.

5. Power attachments on hand-power elevators. Power attachments, such as worm reduction units, rope clutch or rope grip devices, belts to improvised rope wheels, or any similar device, shall not be installed on any hand elevator unless all requirements for power elevators are complied with.

(b) *New installations.* 1. Counterbalance elevators. Elevator cars shall not counterbalance each other.

2. Hand cable controls. Hand cable control power operated elevators and dumbwaiters are prohibited.

(4) **ALTERATIONS, REPAIRS AND REPLACEMENTS.** All alterations, repairs and replacements of parts shall comply with the applicable sections of this chapter.

*History:* Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.04 Petition for modification.** The department shall consider and may grant a variance to an administrative rule upon receipt of a fee and a completed petition for modification form from the owner, provided an equivalent degree of safety is established in the petition for

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modification which meets the intent of the rule being modified. The department may impose specific conditions in a petition for modification to promote the protection of the health, safety and welfare of the employees or the public. Violations of those conditions under which the petition for modification is granted constitutes a violation of these rules.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.05 Enforcement.** This chapter shall be used by the department, municipality and insurance inspectors certified by the department. The department shall have the responsibility for interpreting the rules, including those in the incorporated ANSI/ASME A17.1 code, and for the approval of equipment and material.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

## PLAN APPROVALS AND INSPECTIONS

**Ind 4.06 Plan examination and approval.** (1) **PLAN SUBMITTAL.** Plans and specifications for all new installations and the following alterations shall be submitted to the department or municipality for examination and approval:

- (a) Increase in rated load or speed;
- (b) Increase in dead weight of car by 10% or more;
- (c) Increase or decrease in travel;
- (d) Change in classification from freight to passenger service;
- (e) Addition of hoistway doors or gates; and
- (f) Relocation of machine room.

(2) **INFORMATION REQUIRED ON PLANS.** At least 3 sets of plans, including specifications, shall be submitted by the manufacturer's representative or the distributor who furnishes the equipment. The plans shall include the following:

(a) A plan of car, hoistway and machine room showing all clearances, including all inside car dimensions specified in s. Ind 4.61 (4);

(b) A section through hoistway, pit and car showing all applicable dimensions. All landings shall be clearly shown, indicating types of hoistway doors or gates used;

(c) Working clearances around machine, controller and disconnecting means showing dimensions to adjacent or opposite walls and equipment, or both.

(d) The size and weight per foot of guiderails and details of their support, including reinforcement where required.

(3) **APPLICATION FOR INSTALLATION OR REMODELING.** Prior to commencing work, at least 2 completed copies of the department application form shall be submitted to the department for all new installations, alterations listed in sub. (1) (a) to (f) and the following alterations.

- (a) Change in type of operation or control;

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- (b) Addition of phase I emergency recall or phase II emergency in-car operation specified in [ANSI/ASME] A17.1 211.3;
- (c) Change in size or type of suspension ropes;
- (d) Replacement, change in type, or addition of a car or counter-weight safety or governor;
- (e) Replacement of hoistway doors;
- (f) Addition of hoistway-door locking devices or car door or gate electric contacts;
- (g) Addition of top-of-car operating devices;
- (h) Addition of hoistway-door, car-door or gate operating devices;
- (i) Addition of car-leveling or truck-zoning devices;
- (j) Change in size or type of guiderails;
- (k) Replacement of an existing driving machine by a new driving machine;
- (l) Replacement of an existing controller by a new controller.

**Note:** See Appendix for an example of the application for installation or remodeling form (SB-22).

(4) **APPROVAL OF PLANS AND APPLICATION.** (a) *Conditional approval.* If, upon examination, the department or municipality determines that the plans and application for installation or remodeling substantially conform to the provisions of this code, a conditional approval, in writing, shall be granted. All non-code-complying conditions stated in the conditional approval shall be corrected before or during construction. A conditional approval issued by the department or municipality shall not be construed as an assumption of any responsibility for the design or construction of the equipment.

(b) *Denial of approval.* If the department or municipality determines that the plans or the application do not substantially conform to the provisions of this chapter, the application for conditional approval shall be denied, in writing.

(c) *Revocation of approval.* The department or municipality may revoke any approval, issued under the provisions of this chapter, for any false statements or misrepresentation of facts on which the approval was based.

(d) *Commencing work.* On-site fabrication or installation shall not commence before the plans and application are approved.

(5) **OWNER'S RESPONSIBILITY.** The submission of plans for approval or application form for installation or remodeling, or both, as required by subs. (1) and (3), shall be the responsibility of the building owner when the manufacturer, manufacturer's representative or distributor does not submit the plans, specifications and application for approval.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.07 Tests and inspections.** (1) **NEW INSTALLATIONS.** New installations shall be tested and inspected by an authorized representative of the department or municipality to determine whether or not the instal-

lations conform to the conditionally approved plans and the provisions of this chapter. The installations shall not be placed in service until authorized by the department or municipality.

(a) *Notification for inspection.* The department shall be notified at least 10 days prior to the time the new installation is complete and ready for inspection.

(b) *Test and inspection.* A representative of the company installing the equipment shall be present during the tests and inspections specified in sub. (1).

(c) *Registration numbers.* All new equipment, as specified in s. Ind 4.02 (1), shall be assigned a registration number by the department or municipality. The registration number shall be located as follows:

1. Elevators: on the car crosshead or locations readily visible;
2. Dumbwaiters: in or on the car structure;
3. Escalators, moving walks: in the machine room at locations visible from the access opening;
4. Other equipment: at locations readily visible.

(2) **EXISTING INSTALLATIONS.** Every installation of equipment specified in s. Ind 4.02 (1) shall be inspected at least once every 12 months, except inclined wheelchair lifts and stairway chairlifts shall be inspected at least once every 3 years.

(3) **REINSPECTION.** Any equipment found to be in noncompliance will be reinspected as determined by the department or municipality to obtain compliance with the provisions of this chapter.

(4) **MAJOR ALTERATIONS.** Every major alteration specified in ANSI/ASME A17.1 1200.1a and s. Ind 4.53, shall be inspected as determined by the department or municipality.

(5) **COMPLIANCE DATE.** Every item which is out of compliance with this chapter listed on the inspection report shall be corrected on or before the compliance date stated on the report.

**Note:** See Appendix for examples of inspection forms and of abbreviated fee schedule.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### CERTIFICATE OF OPERATION

**Ind 4.08 Certificate of operation.** If the department, after inspection, determines that the installation conforms with the provisions of this chapter, a certificate for operation shall be issued by the department.

(1) **EXPIRATION.** Certificates for operation shall be effective from the date of issuance until 60 days after the next scheduled periodic inspection.

(2) **REVOCATION.** The department may revoke the certificate for operation if the equipment is found to be in noncompliance with the applicable safety standard. Upon revocation of the certificate for operation, the department shall notify the owner, in writing, of the noncomplying

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items and afford him or her the opportunity for a hearing within 30 days from the date of revocation.

