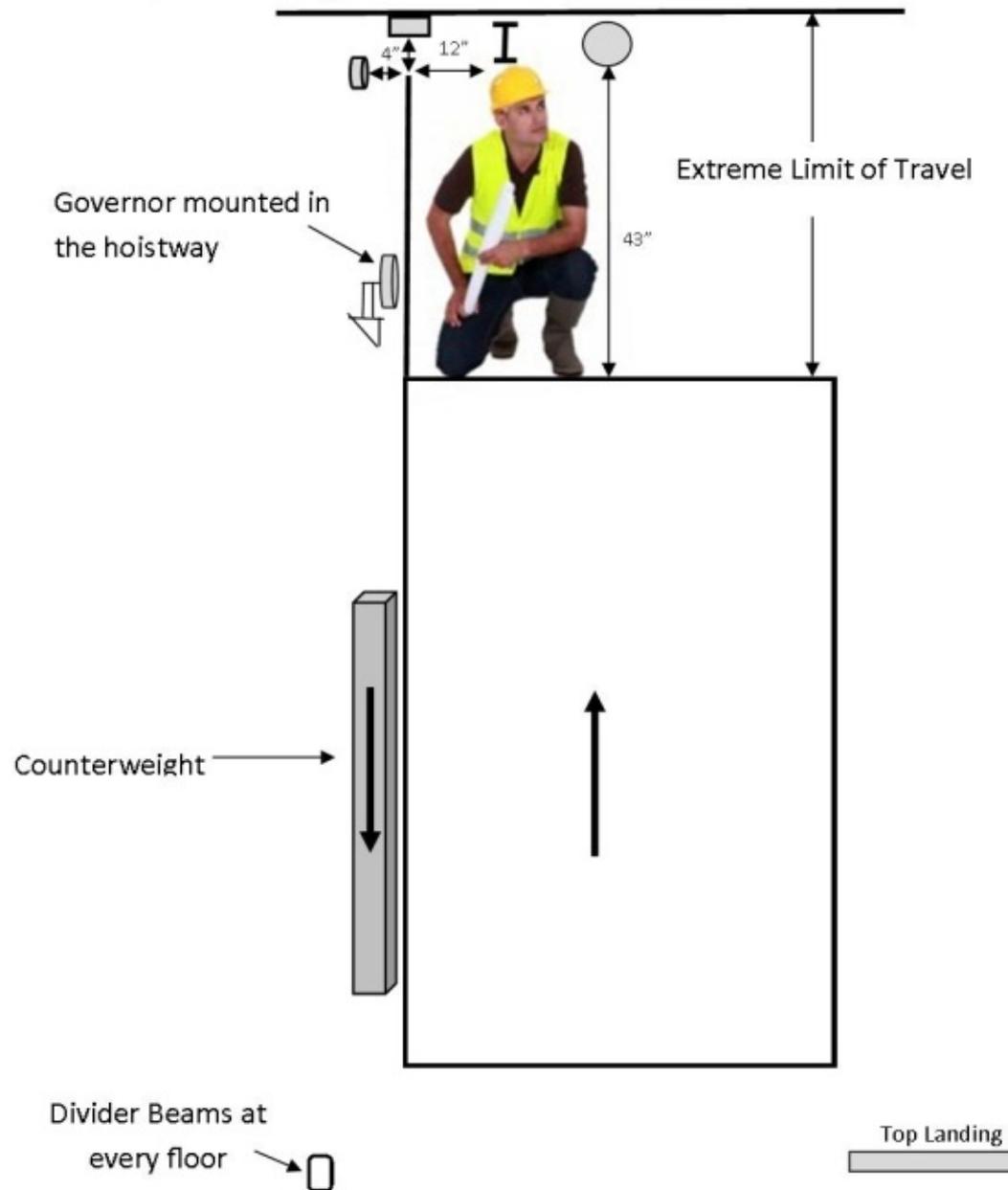


# Car Top Railings

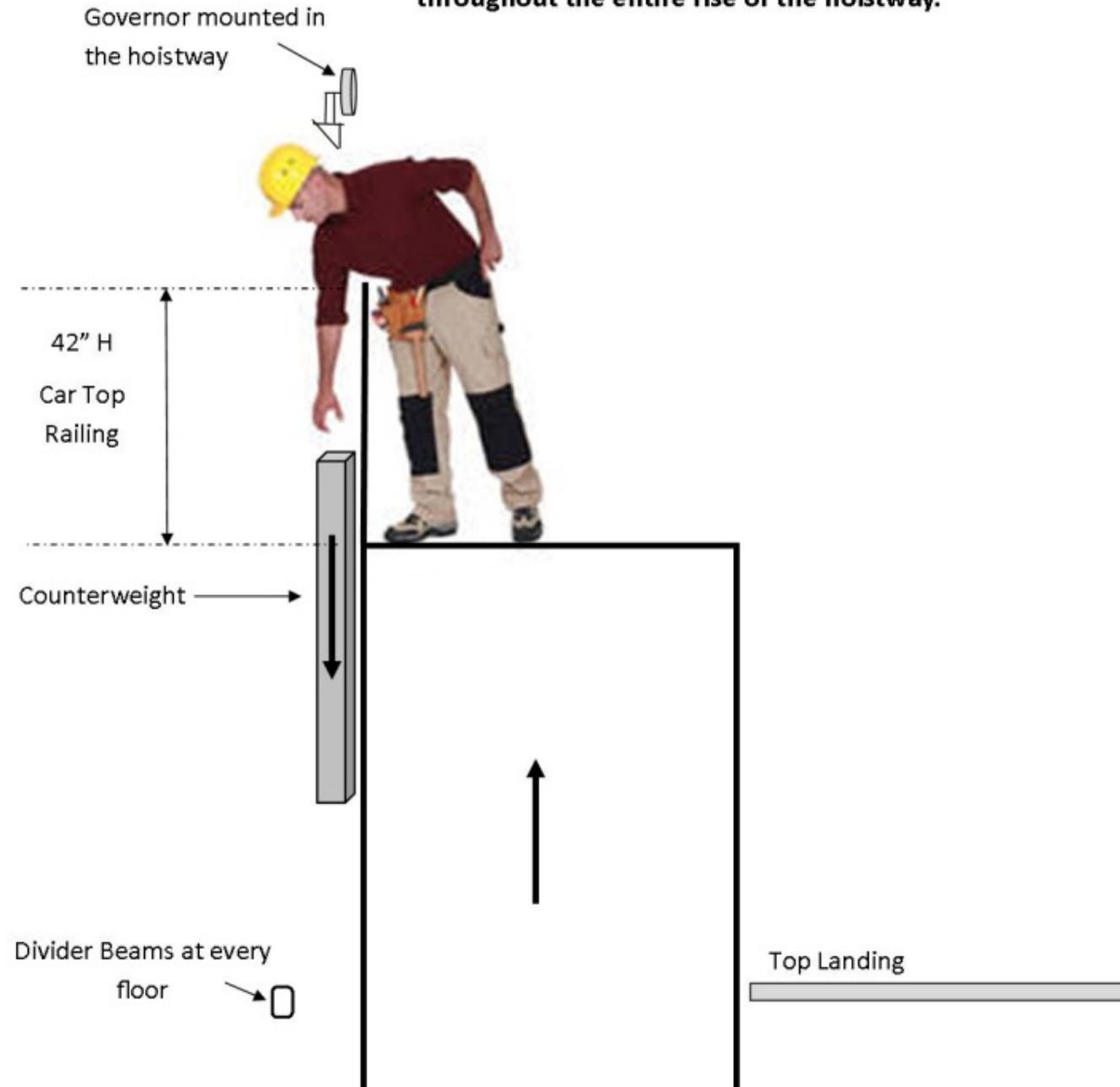
## ASME 2010 Vertical and Horizontal

### Car Top and Railing Clearances



# Car Top Railings

**Current Horizontal Railing Clearances throughout the entire rise of the hoistway.**

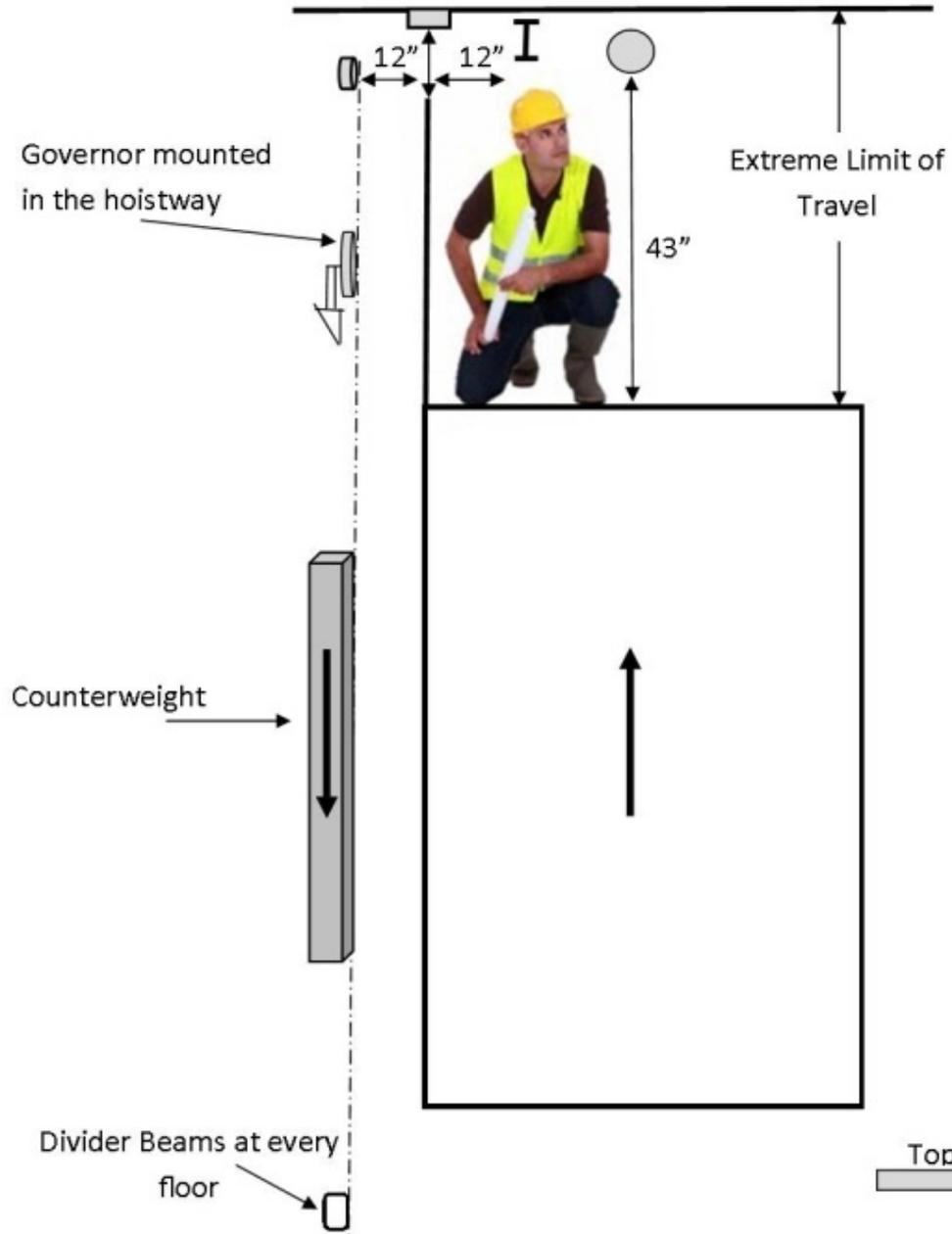


