### § 238.443 Headlights.

(a) Each power car shall be equipped with at least two headlights. Each headlight shall produce no less than 200,000 candela. One headlight shall be arranged to illuminate a person standing between the rails 800 feet ahead of the power car under clear weather conditions. The other headlight shall be arranged to illuminate a person standing between the rails 1,500 feet ahead of the power car under clear weather conditions.

(b) A power car with a headlight not in compliance with the requirements of paragraph (a) of this section shall be moved in accordance with the following:

(1) If one of the headlights is defective, the defect shall be considered a non-running gear defect subject to the provisions contained in § 238.17 of this part.

(2) If both headlights are defective, the power car shall be inspected and tagged in accordance with the requirements contained in § 238.17(c) relating to non-running gear defects. The power car may continue to be used in passenger service only to the nearest forward location where the repairs necessary to bring the power car into compliance can be made or to the power car's next calendar day mechanical inspection, whichever occurs first.

[67 FR 19993, Apr. 23, 2002]

### § 238.445 Automated monitoring.

(a) Each passenger train shall be equipped to monitor the performance of the following systems or components:

(1) Reception of cab signals and train control signals;

(2) Truck hunting;

(3) Dynamic brake status;

(4) Friction brake status;

(5) Fire detection systems;

(6) Head end power status;

(7) Alerter or deadman control;

(8) Horn and bell;

(9) Wheel slide;

(10) Tilt system, if so equipped; and

(11) On-board bearing-temperature sensors, if so equipped.

(b) When any such system or component is operating outside of its predetermined safety parameters:

(1) The train operator shall be alerted; and

(2) Immediate corrective action shall be taken, if the system or component defect impairs the train operator's ability to safely operate the train. Immediate corrective action includes limiting the speed of the train.

(c) The monitoring system shall be designed with an automatic self-test feature that notifies the train operator that the monitoring capability is functioning correctly and alerts the train operator when a system failure occurs.

### § 238.447 Train operator's controls and power car cab layout.

(a) Train operator controls in the power car cab shall be arranged so as to minimize the chance of human error, and be comfortably within view and within easy reach when the operator is seated in the normal train control position.

(b) The train operator's control panel buttons, switches, levers, knobs, and the like shall be distinguishable by sight and by touch.

(c) An alerter shall be provided in the power car cab. If not acknowledged, the alerter shall cause a brake application to stop the train.

(d) Power car cab information displays shall be designed with the following characteristics:

(1) Simplicity and standardization shall be the driving criteria for design of formats for the display of information in the cab;

(2) Essential, safety-critical information shall be displayed as a default condition;

(3) Operator selection shall be required to display other than default information;

(4) Cab or train control signals shall be displayed for the operator; and

(5) Displays shall be readable from the operators's normal position under all lighting conditions.

(e) The power car cab shall be designed so at to permit the crew to have an effective field of view in the forward direction, as well as to the right and left of the direction of travel to observe objects approaching the train from either side. Field-of-view obstructions due to required structural members shall be minimized.

(f) Each seat provided for an employee regularly assigned to occupy a power car cab and any floor-mounted seat in the cab shall be:

(1) Secured to the car body with an attachment having an ultimate strength capable of withstanding the loads due to the following individually applied accelerations acting on the combined mass of the seat and the mass of a seat occupant who is a 95th-percentile adult male:

(i) Longitudinal: 12g;

(ii) Lateral: 4g; and

(iii) Vertical: 4g;

(2) Designed so that all adjustments have the range necessary to accommodate a person ranging from a 5th-percentile adult female to a 95th-percentile adult male, as persons possessing such characteristics are specified, correcting for clothing as appropriate, in any recognized survey after 1958 of weight, height, and other body dimensions of U.S. adults;

(3) Equipped with lumbar support that is adjustable from the seated position;

(4) Equipped with force-assisted, vertical-height adjustment, operated from the seated position;

(5) Equipped with a manually reclining seat back, adjustable from the seated position;

(6) Equipped with an adjustable headrest; and

(7) Equipped with folding, padded armrests.

(g) Sharp edges and corners shall be eliminated from the interior of the power car cab, and interior surfaces of the cab likely to be impacted by an employee during a collision or derailment shall be padded with shock-absorbent material.