**Note:** See Appendix for example of certificate for operation form.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

### CERTIFICATION OF INSPECTORS

**Ind 4.09 Certification of inspectors.** A person employed by the department, a municipality or an insurance company, may be certified by the department as an inspector, under the scope of this chapter, upon submittal of job qualifications on completed form SB-88 and successful passage of a written examination given by the department.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.10 Plan approvals by certified inspectors.** All plan approvals shall be performed by certified department or municipality inspectors.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.11 Inspections by certified inspectors.** All inspections required by this chapter shall be performed by certified inspectors.

(1) **INSPECTION REPORT.** All certified inspectors shall file an inspection report with the department, on a form approved by the department, within 14 days after the inspection. The report shall identify items of noncompliance.

(2) **COMPLIANCE WITH ORDERS.** If a certified inspector is unable to obtain compliance with this chapter, the inspector shall notify the department. If it becomes necessary for the department to conduct inspections, a fee in accordance with s. Ind 69.06 will be charged for each inspection.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

### ADOPTION OF STANDARDS

**Ind 4.20 Adoption of standards by reference.** (1) **CONSENT TO INCORPORATE.** (a) Pursuant to s. 227.025, Stats., the Attorney General and the Revisor of Statutes have consented to the incorporation by reference of the American National Standard Safety Code for Elevators and Escalators, ANSI/ASME A17.1-1981, subject to those changes, additions or omissions specified in s. Ind 4.21.

(b) The American National Standard Safety Code for Elevators and Escalators, ANSI/ASME A17.1-1981, subject to the changes, additions or omissions specified in ss. Ind 4.22 through 4.74 is hereby incorporated by reference into ch. Ind 4.

(2) **INTERIM SUPPLEMENTS.** Interim supplements to the ANSI/ASME A17.1-1981 shall have no effect in the state, until such time as this section is correspondingly revised to reflect those changes.

(3) **AVAILABILITY OF STANDARDS.** Copies of the ANSI/ASME A17.1-1981 can be obtained from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, N.Y. 10017.

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(4) **FILING OF CODES.** Copies of the standards in reference are on file in the offices of the department, the secretary of state, and the revisor of statutes.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### CHANGES, ADDITIONS OR OMISSIONS TO ANSI/ASME A17.1-1981

**Ind 4.21 Changes, additions or omissions to ANSI/ASME A17.1-1981.** Changes, additions or omissions to ANSI/ASME A17.1-1981 are specified in ss. Ind 4.22 through 4.74, and are rules of the department and are not requirements of the ANSI/ASME A17.1-1981.

**Note:** The referenced A17.1 section or subsection, located in brackets, will follow the Ind designation and precede the text of the rule. Example Ind 4.24 [A17.1 section 100].

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.22 [A17.1 Section 1 and Section 2] Introduction.** ANSI Section 1 - Scope and Section 2 - Purpose and Exceptions do not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.23 [A17.1 Section 3] Definitions.** These are department definitions in addition to the definitions in ANSI Section 3:

- (1) "Approved" means acceptable to the department of industry, labor and human relations.
- (2) "Capacity, contract load or rated load" means the approved safe live load specified on application and plans submitted for approval.
- (3) "Department" means the department of industry, labor and human relations.
- (4) "Existing installations" means equipment that has been completed or for which the contract was let before the effective date of any applicable rule change.
- (5) "Fire-resistive rating" means a rating as defined in s. Ind 51.01 (50).
- (6) "Municipality" means a city employing elevator inspectors certified by the department and exercising legal jurisdiction over elevator installations covered by this chapter.
- (7) "New installations" means equipment for which the contract has been let on or after the effective date of any applicable rule change.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### HOISTWAYS, HOISTWAY ENCLOSURES AND RELATED CONSTRUCTION FOR ELECTRIC ELEVATORS

**Ind 4.24 [A17.1 Section 100] Construction of hoistways and hoistway enclosures.** (1) [A17.1 100.1a Exception (4)] **FIRE-RESISTIVE CONSTRUCTION REQUIRED.** This is a department exception in addition to A17.1 100.1a Exception (4):

Where access is provided to moving elevators, the protection shall be not less than 7 feet in height.

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(2) [A17.1 100.1b] FIRE-RESISTIVE RATINGS. Substitute the following wording for the first paragraph in A17.1 100.1b:

The fire-resistive rating of the hoistway enclosure, exclusive of entrances and protective assemblies in other openings, shall be not less than required by chs. Ind 50 to 64.

(3) [A17.1 100.4] HOISTWAY PROTECTION IN CASE OF FIRE. Section A17.1 100.4 does not apply in Wisconsin.

(4) GUARDING OF VENTILATION OPENINGS IN HOISTWAY WALLS. This is a department rule in addition to the requirements of A17.1 100:

Ventilation openings in hoistway walls, where provided, shall have guards securely anchored to the supporting structure inside the hoistway, consisting of a wire-mesh screen of at least 0.0915-inch diameter steel wire with openings which will reject a ball one inch in diameter, or expanded metal screen of equivalent strength and open area.

(5) [A17.1 100.6 (b)] PROJECTIONS, RECESSES AND SETBACKS IN HOISTWAY ENCLOSURES. Substitute the following wording for A17.1 100.6 (b): On sides not used for loading and unloading. Projections, recesses and setbacks on sides not used for loading and unloading shall not require guarding.

History: Cr. Register, January, 1983, No. 325, eff. 2-1-83.

Ind 4.25 [A17.1 101] Machine rooms and machinery spaces. (1) [A17.1 101.1a] ENCLOSURES REQUIRED FOR ELEVATORS HAVING FIRE-RESISTIVE HOISTWAY ENCLOSURES. This is a department exception in addition to the exceptions of A17.1 101.1a:

Where phase II emergency in-car operation covered by A17.1 211.3a (2) is provided, the elevator machinery space shall be separated from all other equipment by construction having at least a 2-hour fire-resistive rating.

(2) [A17.1 101.5] RECEPTACLE OUTLET IN MACHINE ROOM AND MACHINERY SPACE. This is a department rule in addition to the requirements of A17.1 101.5:

(c) At least one 120 volt, single phase, 15- or 20-ampere duplex receptacle shall be installed in each machine room and machinery space.

History: Cr. Register, January, 1983, No. 325, eff. 2-1-83.

Ind 4.26 [A17.1 102.2] Installation of pipes or ducts conveying gases, vapors or liquids in any hoistway, machine room or machinery space. (1) SPRINKLER HEADS. This is a department rule in addition to the requirements of A17.1 102.2:

Sprinkler heads shall not be installed in any hoistway, machine room or machinery space.

(2) PIPING FOR SUMP PUMPS. Substitute the following wording for A17.1 102.2, Exception (4):

Piping for sump pumps located in elevator machine rooms shall serve only the elevator pit or elevator machine room or both.

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**Ind 4.27 [A17.1 104.1] Guarding of exposed equipment.** (1) [A17.1 104.1] Substitute the following wording for A17.1 104.1:

In machine rooms and secondary machinery spaces, exposed gears, sprockets, tape or rope sheaves or drums shall be guarded to protect against accidental contact, except overspeed governors.