# Car Top Railings

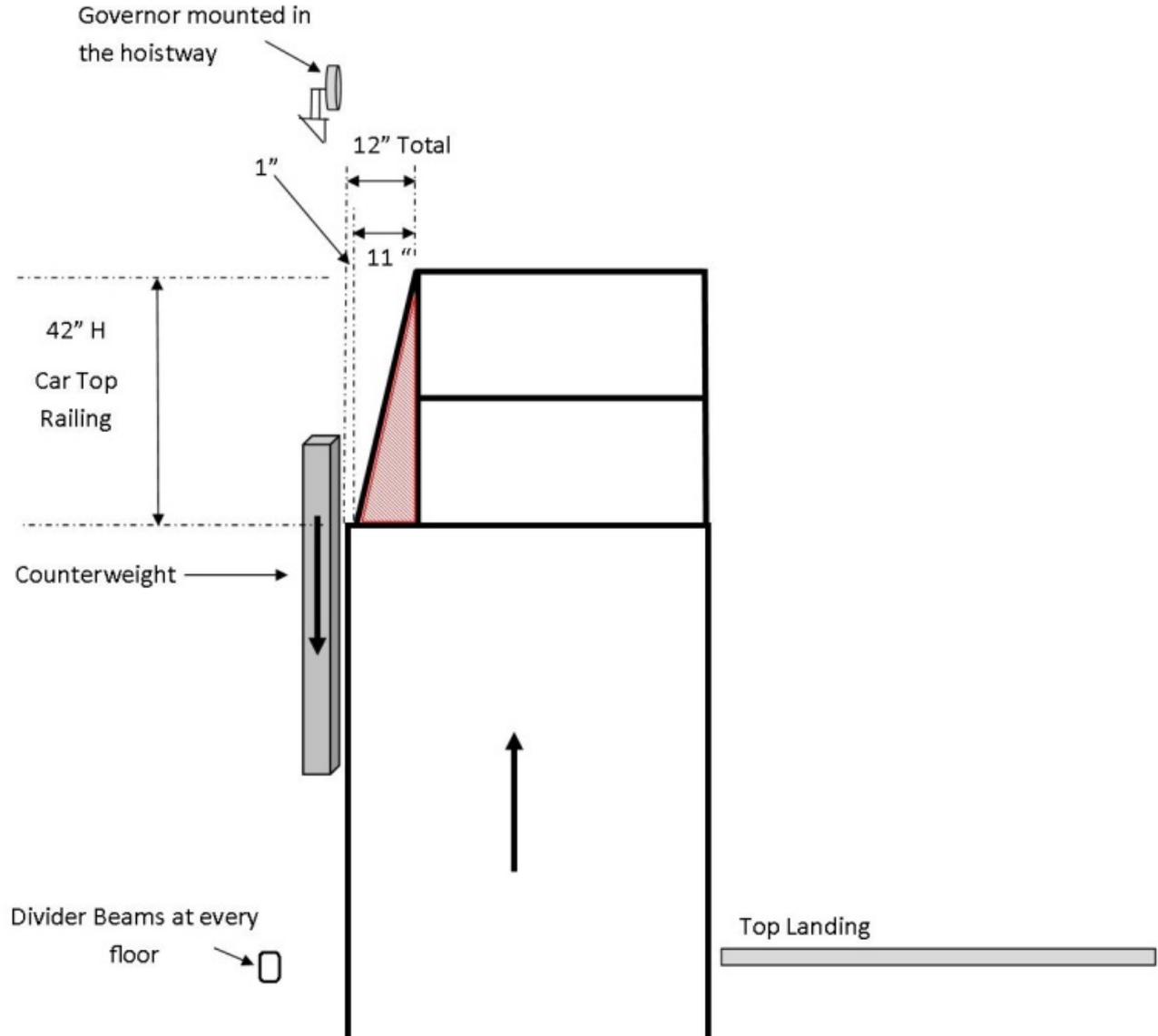
- An elevator technician was riding a top the car, performing lubrication and inspection services. His head became caught between the car top guardrail and a metal plate near the fourth/fifth floor level.
- Two technicians responded to a trouble call on a Personnel Hoist. Employee #1 put on fall protection and positioned himself on the tower to repair the problem. Employee #2 got on top of the car to operate it at inspection speed. As the car began to move in the down direction, Employee #1's arm was crushed between the counterweight and a fixed structural member of the tower.
- An elevator technician was working on top of an elevator when he was crushed between the elevator crosshead and a hoist beam.
- A maintenance technician was repairing an elevator when it suddenly moved pinning him between the elevator car and the hoistway.
- An elevator technician was repairing the elevator from on top of the car when he was crushed between an I-beam and the elevator.

