Chapter Ind 46

TOWING AND LIFTING DEVICES FOR SKI AREAS

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Towing and Lifting Devices for Ski Areas
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Ind 46.01 Scope. The requirements of this code are to insure safe design, construction, installation and operation of every single and double reversible aerial tramway, chair lift, gondola lift, T-bar lift, J-bar lift, platter lift and fiber rope tow installed in public places of employment for the safety of employees and frequenters. These requirements apply to both existing installations and those hereafter installed unless otherwise specified.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67.

Ind 46.02 Definitions. (1) Tramway. A tramway is a device used to transport passengers by any one of the following means: Single and double reversible aerial tramways, chair lifts, gondola lifts, T-bar lifts, J-bar lifts, platter lifts and fiber rope tows.

(a) Single and double reversible aerial tramways. A type of transportation in which passengers are carried in one or more enclosed cars and reciprocate between terminals.

(b) Chair lifts, gondola lifts. A type of transportation in which passengers are carried on chairs, on cars, or in gondola cars, and suspended from a moving wire rope or attached to a moving wire rope and supported on a standing wire rope or other structure.

(c) T-bar lifts, J-bar lifts, platter lifts. A type of transportation which pulls skiers riding on skis by means of devices propelled by a main overhead traveling wire rope.

(d) Fiber rope tow. A type of transportation which pulls skiers riding on skis by means of a traveling fiber rope which the skier grasps by hand.

(2) Approved means approved by the department.

(3) Capacity. In computing capacity, passengers shall be based on weight of 170 pounds each.

(3a) Department means the department of industry, labor and human relations.

(4) Diameter. The term diameter in reference to sheaves means tread diameter.

(5) Electric power line. Electric power line shall mean a transmission line carrying voltage in excess of 480 volts.

(6) Full load or fully loaded. The maximum load approved by the department.

(7) Hauling rope. (a) Wire. A rope for propelling tramways.

(b) Fiber. A rope for towing skiers.

(8) Safety stop. A device used to stop the tramway as a result of passenger contact, attendant's action, cable derailment, or movement of a terminal sheave or counterweight.

(9) Sheaves. Pulleys or wheels grooved for rope.

(a) Deflecting sheave. A sheave which is used for the primary function of changing the course of direction of the hauling rope.

(b) Drive sheave. A sheave driving the hauling rope.

(c) Terminal sheave. A drive sheave or terminal drive sheave.

(d) Terminal return sheave. A sheave which reverses the direction of travel but does not transmit power to the hauling rope.
sheave or to a drive shaft so that there is no clutch, chain or belt between
the brake and the main drive sheave.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67.

Ind 46.70 Operation and control. (1) There shall be a safety gate or
safety stop so constructed and installed that no passenger, in contact
with or being pulled by the rope, can come in contact with sheaves, ma-
chinery, building or other obstruction. The safety stop shall be so
designed and constructed that it can only be reset manually.

(a) The distance from the safety gate to the first sheave or other ob-
struction shall be not less than the distance the rope travels, plus a 30% of
safety factor after the safety gate has been tripped. This distance shall
be determined while the tramway is operating at maximum speed with
only one passenger riding on the tramway.

(b) Electrical stop circuits shall be closed metallic circuits so ar-
ranged that power failure, malfunction or actuation of a safety switch
causes the tramway to stop.

(2) Bypassing of safety stop circuits is prohibited.

(a) Passenger actuated safety stops shall be so located that they can-
not be bypassed by the skier.

1. Passenger or attendant-actuated safety stops shall be tested at the
beginning of each day's operation by an authorized person.

(3) The tramway operator shall maintain a position to have view of
the tramway or tramways, and shall have controls to stop the tramway
readily available.

(4) The tramway shall be started by an authorized employee or au-
thorized ski patrol member only.

(5) After any stop, a rope tow system may not be restarted until the
cause of the stop has been determined and clearance has been obtained
from all attendants for that rope tow system.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67; cr. (3), Register, October, 1982,
No. 322, eff. 11-1-82.

Ind 46.71 Machine room or enclosure. (1) Driving units shall be
enclosed or located in a manner that will prevent employees and fre-
quenters from accidently coming in contact with the machinery.

(a) When an internal combustion engine is used as a prime mover, the
machine room shall be ventilated to prevent any products of combustion
or fuel fumes from contaminating the atmosphere in the enclosure. En-
gine exhaust pipes shall not pass within 2 inches of any wooden member
or other flammable material.

(b) Openings over 10 inches square shall be provided with suitable
doors with locks to prevent entrance and operation by unauthorized per-
sons.

1. The machine room or enclosure shall be sign posted to the effect
that unauthorized persons are not permitted therein.
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(a) Counterweight or tensioning device sheaves shall be grooved and arranged to retain the rope in the groove.

(b) Counterweights shall be so suspended to permit free vertical movement.

(c) Counterweights or tensioning devices shall be so constructed and maintained as to have free movement at all times.

(d) Counterweights or tensioning devices shall be guarded to prevent accidental contact with or passage under the counterweights.

(e) Counterweights or tensioning devices shall have sufficient travel to provide for all normal operating changes in loading and temperatures.