(2) This is a department rule in addition to the requirements of A17.1 104.1:

Every sheave or idler for counterweight or governor cable shall be provided with a guard that will keep the cable on the sheave or idler if the cable becomes slack.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.28 [A17.1 106] Pits.** (1) [A17.1 106.1b] **DESIGN AND CONSTRUCTION OF PITS.** Substitute the following wording for A17.1 106.1b (3) Exception:

Exception: Where water cannot be kept out of a pit with ordinary construction, drains or sumps with metal covers, shall be provided. Where a pump is required to remove water, the pump shall be located outside the elevator hoistway.

(2) [A17.1 106.1e] **Illumination and Receptacle Outlet in Pits.** This is a department rule in addition to the requirements of A17.1 106.1e:

At least one 120 volt, single phase, 15- or 20-ampere duplex receptacle outlet shall be installed in the hoistway approximately level within the lowest terminal landing floor.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.29 [A17.1 107] Bottom and top clearances and runbys for elevator cars and counterweights.** (1) [A17.1 107.1a] **BOTTOM CAR CLEARANCES.** Substitute the following wording for A17.1 107.1a:

When the car rests on its fully compressed buffer, there shall be a vertical clearance of not less than 2 feet between the pit floor and the lowest structural or mechanical part, equipment or device installed beneath the car platform except guide shoes or rollers, safety-jaw assemblies and platform toe guards.

(2) [A17.1 107.1e] **TOP CAR CLEARANCES.** Substitute the following wording for A17.1 107.1e:

The top car clearance for all elevators shall be in accordance with the following:

(a) When the car is at its extreme uppermost mechanical limit of travel, the vertical distance between the nearest part of any overhead obstruction, directly above the car, and the nearest point of the elevator car or its appurtenances shall be not less than 2 feet.

Exception: The top clearance of guide shoes, leveling devices, car gate posts and car door or gate opening and closing linkage shall be not less than 4 inches measured vertically to the lowest part of any overhead obstruction directly above these appurtenances.

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(b) The 2 foot-vertical clearance specified in par. (a) shall apply for a horizontal distance of not less than 2 feet.

Exception: The horizontal distance shall not be required to extend beyond the edge of the car.

(3) [A17.1 107.1] CLEARANCES. The following subsections of A17.1 107.1 do not apply in Wisconsin:

(a) [A17.1 107.1f] Top car clearance for uncounterweighted elevators.

(b) [A17.1 107.1g] Vertical clearances with underslung car frames.

(c) [A17.1 107.1i] Overhead clearances where overhead beams are not over car crosshead.

(d) [A17.1 107.1j] Equipment on top of car not permitted to strike overhead structure.

(e) [A17.1 107.1k] Refuge space on top of car enclosure.

History: Cr. Register, January, 1983, No. 326, eff. 2-1-83.

**Ind 4.30 [A17.1 111] Hoistway-door locking devices, car door or gate electric contacts, hoistway access switches, and elevator parking devices. (1) [A17.1 111.9] ACCESS TO HOISTWAY FOR INSPECTION, MAINTENANCE OR REPAIRS.** Substitute the following wording for A17.1 111.9:

(a) Hoistway access switches conforming to the requirements of A17.1 111.9b and 111.9c shall be permitted only at the top or bottom terminal landings, or both.

(b) Hoistway door unlocking devices conforming to the requirements of sub. (3) 111.9e shall be provided at all landings.

(2) [A17.1 111.9] ACCESS TO HOISTWAY FOR INSPECTION, MAINTENANCE OR REPAIRS. The following subsections of A17.1 111.9 do not apply in Wisconsin:

(a) [A17.1 111.9a] Hoistway Access Switch.

(b) [A17.1 111.9d] Hoistway Door Unlocking Device.

(3) [A17.1 111.9e] LOCATION AND DESIGN OF HOISTWAY DOOR UNLOCKING DEVICES. Substitute the following wording for A17.1 111.9e:

Hoistway door unlocking devices shall conform to the following:

(a) The device shall unlock and permit the opening of the hoistway door from the landing regardless of the position of the car.

(b) The device shall be designed to prevent unlocking the door with common tools.

(c) The unlocking device keyway shall be located at a height not greater than 6 feet 11 inches above the floor.

(d) The unlocking device operating key shall be located adjacent to the lowest landing, or be readily available within the building, and kept in a box having a breakable red cover marked "fire department and emergency use only."

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(4) [A17.1 111.10] ACCESS TO HOISTWAYS FOR EMERGENCY PURPOSES. Section A17.1 111.10 does not apply in Wisconsin.

History: Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### MACHINERY AND EQUIPMENT FOR ELECTRIC ELEVATORS

Ind 4.31 [A17.1 204.2] Passenger-car enclosures. (1) [A17.1 204.2a] MATERIAL FOR ENCLOSURES AND ENCLOSURE LININGS. This is a department rule in addition to the requirements of A17.1 204.2a (2):

Exception No. 2: Wall-covering material having a Class A interior finish as defined in s. Ind 51.01 (75a) (a), shall be permitted to be used on car walls.

(2) SIGNS OR ADVERTISEMENTS IN ELEVATOR CARS. This is a department rule in addition to the requirements in A17.1 204.2:

No signs, plaques or advertisements shall be posted in any elevator car, except:

(a) Those signs required for the operation of the elevator, or

(b) Permanently affixed signs or plaques, or sign enclosures not exceeding ½ inch in thickness, made of noncombustible materials and which have smooth edges and flush securing means.

Note: See s. Ind 51.01 (88), for definition of noncombustible material.

(3) [A17.1 204.2d] SIDE EMERGENCY EXITS. Section A17.1 204.2d does not apply in Wisconsin.

(4) [A17.1 204.7a] ILLUMINATION AND OUTLETS REQUIRED. Substitute the following wording for A17.1 204.7a (4):

4. Each elevator shall be provided with an electric light fixture and at least one 120 volt, single phase, 15- or 20-ampere receptacle on the car top and on the underside of the car platform.

History: Cr. Register, January, 1983, No. 325, eff. 2-1-83.

Ind 4.32 [A17.1 205] Car and counterweight safeties. (1) [A17.1 205.7] GOVERNOR-ACTUATED SAFETIES AND CAR-SAFETY-MECHANISM SWITCHES REQUIRED.. Section A17.1 205.7 (a) Exception does not apply in Wisconsin.

(2) [A17.1 205.14] MARKING PLATES FOR SAFETIES. This is a department rule in addition to the requirements of A17.1 205.14:

The manufacturer's identification as designated on the approved plans required by s. Ind 4.06.

(3) REQUIRED DROP TEST. These are department rules in addition to the requirements of A17.1 205:

(a) Drop test. Every car safety device and speed governor not previously approved by the department, shall be subjected to a drop test as outlined in this section.

1. The test shall be made with the total load on the car safety device. The total load shall include the weight of the car structure, the safety device, the live load, and all appurtenances and devices attached to the car.