# Car Top Railings

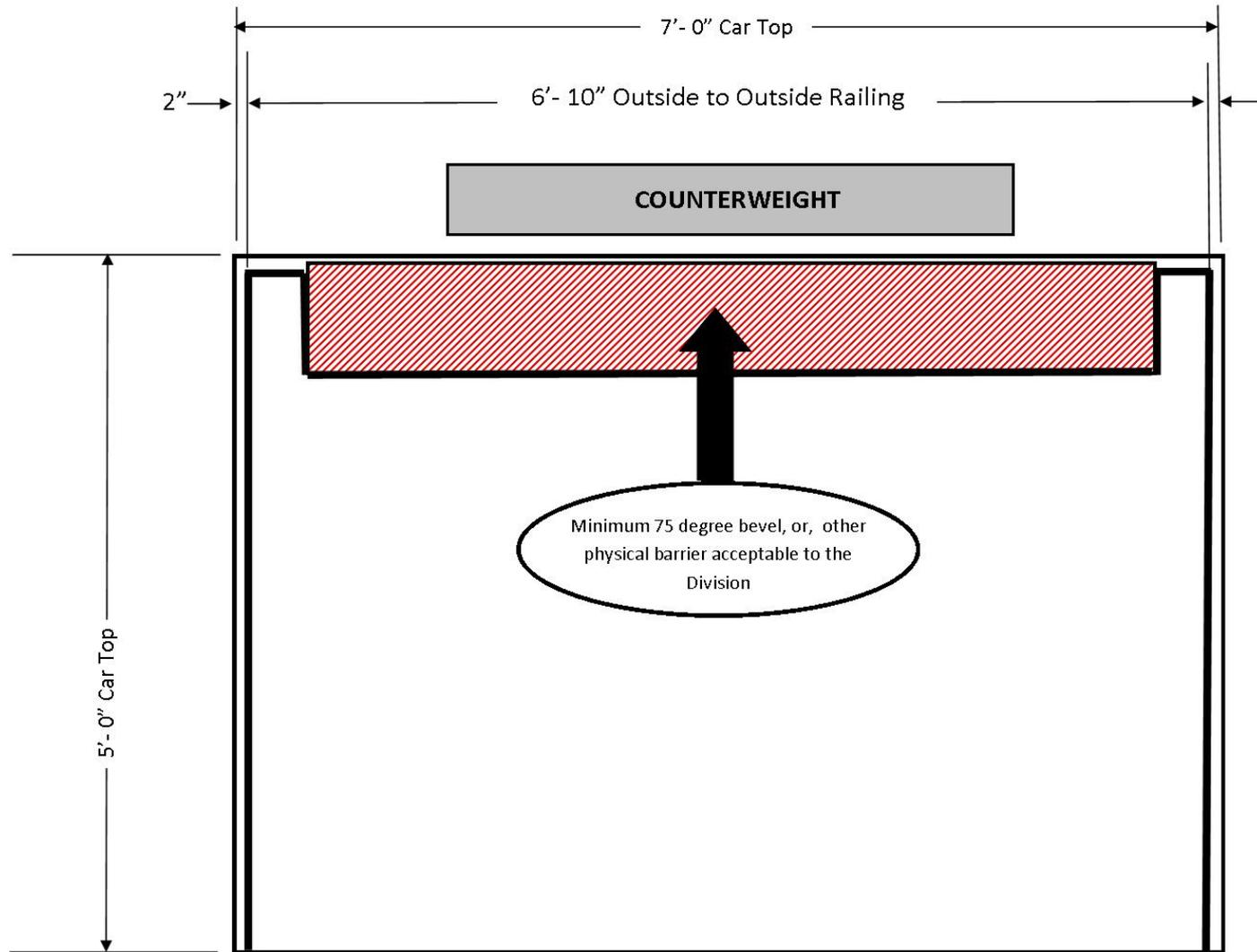
Proposed Vertical and Horizontal  
Car Top and Railing Clearances