FIGURE 1 TO SUBPART E OF PART 238—POWER CAR CAB FORWARD END STRUCTURE CONCEPTUAL IMPLEMENTATION

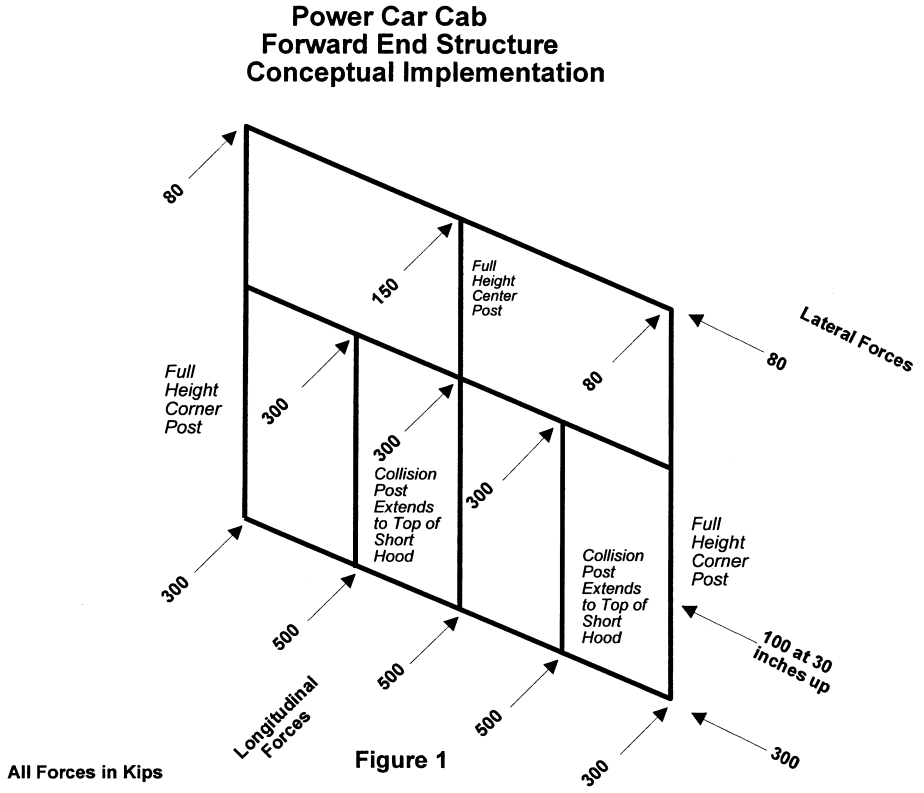


Figure 1

FIGURE 2 TO SUBPART E OF PART 238—POWER CAR CAB REAR END STRUCTURE CONCEPTUAL IMPLEMENTATION1—TO SUBPART E

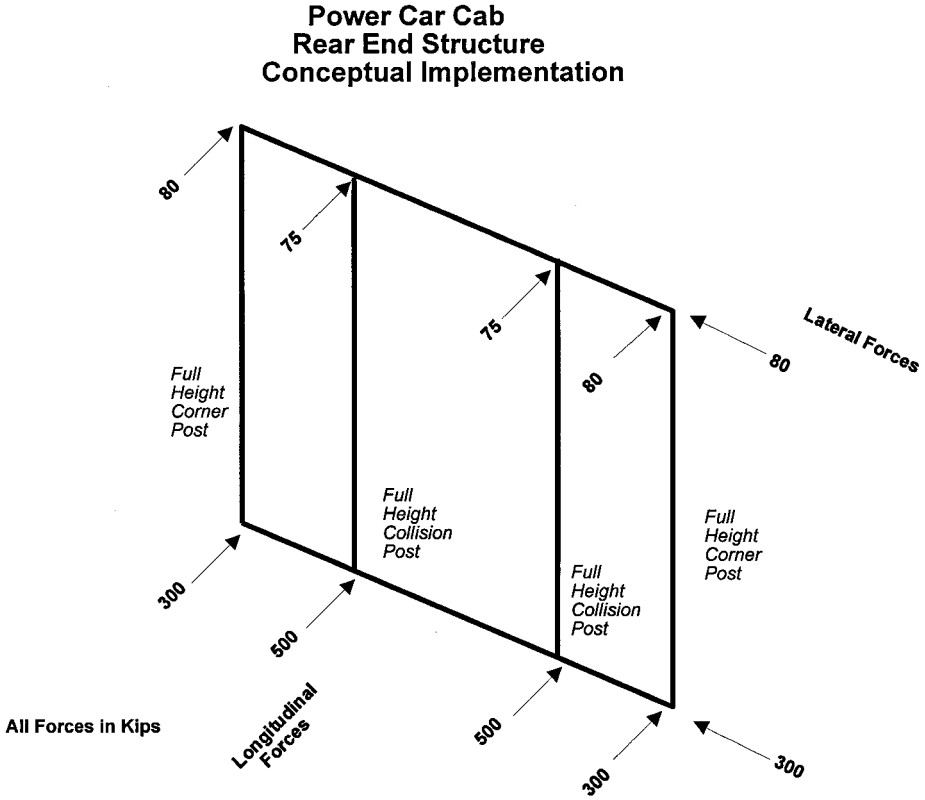


Figure 2

FIGURE 3 TO SUBPART E OF PART 238—TRAILER CAR END STRUCTURE CONCEPTUAL IMPLEMENTATION1—TO SUBPART E

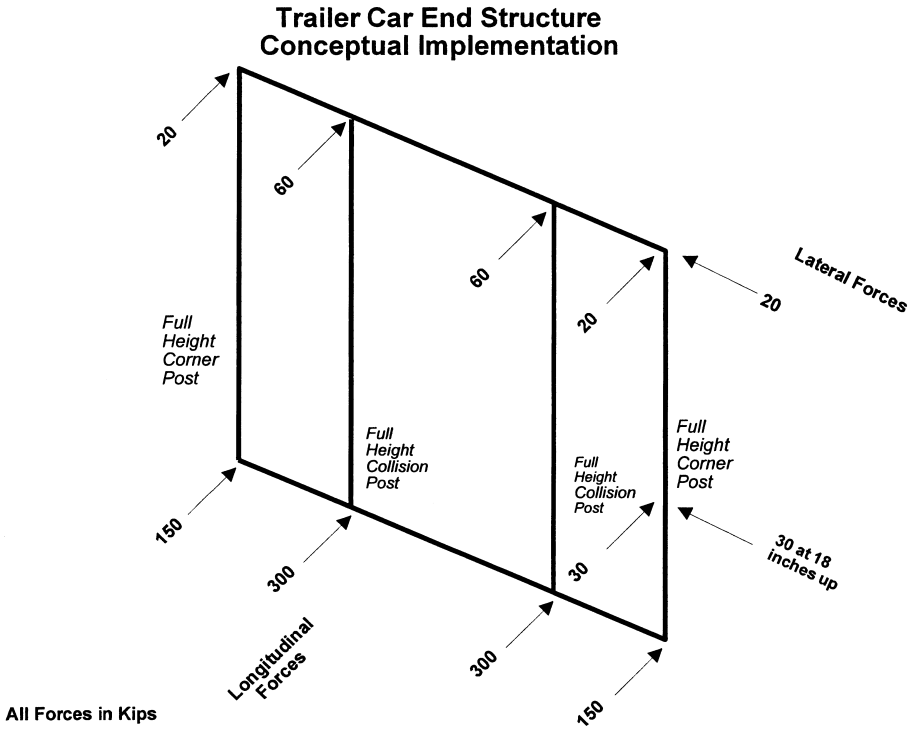


Figure 3

FIGURE 4 TO SUBPART E OF PART 238—TRAILER CAR IN-BOARD VESTIBULE END STRUCTURE CONCEPTUAL IMPLEMENTATION1—TO SUBPART E

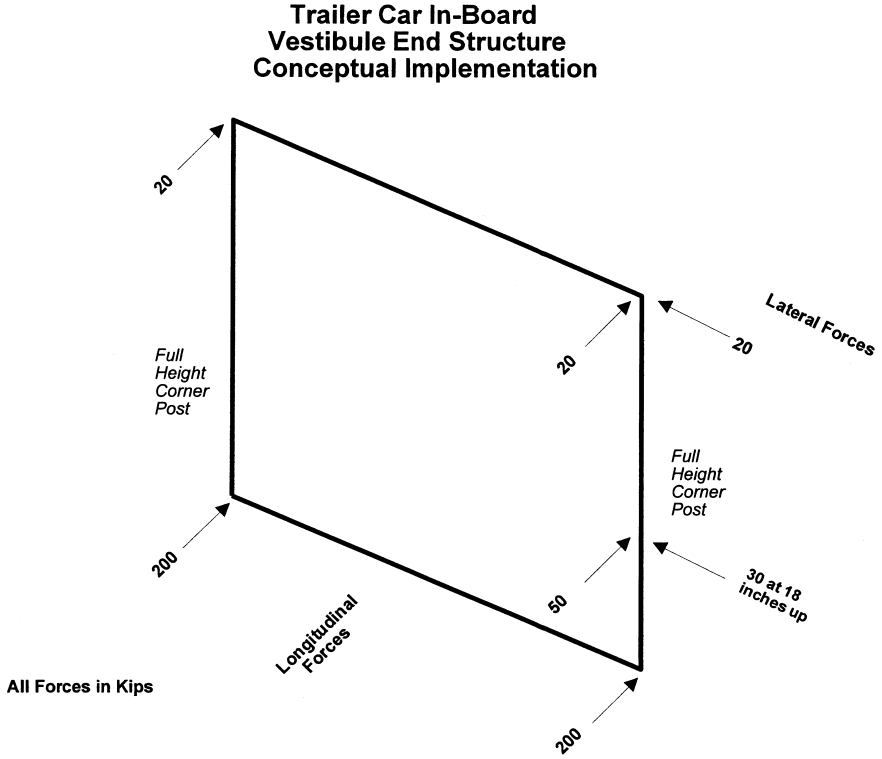


Figure 4

## Subpart F—Inspection, Testing, and Maintenance Requirements for Tier II Passenger Equipment

### § 238.501 Scope.

This subpart contains inspection, testing, and maintenance requirements for railroad passenger equipment that operates at speeds exceeding 125 mph but not exceeding 150 mph.

### § 238.503 Inspection, testing, and maintenance requirements.

(a) *General.* Under the procedures provided in § 238.505, each railroad shall obtain FRA approval of a written inspection, testing, and maintenance program for Tier II passenger equipment prior to implementation of that program and prior to commencing passenger operations using that equipment. As further specified in this section, the program shall describe in detail the procedures, equipment, and other means necessary for the safe operation of the passenger equipment, including:

(1) Inspection procedures, intervals, and criteria;

(2) Testing procedures and intervals;

(3) Scheduled preventive-maintenance intervals;

(4) Maintenance procedures;

(5) Special testing equipment or measuring devices required to perform inspections, tests, and maintenance; and