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2. The free fall shall be such that the safety under test shall have attained the maximum governor tripping speed before the safety actuating device starts to function, except that where approval is desired for speeds greater than 280 feet per minute the governor tripping speed need not exceed 280 feet per minute.

3. The total drop from the starting point to rest for type B safeties shall not exceed 15 feet.

4. The application of the car safety device shall not cause the car platform to become out of level in excess of 1/2 inch per foot in any direction.

5. A drop test made on a car safety device that is designed and constructed to trip by inertia, when set within the drop test requirements, shall be considered as satisfactory. The governor in connection with the above car safety device shall be tested separately to determine the tripping speed as required in A17.1 Table 205.3.

6. Such tests shall be made at the risk and expense of the elevator manufacturer and witnessed by the department.

(b) *Plans and specifications.* Complete plans and specifications for every car safety device and speed governor to be tested shall be submitted to the department.

*History:* Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.33 [A17.1 206] Speed governors.** (1) [A17.1 206.1] **SPEED GOVERNORS REQUIRED AND LOCATION.** Section A17.1 206.1 (a) Exception does not apply in Wisconsin.

(2) [A17.1 206.8] **SPEED-GOVERNOR MARKING PLATE.** These are department rules in addition to the requirements of A17.1 206.8:

(a) Manufacturer of governor.

(b) Manufacturer's identification number of governor.

*History:* Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.34 [A17.1 210] Operating devices and control equipment.**

(1) [A17.1 210.1d] **TOP-OF-CAR OPERATING DEVICE.** Section A17.1 210.1d (4) does not apply in Wisconsin.

(2) [A17.1 210.2 (e)] **EMERGENCY STOP SWITCH.** (a) Substitute the following wording for the first sentence of A17.1 210.2 (e):

An emergency stop switch shall be provided in the pit of every elevator and on the top of every elevator car.

(b) These are department rules in addition to the requirements of A17.1 210.2 (e):

1. An emergency stop switch shall be prohibited in the car, except freight elevators without power-operated doors.

2. A door hold-open keyed or toggle switch shall be permitted provided it is rendered inoperative when the elevator is under the emergency control required by A17.1 211.3.

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(3) [A17.1 210.2 (s)] CAR SIDE-EMERGENCY - EXIT DOOR CONTACT SWITCHES. Section A17.1 210.2 (s) does not apply in Wisconsin.

History: Cr. Register, January, 1983, No. 325, eff. 2-1-83.

Ind 4.35 [A17.1 211] Emergency operation and signal devices. (1) [A17.1 211.1 (a) (2)] CAR EMERGENCY SIGNALING DEVICES. These are department exceptions in addition to the requirements of A17.1 211.1 (a) (2):

Exception #1: Elevators in buildings having a height from the lowest to the highest landing of not more than 70 feet providing the distance between any adjacent landings does not exceed 15 feet.

Exception #2: When the means of communication with an approved service permits two-way conversation.

(2) [A17.1 211.2] EMERGENCY POWER. This is a department note in addition to the requirements of A17.1 211.2:

Note: See s. Ind 52.01 for special emergency standby power requirements for elevators in high rise buildings.

(3) [A17.1 211.3] OPERATION OF ELEVATORS UNDER FIRE OR OTHER EMERGENCY CONDITIONS. (a) [A17.1 211.3a (1) (b)] This is a department rule in addition to the requirements of A17.1 211.3a (1) (b):

SMOKE DETECTORS. 1. The lobby smoke detectors shall be visible and located within 15 feet from all elevator hoistway doors.

2. If smoke detectors are located in hoistways, they shall activate the phase I emergency recall operation.

(b) [A17.1 211.3a (2)] This is a department rule in addition to the requirements of A17.1 211.3a (2):

SECURITY FLOORS. Where a building owner has designated security floors, phase II access to those floors shall not be required provided other means of access acceptable to the fire department having jurisdiction is provided.

(c) [A17.1 211.3a (4)] This is a department rule in addition to the requirements of A17.1 211.3a (4):

An additional set of keys intended for use by the fire department, police department or emergency squad, shall be kept in a metal box mounted in a conspicuous location at the main floor or other approved level. The box shall have a lock-type cover which can be opened only by the fire department, police department or emergency squads.

(d) [A17.1 211.3a] This is a department rule in addition to the requirements of A17.1 211.3a:

Freight elevators equipped with power-operated vertically sliding doors that do not close automatically shall meet the requirements of this subsection and operate as follows:

1. The continuous pressure operation permitted by A17.1 112.3b shall be over-ridden by an automatic operation upon initiation of the emergency controls of A17.1 211.3a.

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2. The automatic operation required by subd. 1 shall comply with A17.1 112.3d.

3. When the hoistway doors are closed the car shall proceed to the main floor or other approved level without stopping for car or lobby calls, and the doors shall open and remain open.

(4) [A17.1 211.3e] OPERATING PROCEDURES. Section A17.1 211.3e does not apply in Wisconsin.

(5) [A17.1 211.4] FLOOR NUMBERS. Section A17.1 211.4 does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.36 [A17.1 212.8] Splicing and replacement of suspension ropes.** This is a department rule in addition to the requirements of A17.1 212.8:

When renewing or replacing wire ropes, the ropes shall comply with the manufacturer's specifications as stated on the wire rope data plate provided on the crosshead, except a change in rope size or number or both. All changes shall be included on the data plate.

#### HYDRAULIC ELEVATORS

**Ind 4.37 [A17.1 300] Hoistways, hoistway enclosures and related construction.** (1) [A17.1 300.3a] BOTTOM CAR CLEARANCES. Substitute the following wording for A17.1 300.3a:

The bottom car clearances shall comply with s. Ind 4.29 (1).

(2) [A17.1 300.3d] TOP CAR CLEARANCES. Substitute the following wording for A17.1 300.3d:

The top car clearances shall comply with s. Ind 4.29 (2).

(3) [A17.1 300.3e] EQUIPMENT PROJECTING ABOVE THE CAR TOP. Section A17.1 300.3e does not apply in Wisconsin.

(4) [A17.1 300.3g] TOP CLEARANCE AND BOTTOM RUNBY OF COUNTERWEIGHTS. Section A17.1 300.3g does not apply in Wisconsin.

(5) [A17.1 300.3h] REFUGE SPACE ON TOP OF CAR ENCLOSURE. Section A17.1 300.3h does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.38 [A17.1 302.3e] Collection of oil leakage.** Substitute the following wording for A17.1 302.3e:

A drip ring or reservoir shall be provided at the packing gland of the cylinder to collect the oil leakage. Collected oil shall be automatically returned by a separate pumping unit to a reservoir located outside of the hoistway.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.39 [A17.1 305.1b] Location of stopping switches.** Substitute the following wording for A17.1 305.1b:

Stopping switches shall be located on the car or in the hoistway.