# Car Top Railings

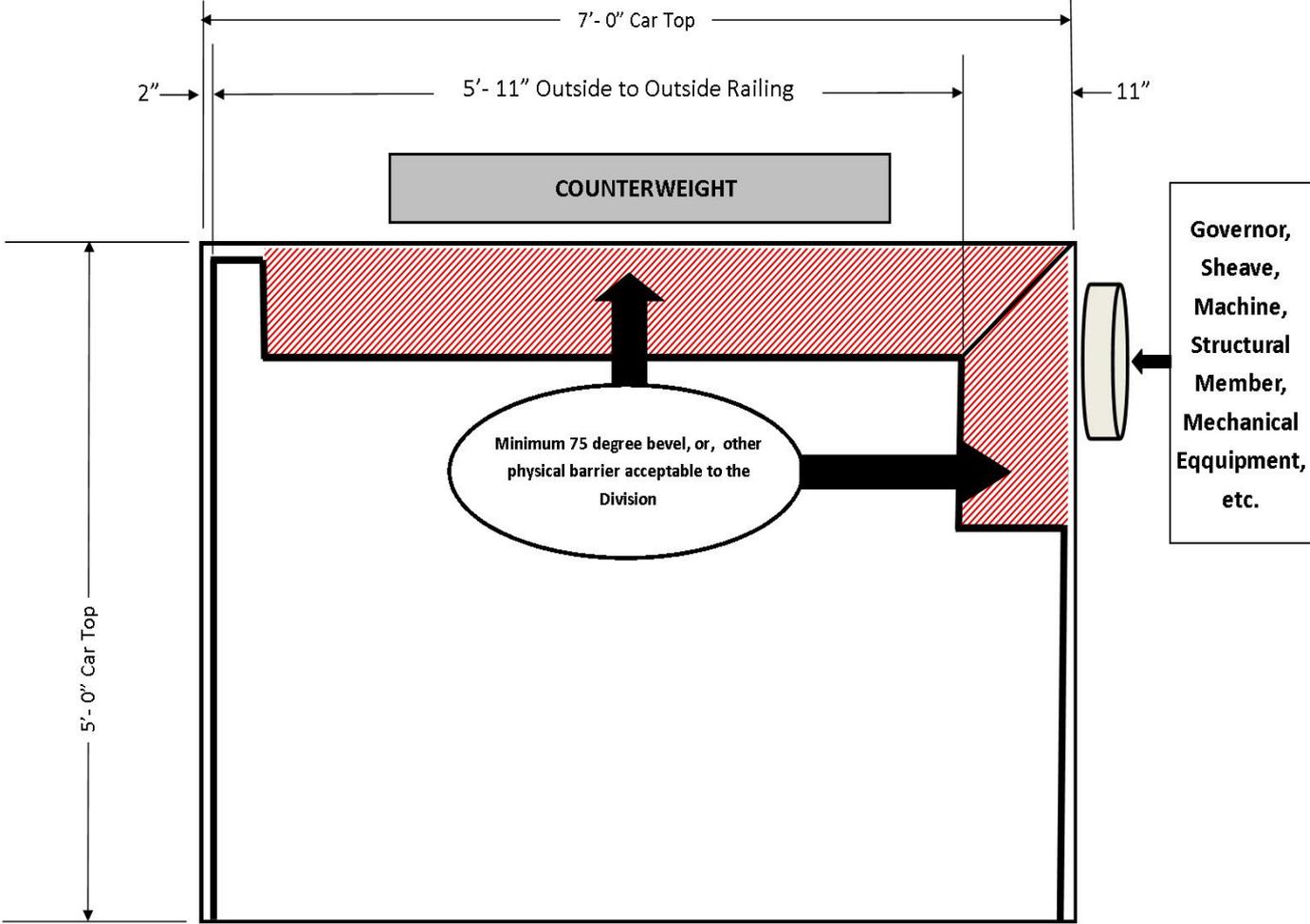


# Car Top Railings



**Inset Car Top Railing and Bevel**

# Car Top Railings



Inset Car Top Railings and Bevels

# Car Top Railings

- Group IV Alteration

§3141.2. Alterations.