Ind 46.76 Foundations. Foundations or anchors used to restrain the driving mechanism and the terminal sheave shall be of sufficient size and type to prevent movement under full load.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67.

Ind 46.77 Loading and unloading areas. (1) Loading areas shall be level, free of obstructions and fenced to guide skiers for loading.

(2) Unloading areas shall be of sufficient length, width and grade to provide the skier clearances to move away from the tramway line.

(3) A ladder or other suitable means of elevation for facilitating release of skiers entangled in the tramway rope shall be available and visible at all times in the immediate vicinity of the safety-stop at the unloading area.

(4) Illumination at loading and unloading areas and the entire ski path, when the tramway is in operation, shall be of an intensity of not less than 5 foot candles at the surface.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67.

Ind 46.775 Minimum operating personnel. (1) (a) Except as provided in subs. (2) and (3), each rope tow system shall have at least one attendant present at each:

1. Loading area; and

2. Unloading area.

(b) 1. The duties of the attendants at the loading and unloading areas shall include observing for any potentially dangerous operational or mechanical developments within their view.

2. Each attendant shall have controls to stop the rope tow system readily available and shall maintain an operating position no more than 10 feet from these controls.

3. The tow system shall be stopped whenever a required attendant is more than 10 feet from the controls to stop the rope tow system.

(2) A rope tow system may have only one attendant present at either the loading area or unloading area, if:
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(2) Foundations for intermediate towers shall be constructed, located and of sufficient strength to support the stresses imposed under full load operation.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67.

IND 46.30 Signs. (1) Signs shall be provided as outlined in the following subsection:

(a) "Towing outfits or rope grippers attached to a skier or his equipment are prohibited."

"Beware"—"Dangerous"—"Loose clothing—Long Hair."

"Stay in Ski-Track."

1. These shall be placed at loading areas.

(b) "Safety Gate."

1. This shall be placed at the safety gate.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67.

IND 46.81 General requirements. (1) New and existing installations. (a) Voltage through any passenger activated safety stop shall not exceed 120 volts.

(2) Construction and location of signs. Required signs shall be of substantial construction, firmly and appropriately mounted or positioned. They shall be provided in such numbers and at such locations as to be clearly visible under normal operating conditions to all persons to whom their respective legends may relate. Design, lettering and background coloring shall be such to provide easy legibility.

(3) Accidents. Provision shall be made to render first aid in the event persons are injured on the tramway. This shall include provision for transporting an injured person off the tramway or slope.

(a) Accidents resulting in personal injury on a tramway shall be reported to the department within 10 days from date of accident.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67; am. (3) (a), Register, July, 1978, No. 271, eff. 8-1-78.

IND 46.82 Maintenance. (1) Tramways shall be kept in safe operating condition, properly lubricated and clean, including counterweight areas and pits, machine rooms or areas.

(a) Permanent records must be kept of all inspections and major repairs made. These records shall be made available to the department upon request.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67; am. (1) (a), Register, July, 1978, No. 271, eff. 8-1-78.

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(a) The rope tow system is less than 800 feet in length, measured from the loading area to the safety gate; and

(b) The attendant is positioned so to have an unobstructed view of the entire length of the system, either physically or through television surveillance; and

(c) That attendant has controls to stop the rope tow system readily available and maintains an operating position no more than 10 feet from these controls; and

(d) The tow system will be stopped whenever the required attendant is more than 10 feet from the controls to stop the rope tow system.

(3) One attendant may serve more than one loading area or unloading area, if:

(a) The attendant is positioned so that all loading areas or unloading areas under their responsibility are within a 90 degree cone of vision; and

(b) The attendant has controls to stop all rope tow systems readily available and maintains an operating position no more than 10 feet from these controls; and

(c) The stopping controls are clearly marked to indicate the corresponding rope tow system; and

(d) All tow systems under the attendant's responsibility will be stopped whenever the required attendant is more than 10 feet from the controls to stop the rope tow systems.

History: Cr. Register, October, 1962, No. 322, eff. 11-1-62.

IND 46.78 Hauling rope. (1) Hauling rope shall be a type manufactured for ski-tow use.

(a) Splices shall be of the transmission or long type.

(b) The use of towing outfits or rope grippers attached to a skier or his equipment is prohibited.

(3) Sheave adjustment or other approved means shall be provided to regulate rotation of the up-going rope of a fiber rope tow, limiting spiraling to no more than one complete revolution in 200 feet of travel and not to exceed 3 revolutions in the total uphill length of any tow. This spiraling measurement shall be taken with no one using the rope tow system.

History: Cr. Register, March, 1967, No. 135, eff. 4-1-67; cr. (3), Register, October, 1962, No. 322, eff. 11-1-62.

IND 46.79 Intermediate towers and supports. (1) Return rope sheave supports shall be of sufficient strength to prevent failure under full load.

(a) Guy wires or braces shall be located to provide the minimum clearances as required by s. IND 46.66 (1) (a), (b), and (c).

(b) Guy wires or braces shall be fenced.

(c) There shall be no projections lower than 7 feet above the surface of the tow path on towers and supports.

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