**History:** Cr. Register, January, 1983, No. 326, eff. 2-1-83.

## PRIVATE RESIDENCE ELEVATORS

**Ind 4.40 [A17.1 Part V] Private residence elevators.** The entire A17.1 Part V does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

## POWER DUMBWAITERS

**Ind 4.41 [A17.1 Part VII] Hand and power dumbwaiters.** Substitute the following wording for A17.1 Part VII 700-Scope:

This part applies to power dumbwaiters.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.42 [A17.1 700] Hoistways, hoistway enclosures and related construction.** (1) [A17.1 700.4b] TYPES OF ENTRANCES FOR HAND DUMBWAITERS. Section A17.1 700.4b does not apply in Wisconsin.

(2) [A17.1 700.5] CLOSING HOISTWAY DOORS OF HAND DUMBWAITERS. Section A17.1 700.5 does not apply in Wisconsin.

(3) [A17.1 700.6] SIGNS ON HOISTWAY DOORS OF HAND DUMBWAITERS. Section A17.1 700.6 does not apply in Wisconsin.

(4) [A17.1 700.7b] SIZE AND LOCATION OF HOISTWAY-DOOR OPENINGS FOR HAND DUMBWAITERS. Section A17.1 700.7b does not apply in Wisconsin.

(5) [A17.1 700.10b] HOISTWAY-DOOR LOCKING DEVICES FOR HAND DUMBWAITERS. Section A17.1 700.10b does not apply in Wisconsin.

(6) [A17.1 700.11] HOISTWAY ACCESS DOORS. This is a department rule in addition to the requirements of A17.1 700.11:

All terminal landing doors shall be provided with means to open the door irrespective of the position of the dumbwaiter car. The opening means shall be mounted adjacent to the door and shall be provided with a removable cover or other means to restrict access for unauthorized persons.

(7) VISION PANELS. This is a department rule in addition to the requirements of A17.1 700:

Vision panels not less than 4 square inches nor more than 12 square inches shall be provided in hoistway doors where position indicators are not provided. Vision panels shall be ¼-inch clear wire glass mounted flush with the surface of the landing side of the door.

(8) CAR CLEARANCES. This is a department rule in addition to the requirements of A17.1 700:

(a) The clearance between any point of car travel and any stationary part shall be not less than ½ inch.

(b) The clearance between the dumbwaiter car sill or gate threshold and hoistway landing sill or door threshold shall not exceed 2 inches.

(c) The minimum car and counterweight clearance at terminal landings shall be not less than 4 inches.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

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**Ind 4.43 [A17.1 704.4 (b)] Driving-machine brakes.** Section A17.1 704.4 (b) does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.44 [A17.1 707.4] Hand dumbwaiters.** Section A17.1 707.4 does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### MOVING WALKS

**Ind 4.45 [A17.1 902.1] Protection required.** Substitute the following wording for A17.1 902.1:

Where a moving walk pierces a building floor, the opening shall be protected against the passage of flame, heat, or smoke in accordance with the provisions of chs. Ind 50-64 applying to the protection of floor openings for escalators.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### ACCEPTANCE AND PERIODIC TESTS AND INSPECTIONS AND MAINTENANCE

**Ind 4.46 [A17.1 1000.4 (d)] Additional acceptance tests and inspection for hydraulic elevators.** This is a department rule in addition to the requirements of A17.1 1000.4d:

The test of the pump relief valve or pump cutoff pressure shall be conducted where the seal required by A17.1 303.2a (4) has been tampered with or removed.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.47 [A17.1 1001.1] Tests and inspections of existing installations.** (1) [A17.1 1001.1a] INSPECTION PERIODS. Section A17.1 1001.1a does not apply in Wisconsin.

(2) [A17.1 1001.1b] CAR AND COUNTERWEIGHT SAFETY, GOVERNOR AND OIL BUFFER INSPECTIONS AND TESTS. Section A17.1 1001.1b does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.48 [A17.1 1001.4] Tests of safeties.** (1) [A17.1 1001.4 (a)] TESTS EVERY 12 MONTHS. Section A17.1 1001.4 (a) does not apply in Wisconsin.

(2) [A17.1 1001.4 (b)] TESTS EVERY FIVE YEARS. (a) Substitute the following wording for the first paragraph of A17.1 1001.4 (b):

Safeties, including wood guide safeties, and their governors shall be inspected and tested as follows:

(b) Substitute the following wording for the last paragraph of A17.1 1001.4 (b) (5):

A tag shall be fastened to the governor releasing carrier upon completion of a satisfactory test of the car safety device and speed governor. Reports of tests as specified in A17.1 1001.4 (b) shall be submitted to

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the department with complete information on form SB-2E, "Test Report of Safety Devices," and tags furnished by the department.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.49 [A17.1 1001.6] Hydraulic elevators, additional inspections and tests.** (1) [A17.1 1001.6a] INSPECTION AND TEST PERIOD. Section A17.1 1001.6a does not apply in Wisconsin.

(2) [A17.1 1001.6b] TWELVE MONTH INSPECTION AND TEST PERIOD. Section A17.1 1001.6b does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.50 [A17.1 1001.7] Inspections and tests of escalators and moving walks.** Section A17.1 1001.7 does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.51 [A17.1 1001.8] Installations placed out of service.** Substitute the following wording for A17.1 1001.8:

(1) Elevators reported as not being used shall not be subjected to the annual inspection provided the installation conforms with the requirements listed as follows:

(a) All hoistway landing doors or gates shall be securely sealed to prevent opening from the landings.

(b) The conductors shall be disconnected from the load side terminals of the machine room circuit-breaker or disconnect switch.

(c) The fuses shall be removed from the disconnect switch.

(d) For hand elevators, in addition to sealing the hoistway doors or gates, the car platform shall be substantially blocked and the hoisting cables removed from the car crosshead.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.52 [A17.1 1002] Maintenance.** These are department rules in addition to the requirements of A17.1 1002.1 through 1002.5:

(1) Elevators, dumbwaiters, escalators and moving walks shall be kept in a safe operating condition, properly lubricated and clean, including pits, machine rooms and machinery spaces.

(2) Material which is not a permanent part of the elevator equipment shall not be permitted on the top of an elevator car.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### ALTERATIONS, REPAIRS AND REPLACEMENTS

**Ind 4.53 [A17.1 1200.1a] Major alterations.** This is a department rule in addition to the requirements of A17.1 1200.1a:

Addition of phase I emergency recall operation or phase II emergency in-car operation or both.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

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**Ind 4.54 [A17.1 1200.2c] Increase or decrease in travel and change in location of the driving machine.** This is a department rule in addition to the requirements of A17.1 1200.2c:

Where the alteration involves an increase or decrease in travel and the final travel exceeds the heights specified in A17.1 211.3, the applicable requirements of A17.1 211.3 shall be complied with.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.55 [A17.1 1200.2d] Change in type of operation or control.** Substitute the following wording for A17.1 1200.2d (1) (f):

(1) (f) **Emergency Signal Devices and Control.** Emergency signal devices and phase I and II operation where required by A17.1 211.3a shall be provided and shall conform to the requirements of section A17.1 211.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.56 Addition of emergency recall and emergency in-car operation.** These are department rules in addition to the requirements of A17.1 1200.2:

Where phase I and II operation is installed, the installation shall conform to the following requirements.

