

Elevators and Plant Railways

tops and travel of not more than 15 ft, car lights may be omitted if at least two electric lights are installed at the top of the hoistway and furnish the minimum illumination specified

Illumination on landing thresholds should be at least 5 foot-candles

Hoisting ropes

Car and counterweight ropes must be of iron (low-carbon steel) or steel. Ropes less than $\frac{1}{2}$ in in diameter may not be used on passenger elevators. Traction elevators should have not fewer than three hoisting ropes, winding-drum elevators should have not fewer than two hoisting ropes and two ropes for each counterweight used.

The "Elevator Code" requires that the diameter of sheaves or drums for hoisting or counterweight ropes be not less than 40 times the diameter of the ropes. In practical application, however, this ratio is usually higher than 40.

On winding-drum machines, rope should be long enough so there will not be less than one full turn of rope on the drum when the car is at the extreme limit of its overtravel. Drum ends of ropes are usually secured by tapered babbitted sockets or by clamps on the inside of the drum.

Rope fastenings. Ends of car and counterweight suspension ropes are usually fastened by individual babbitt-filled tapered sockets (see Fig 21-8). The "Elevator Code" gives detailed specifications on proper application.

Rope sockets must develop at least 80 per cent of the breaking strength of the rope used. Shackles, rods, eyebolts, and other means used to connect sockets to the car or counterweight must have a breaking strength at least equal to that of the rope.

Governor ropes should be of iron, steel, Monel metal, phosphor bronze, or stainless steel, and be of regular lay construction not less than $\frac{3}{8}$ in in diameter. Tiller rope is prohibited by the "Elevator Code." Rope that winds on the safety drum must be corrosion-resistant.

Operating controls

Stopping devices. Winding-drum elevators are required by the "Elevator Code" to have an adjustable machine-automatic limit

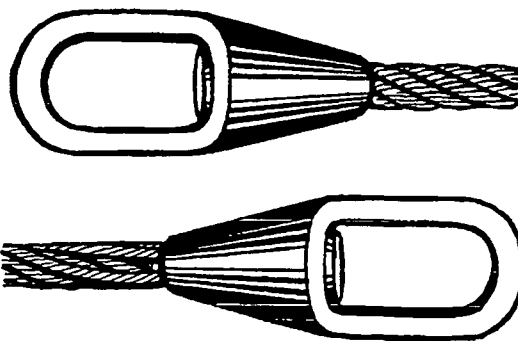


FIG 21-8 — At top is properly socketed rope. A poorly socketed one is shown below it—the rope lay has been lost because of inadequate seizing.

stop mechanism which will stop the car if it overruns the highest and lowest landings. In addition, limit switches shall be placed either in the hoistway or on the car.

Electric elevators with traction machines are required to have stopping switches in the hoistway, on the car, or in the machine room, if the switches are operated by the motion of the car.

Drum-type elevator machines are required to have a slack rope device to shut off power to the machine and brake in case the rope becomes slack. This device must be such that it won't reset automatically when slack in the rope is removed.

Every electric elevator must have an emergency stop switch in the car, adjacent to the operating device, which will cut off the power. The button should be clearly identified and of a distinctive color. Contacts of such switches should be directly opened mechanically and should not depend solely upon springs for opening contacts.

Grounding. The motor frame (and the operating cable if insulated from the motor frame) should be grounded. All switches and wiring should conform to the National Bureau of Standards *National Electrical Safety Code* and the NFPA *National Electrical Code*.

Safety devices. Every elevator car suspended by wire ropes is required by the "Elevator Code" to have one or more car safety devices that will catch and stop the car in the event of overspeed or failure of the hoisting