(a) Alterations made to conveyances shall comply with ASME A17.1-2004, section 8.7.

(b) When alterations are made pursuant to ASME A17.1-2004, section 8.7, conveyances shall comply with ASME A17.1-2004, section 8.4-, that are applicable to the alteration.

~~(1) When alterations are made pursuant to ASME A17.1-2004, sections 8.7.2.27.4, 8.7.2.27.5, or 8.7.2.27.6, conveyances shall comply with ASME A17.1-2004, section 8.4.10.~~

(c) Railings added to an existing car top after XX/XX/2013 shall conform to the requirements of 3141.7(a)(19) and (20).

# Car Top Railings

- Group IV new installation

§3141.7. General Requirements.

Conveyances shall comply with the following general requirements:

(19) Car top railings

(A) Perimeter railings required by ASME A17.1-2004 Section 2.14.1.7.1 shall be located so that the outer edge of the railing is within 50mm (2 inches) of the outside perimeter of the car top. The railing shall have a minimum vertical and horizontal clearance of not less than 305mm (12 inches) to the hoistway enclosure, counterweight, fixed electrical or mechanical devices, and structural members within the hoistway. Car rail brackets less than 457 mm (18 inches) in horizontal length are exempted from this clearance requirement. The vertical and horizontal clearances to the railings shall be maintained throughout the entire hoistway.

# Car Top Railings

- Group IV new installation continued

(B) If the minimum railing clearances cannot be met with the railing at the perimeter of the car top, one of the following provisions shall be met:

(1) When horizontal obstruction(s) protrude into the required railing clearances, screening of the obstruction(s) shall be provided to cover the entire length of the hoistway along the vertical plane. Screening shall be made from wire-mesh material equal to or stronger than .048 inch diameter wire with openings not exceeding 1/2 inch, securely fastened to keep the guard taut and plumb; or

(2) The outside edge of the railings may be inset only as necessary to establish the minimum railing clearances, but no greater than 305mm (12 inches) from the perimeter of the car top and:

A. All exposed areas outside the car top railing shall preclude standing or placing objects which may fall. Such areas shall be provided with:

a. a bevel not less than 75 degrees above horizontal, and extending from the railing to within 50 mm (2 in.) of the car top perimeter, or

b. other alternate means acceptable to the Division.

B. All exposed areas outside the car top railing shall be clearly marked. The markings shall consist of alternating 100 mm (4 inch) diagonal red and white strips.

C. A durable sign in letters not less than 13 mm (1/2 inch) on a contrasting background permanently attached to a railing and visible from the entrance side of the car top shall be provided. The sign shall state:

CAUTION

DO NOT STAND ON OR CLIMB OVER RAILING

(d) Serviceable equipment shall be positioned so that mechanics and inspectors do not have to climb on or over railings to perform adjustments, maintenance, repairs or inspections.

# Car Top Railings

- Group IV new installation continued

(20) The railing required by ASME A17.1-2004 section 2.14.1.7.1 shall be capable of resisting anywhere along its length the following forces when applied separately, without deflecting more than 75 mm (3 in.) and without permanent deformation.

(A) A force of at least 890 N (200 lbf) applied in any lateral or downward vertical direction, at any point along the top rail.

(B) A force of at least 666 N (150 lbf) applied in any lateral or downward vertical direction at any point along the center of the intermediate rail, member, or panel. If the standard railing is a solid panel extending from the top rail to the toe-board, the application of the force specified in 2.10.2.4(a) shall be considered to meet the requirements of 2.10.2.4(b).

(C) A force of 225 N (50 lbf) applied in a lateral direction to the toe-board.