1. The phase I and II operation shall conform to the requirements of A17.1 211.3a.

2. Emergency stop switches, if provided in the car, shall be bypassed during phase I and phase II operations.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.57 [A17.1 1202.2] Repairs and replacements of damaged, broken or worn parts.** Substitute the following wording for the requirements of A17.1 1202.2:

Ordinary repairs and replacements of damaged, broken or worn parts, necessary for normal maintenance, shall be made with parts of equivalent material, strength and design.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### SPECIAL PURPOSE PERSONNEL ELEVATORS

**Ind 4.58 [A17.1 1502.9] Limitation of load, speed and platform area.** This is a department rule in addition to the requirements of A17.1 1502.9:

Exception: Rack and pinion drive machines approved by the department.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.59 [A17.1 1502.10a] Types of driving machines.** Substitute the following wording for A17.1 1502.10a - Exception:

Exception: Screw machines conforming to the requirements of A17.1 208.9, and rack and pinion drive machines approved by the department.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

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## PRIVATE RESIDENCE INCLINED LIFTS

**Ind 4.60 [A17.1 Part XVIII] Private residence inclined lifts.** The entire A17.1 Part XVIII does not apply in Wisconsin.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.

## ACCESSIBILITY REQUIREMENTS FOR ELEVATORS

**Ind 4.61 Accessibility requirements for elevators. (1) GENERAL.** The requirements of this part apply to all new passenger elevator installations.

(2) **OPERATION AND LEVELING.** The operation shall be automatic and self-leveling within ½ inch of floor levels under normal use conditions.

(3) **DOOR OPERATION AND REOPENING. (a)** Automatic power operated horizontal sliding car and hoistway doors shall be provided.

(b) Doors shall be provided with a door reopening device which stops and fully reopens a car door and adjacent hoistway door in case the car door is obstructed while closing.

1. The reopening device shall be capable of sensing an object or person in the path of a closing door at 5 and 29 inches, plus or minus one inch, above the floor without requiring contact for activation.

2. Door reopening devices shall remain effective if obstructed for a period of not less than 20 seconds. After this time, doors shall be permitted to close in accordance with A17.1 112.3c.

(4) **PLATFORM AREA AND DOOR OPENING WIDTH.** Every passenger elevator used to provide access for the physically disabled as required by ch. Ind 52, shall be sized in accordance with the following:

(a) The clear distance between walls or between wall and door shall be not less than 54 inches and the net inside platform area shall be not less than 24 square feet. The clear distance from wall to return panels and from return panel to return panel shall be not less than 51 inches.

1. Exception. When elevators are provided in health care facilities, including medical clinics, and in all buildings over 3 stories in height, at least one elevator shall have the combination of car size and door opening which accommodates a 76 inch by 24 inch ambulance type stretcher in the horizontal position with no tilting at any time.

2. Exception. For elevators installed in existing hoistways and where the car size specified in sub. (4) cannot be provided because of hoistway size, the minimum clear distance shall be permitted to be not less than 54 inches by 51 inches.

3. Exception. For elevators installed in existing hoistways and where the car size specified in subd. 2. cannot be provided because of hoistway size, the minimum car size shall be approved by the department.

(b) The minimum clear width of the door opening shall be not less than 36 inches, except a minimum clear width of 32 inches shall be permitted for elevators installed and sized in accordance with par. (a) 2 or 3.

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(5) **CAR CONTROLS, SIGNALLING AND COMMUNICATIONS SYSTEMS.** (a) The center line of the highest elevator control buttons shall be no higher than 54 inches above the car floor.

(b) The emergency alarm or signalling buttons shall be grouped at the bottom of the control panel and shall have their center lines no less than 35 inches above the car floor.

(c) The highest operable part of a two-way communication system shall be a maximum of 54 inches above the car floor.

(d) Floor registration buttons shall be provided with visual indication lights. The visual indicators shall be extinguished when each call is answered.

(6) **HANDRAILS.** (a) A handrail shall be provided on one wall of the car, preferably the rear.

(b) The top of the rail shall be located at a height of 32 inches from the floor with its inside surface at least 1-1/2 inches clear of the wall. The rail shall not project more than 4 inches into the clear space.

(7) **LOBBY BUTTONS.** (a) The center line of the lobby or hall call button fixture shall be a maximum of 42 inches above the floor.

(b) There shall be no obstruction that interferes with the operation of the lobby call button by a person in a wheelchair.

(c) Lobby or hall call buttons shall have visual signals to indicate when each call is registered and be extinguished when each call is answered.

(d) The button designating the up direction shall be on top.

(8) **LOBBY VISUAL AND AUDITORY CUES.** (a) A visual and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call.

(b) Audible signals shall sound once for the up direction and twice for the down direction, or shall have verbal annunciators that state the direction of the car.

(c) Visual signals shall have the following features:

1. Lobby or hall direction fixtures shall be mounted so that their center line is at least 72 inches above the lobby floor.

2. Visual elements shall be at least 2-1/2 inches in the smallest dimension.

3. Signals shall be visible from the vicinity of the lobby or hall call button. Lanterns located in cars, visible from the vicinity of lobby or hall call buttons, and conforming to subd. 1. and 2., shall be acceptable.

(9) **RAISED NUMERALS AND LETTERS.** (a) All car operating panels shall have raised letters and arabic numerals identifying the floor, open, close, hold-open and emergency alarm buttons, and the telephone or other emergency signalling means.

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1. \*Exception: Nationally recognized symbols approved by the department may replace words to identify essential controls.

\*Note: See Appendix

2. The dimension of the letter or numeral on the car operating panel shall be a minimum of 5/8 inch in height.

Note: In addition to the required raised letters and numerals, braille identification is recommended.

(b) All characters shall be:

1. Raised to a height of not less than 1/32 inch;
2. Printed vertical capital with the width-to-height ratio between 3:5 and 1:1 and the stroke-width-to-height ratio between 1:5 and 1:10;
3. Of contrasting color with either light characters on a dark background or dark characters on a light background;
4. Made of durable material;
5. Securely affixed, and where used to identify a control button, located immediately to the left of the button or switch to which they apply; and
6. Arranged so that multiple character sequences shall be mounted to be readable from left to right.

(c) Raised letters or arabic numerals shall be provided at each hoistway entrance on both sides of the door frame jamb to identify the floor designation.

1. The letter or numerals shall be centered on the jamb at a height of 60 inches on center above the floor.

2. The dimension of the letter or numeral on the frame shall be a minimum of 1-1/4 inches and a maximum of 2 inches in height.

History: Cr. Register, January, 1983, No. 325, eff. 2-1-83.

#### LIFTS FOR THE PHYSICALLY DISABLED

**Ind 4.70 Scope.** This subchapter applies to vertical wheelchair lifts, inclined wheelchair lifts and stairway chair lifts installed in or at a public building or place of employment for use only by persons with functional limitations.

History: Cr. Register, January, 1983, No. 325, eff. 2-1-83.

**Ind 4.71 General requirements.** The requirements of this section apply to all types of lifts used to provide access for the physically disabled.

(1) **USE IN PUBLIC BUILDINGS OR PLACES OF EMPLOYMENT.** (a) *Approval.* Subject to the approval of the department, lifts may be used as part of an accessible route.

(b) *Means of egress.* Means of egress from a building shall be maintained as required by the department.

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(c) *Overhead clearance.* A minimum overhead clearance of 6 feet 8 inches shall be provided between any point on a platform and the lowest overhead obstruction during the entire distance of travel.

(2) **WIRING.** The installation of all electrical wiring in runways and machinery spaces except as may be provided elsewhere in these rules shall conform to the requirements of ch. ILHR 16, Wis. Adm. Code.

(3) **PLATFORM OR CHAIR SAFETIES AND GOVERNORS.** (a) All platforms and chairs shall be provided with a safety device. The safety device shall be of the inertia or other approved type operated by the breakage or slackening of the suspension means or by the action of a speed governor. If of the speed governor type, the governor shall operate the safety device at a maximum speed of 75 fpm. On the breakage of the suspension means, the safety device shall operate without delay and independently of the speed governor action. A manually reset slack rope or chain switch shall be provided which will remove power from the motor and brake if the hoisting rope or chain fails or slackens.

(b) *Exception:* A platform safety device shall not be required where the driving means is direct plunger hydraulic or rack and pinion.

(4) **FRICION-GEARING, CLUTCH MECHANISM, OR COUPLING.** Friction-gearing, clutch mechanisms, or couplings shall not be used in connecting the drum or sheaves to the main driving gear.

(5) **USE OF CAST IRON IN GEARS.** Gearing having cast iron teeth shall not be used.

(6) **HYDRAULIC DRIVING MACHINES.** Hydraulic driving machines where used shall conform to the requirements of A17.1 302 except roped hydraulic machines may be used and the design need not conform to the requirements of A17.1 302.1, 302.2, 302.3c, and 302.3g.

(7) **SCREW MACHINES.** Screw machines, where used, shall conform to A17.1 208.9.

(8) **MACHINE FRAMEWORK AND BASE.** All machine frames shall be of metal construction. Cast iron shall not be used. The machine framework and base shall be secured in place with adequate support provided to maintain the device in a level position.

(9) **GUIDING MECHANISM ENCLOSURES.** The guiding mechanism shall be enclosed with a solid enclosure to prevent accidental contact. If openings are necessary in this enclosure for operation, they shall reject a ball 1-1/2 inches in diameter.

(10) **SECURING OF MACHINERY BEAMS AND SHEAVES.** All machinery and sheaves shall be so supported and secured to prevent any part becoming loose or displaced.

(11) **PLATFORM AND CHAIR TRUCK AND GUIDES.** The platform or chair shall be securely anchored to a truck which supports it. The truck shall be retained on a track or on a guide rail assembly.

(12) **GUARDING OF DRIVING MACHINES AND SUSPENSION MEANS.** The drive machine and suspension means shall be enclosed with a solid enclosure, except suspension means which operate within a guide or track and travel at the same speed and in the same direction as the platform or chair shall be considered suitably guarded. Any opening required for op-

eration shall reject a ball 3/4 inch in diameter. Access shall be provided by a removable or hinged panel for the purposes of inspection and service.

(13) LOCATION OF POWER UNIT AND ALIGNMENT AND GUARDING OF SHEAVES AND SPROCKETS. The power unit may be mounted on the carriage or placed at a remote location. If remotely located, all intervening sheaves or sprockets shall be placed so that the rope or chain travels in the proper alignment. All sheaves and sprockets shall be enclosed or guarded.

(14) DRIVING MACHINE BRAKES. A machine brake of the electrically released spring applied type shall be provided. If a self-locking drive utilizing a lead screw or other positive gearing which will stop and hold the carriage with the rated load within 4 inches of down travel after the power is removed, a machine brake shall not be required.

(15) TYPES OF SUSPENSION MEANS PERMITTED. Suspension means shall be one of the following:

- (a) Steel or iron wire rope;
- (b) Steel aircraft cable;
- (c) Roller chain;
- (d) Direct plunger hydraulic;
- (e) Roped hydraulic;
- (f) Rack and pinion;
- (g) Screw-drive.

(16) IDLE TURNS AND SERVING ENDS OF ROPES ON WINDING DRUMS. All wire ropes anchored to a winding drum shall have not less than one full turn of rope on the drum when the car or counterweight has reached its limit of possible overtravel and be secured on the inside of the drum by clamp or other approved means.

(17) LENGTHENING, SPLICING, REPAIRING, OR REPLACING SUSPENSION MEANS. Suspension wire ropes shall not be lengthened or repaired by splicing. Broken or worn suspension chains shall be replaced. If one wire rope or a chain of a set is worn or damaged and requires replacement, the entire set of ropes or chains shall be replaced. If a chain is replaced, all sprockets shall be replaced.

(18) FASTENING OF ROPE SUSPENSION MEANS TO PLATFORM. The platform ends of wire ropes shall be fastened by return loop by properly made individual tapered babbitted sockets or by properly attached fittings as recommended by wire rope manufacturers. Tapered babbitted rope sockets and the method of babbitting shall conform to the requirements of A17.1 212.9d and 212.9f. The diameter of the hole in the small end of the socket shall not exceed the nominal diameter of the rope by more than 3/32 inch. All suspension means shall be guarded against accidental contact. Suspension means which operate within a guide or track and travel at the same speed and in the same direction as the car or platform shall be considered suitably guarded.



(19) **CAR FRAME AND PLATFORM.** The car frame shall be of metal construction and have safety factor of not less than 5 based on the rated load. The platform shall be of metal or wood construction with a non-skid surface.

(20) **PLATFORM SIZE.** The net platform area shall not exceed 18 square feet and have a minimum clear width of 32 inches. It shall be capable of sustaining and lowering a load as specified in A17.1 207.1.

(21) **CAR ILLUMINATION.** The minimum illumination at the car controls of the platform shall be not less than 5 foot candles.

(22) **CAPACITY PLATES.** A capacity plate shall be provided by the manufacturer and fastened in a conspicuous place stating the rated load. The letters and numerals used shall not be less than 1/4 inch in height.

(23) **TYPE OF OPERATION.** Operation of the platform or chair from any control station shall be of the constant pressure type.

(24) **USE OF GLASS.** Glass used shall conform to A17.1 204.1b.

**History:** Cr. Register, January, 1983, No. 325, off. 2-1-83.

**Ind 4.72 Special requirements for vertical wheelchair lifts. (1)**  
**RUNWAY AND PLATFORM GUARDING.** The runway and platform shall be guarded in accordance with pars. (a) and either (b) or (c).

(a) *General requirements.* 1. The runway entrance shall be guarded at the upper level by a door or gate constructed to reject a ball 2 inches in diameter. The door shall be self-closing and at least 42 inches high and shall be provided with a mechanical lock and electric contact or interlock. Locking devices shall be protected against tampering from the landing side.

2. The lift side of landing doors shall not project beyond the vertical line of travel of the platform. Hardware, except that required for door locking or contacts, shall not project beyond the vertical line of travel of the platform.

3. The running clearance between the entrance edge of the platform and any enclosure shall be no less than 1/2 inch nor more than 3/4 inch. The clearance between the platform and doors shall not exceed 3 inches.

4. The platform side guards on the sides not used for access or exit shall be of smooth construction with no openings other than those necessary for operation to a height of 42 inches above the platform or car floor. Those openings necessary for operation shall reject a ball 1/2 inch in diameter. The running clearance between the side guards and the enclosure shall be not less than two inches.

5. The runway enclosure on sides used for access or exit shall be of smooth construction.

(b) *Runway enclosure provided.* 1. The runway shall be guarded by a solid enclosure extending from the lower landing to a height of at least 42 inches above the upper landing. The lift sides of the enclosure shall present a smooth surface.

2. The lower access to the platform shall be guarded by an unperforated self-closing door not wider than the entrance to the platform. The opening shall provide a minimum vertical clearance of 6 feet 8 inches.

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The door shall be provided with a mechanical lock and electric contact or interlock. Locking devices shall be protected against tampering from the landing side. The lift side of the door shall present a smooth surface. Means of emergency access shall be provided.

(c) *Runway enclosure not provided.* 1. The lower landing entrance to the platform shall be equipped with a self-closing door or gate at least 42 inches high. The door or gate shall be constructed to reject a ball 2 inches in diameter and provided with a mechanical lock and electric contact or interlock.

2. The entire underside of the platform shall be guarded to prevent access or equipped with a device, which if the platform is obstructed in its downward travel by a force of 4 pounds or more will stop the platform within a distance of 2 inches or less.

(2) **LIMITATION OF LOAD, SPEED AND TRAVEL.** The rated load shall be not less than 350 pounds nor more than 750 pounds. The rated speed shall not exceed 30 fpm. The travel shall not exceed 7 feet nor penetrate a floor.

(3) **NORMAL STOPPING DEVICES.** Upper and lower normal terminal stopping devices operated by the car shall be provided and shall be set to stop the car within 1/2 inch of the landings. An upper final terminal stopping device operated by the car shall also be provided which will remove power from the driving machine.

(4) **SLACK-ROPE AND SLACK-CHAIN DEVICES FOR WINDING-DRUM AND ROLLER-CHAIN TYPE DRIVING MACHINES.** Winding-drum driving machines with rope suspension shall be provided with a slack-rope device of the manually reset type that will remove power from the motor and brake if the car is obstructed in its descent and the hoisting ropes slacken. Lifts with roller-chain suspension shall be provided with a slack-chain device which will remove power from the motor and brake if the car is obstructed in its descent and the suspension means slacken. This device need not be of the manually reset type if the chain sprockets are guarded to prevent the chain from becoming disengaged from the sprockets.

(5) **EMERGENCY SIGNALS.** Where a vertical wheelchair lift is installed within a runway enclosure specified in sub. (1) (b), an audible emergency signal shall be installed.

**History:** Cr. Register, January, 1983, No. 325, off. 2-1-83.

**Ind 473 Special requirements for inclined wheelchair lifts.** (1) **LIFTS INSTALLED ON STAIRWAYS.** (a) All inclined wheelchair lifts shall be installed on stairways.

(b) Solid guarding shall be provided between the lift runway and stairway area usable by pedestrians. The guarding shall have no openings and shall be of sufficient height to prevent any pinching or shearing points.

(2) **CLEARANCES.** Car clearances between the platform and runway enclosures or obstructions shall be not less than 3/4 inch.

(3) **ANCHORING OF GUIDES.** The supporting tracks or guide rails shall be securely anchored to the stairs or side wall.

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(4) **PLATFORM ENCLOSURES.** (a) The platform shall be equipped with self-closing doors or gates at least 42 inches high on the sides used for access or exit. The door or gate shall be constructed to reject a ball 2 inches in diameter and provided with a mechanical lock and electric contact or interlock.

(b) The platform side guards on the sides not used for access or exit shall be of smooth construction with no openings, other than those necessary for operation, to a height of 42 inches above the platform or car floor. These openings necessary for operation shall reject a ball of 1/2 inch in diameter. The running clearance between the side guards and the enclosure shall be not less than 2 inches nor more than 3 inches.

(5) **RATED LOAD.** The rated load shall be no less than 350 pounds nor more than 750 pounds.

(6) **RATED SPEED.** The rated speed measured along the incline shall not exceed 40 fpm.

(7) **LIMITATION ON TRAVEL AND ANGLE OF INCLINATION.** (a) Incline wheelchair lifts shall not:

1. Provide transportation between more than 2 consecutive floors; and
2. Operate on a greater incline than 45° as measured on the mean.

(b) The platform shall be visible from all landing control stations during its entire length of travel, without use of mirrors.

(8) **OBSTRUCTION SAFETIES.** The entire underside and the leading edge of the platform shall be equipped with a device, which if the platform is obstructed in its travel in either direction by a force of 4 pounds or more, will stop the platform travel within a distance of 2 inches or less.

*History: Cr. Register, January, 1983, No. 325, eff. 2-1-83.*

**Ind 4.74 Special requirements for stairway chair lifts.** (1) **ANCHORING OF GUIDES.** The supporting tracks or guide rails shall be securely anchored to the stairs or side wall.

(2) **CONSTRUCTION.** Each chair or chairs and seat or seats shall be constructed in the following manner:

(a) Each chair shall have a foot platform and a seat with a seat belt. Each chair shall be equipped with 2 hand grips.

(b) If the chair stops less than 20 inches beyond the final top riser, measured horizontally, a swivel seat shall be provided.

(c) Where a swivel seat is provided, the seat shall have an electric contact which shall prevent the operation of the chair lift when the seat is not in the operating position.

(3) **FOOTREST OBSTRUCTION SWITCH.** If the footrest is so located such that it is within 6 inches of the stair nosing or riser, a device shall be provided on the footrest to stop the upward motion of the carriage if it encounters an object between the footrest and the nosing or riser.

(4) **LIMITATION OF ANGLE AND TRAVEL.** In no case shall the stairway chair lift provide transportation between more than 2 consecutive floors.

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Travel shall be limited to 35 feet measured on the incline. No lift shall be installed or operated on an incline greater than 45° from the horizontal.

(5) **CAPACITY AND RATED LOAD.** The capacity shall not exceed 2 persons. The rated load shall be not less than 250 pounds for single-seat lift and shall not be less than 400 pounds for two-seat lift.

(6) **RATED SPEED.** The rated speed measured along the incline shall not exceed 40 fpm.

**History:** Cr. Register, January, 1983, No. 325, eff. 2-1-83.