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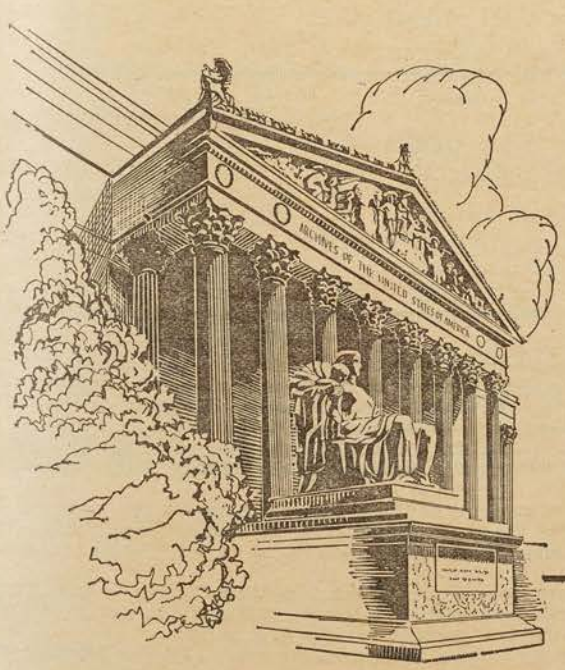
PART I

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Agencies in this issue—

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Agriculture Department
Atomic Energy Commission
Commerce Department
Commodity Credit Corporation
Consumer and Marketing Service
Federal Communications Commission
Federal Highway Administration
Federal Home Loan Bank Board
Federal Maritime Commission
Federal Railroad Administration
Federal Reserve System
Food and Drug Administration
Hazardous Materials Regulations Board
Indian Affairs Bureau
Interstate Commerce Commission
Securities and Exchange Commission
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Transportation Department

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Announcing First 10-Year Cumulation

TABLES OF LAWS AFFECTED

in Volumes 70–79 of the

UNITED STATES STATUTES AT LARGE

Lists all prior laws and other Federal instruments which were amended, repealed, or otherwise affected by the provisions of public laws enacted during the years 1956–1965. Includes index of popular name acts affected in Volumes 70–79.

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Title 7—AGRICULTURE

Chapter I—Consumer and Marketing Service (Standards, Inspection, Marketing Practices), Department of Agriculture

SUBCHAPTER M—EXPORT AND DOMESTIC CONSUMPTION PROGRAM

PART 207—POULTRY AND POULTRY PRODUCTS

Subpart—Announcement PY–29, "Chicken Export Payment Program—GMX 73a"

Announcement PY–29, "Chicken Export Payment Program—GMX 73a" providing for payment on chicken exports is terminated. Announcement PY–29 will be superseded by Announcement PY–44 which contains new terms and conditions of the chicken export payment program but will not be published.

Inquiries concerning the new program, along with requests for copies of Announcement PY–44, should be addressed to the Poultry Division, Consumer and Marketing Service, U.S. Department of Agriculture, Washington, D.C. 20250. Telephone 703–557–4771.

Offers for export payments under the new program shall state that they are subject to Announcement PY–44. Invitations to offer under the new program will be issued by C&MS from time to time in the form of USDA press releases.

Title 7 of the Code of Federal Regulations is changed by deleting §§ 207.1 to 207.19 of Part 207.

Effective date. This change is effective December 30, 1968.

Approved: December 20, 1968.

JOHN E. TROMER,
Acting Deputy Administrator, Marketing Services.

[F.R. Doc. 68–15356; Filed, Dec. 24, 1968; 8:47 a.m.]

Chapter VIII—Agricultural Stabilization and Conservation Service (Sugar), Department of Agriculture

SUBCHAPTER B—SUGAR REQUIREMENTS AND QUOTAS

PART 811—CONTINENTAL SUGAR REQUIREMENTS AND AREA QUOTAS

Requirements and Quotas for 1969

Basis and purpose and bases and considerations. This regulation is issued pursuant to the authority vested in the Secretary of Agriculture by the Sugar Act of 1948, as amended (61 Stat. 922, as amended), hereinafter referred to as the "Act". The purpose of Sugar Regulation 811 is to determine pursuant to section 201 of the Act the amount of sugar needed to meet the requirements of consumers in the continental United States for the calendar year 1969, and to establish sugar quotas for the supplying areas in terms of short tons of sugar, raw value, equal to the amount determined by the Secretary of Agriculture to be needed in 1969. Further, this regulation establishes quantities of certain quotas that may be filled by direct-consumption sugar and establishes a liquid sugar quota.

In accordance with the rule making requirements in 5 U.S.C. 553 there was published in the FEDERAL REGISTER (33 F.R. 17360) a notice of proposed rule making for the issuance of a regulation determining sugar requirements for the continental United States and establishing quotas for the calendar year 1969. Written data, views, or arguments for consideration in connection with the proposed regulation were to be submitted by interested persons prior to December 10, 1968. Thorough consideration has been given to all data, views, and comments received relative to the proposed regulation which are briefly summarized at the end of this statement of bases and considerations.

Section 201 of the Act directs the Secretary to determine for each calendar year the amount of sugar needed to meet the requirements of consumers in the continental United States and to revise such determination during the calendar year whenever he deems it necessary. The section sets forth criteria to guide the Secretary in his determination and states that such determination shall be made so as to protect the welfare of consumers and of those engaged in the domestic sugar industry by providing such supply of sugar as will be consumed at prices which will not be excessive to consumers and which will fairly and equitably maintain and protect the welfare of the domestic sugar industry.

Distribution of sugar in the United States during the 12-month period ended September 30, 1968, amounted to 10,609,000 tons. In the preceding 12-month period only 10,156,000 tons, had been distributed, a quantity 200,000 tons less than in the prior 12-month period ended September 30, 1966. Thus, recent distribution while about 450,000 tons greater than in the preceding 12-month period was only 250,000 tons greater than in the second preceding period.

Weather this year and during 1966 was unusually favorable to sugar consumption, whereas, last year it was subnormal. The same pattern applied to the fruit crop for canning. The current year being leap year also contained one additional day of sugar consumption.

Population in 1969 is expected to be about 1 percent above 1968. Neither the weather, the fruit crop, nor other demand conditions can be counted upon to be quite as conducive to sugar consumption next year, as in the current year. Considering all of these factors, including the absence of the extra day, it is reasonable to expect that consumption in 1969 may be of the order of 10,600,000 tons.

Because of the possible waterfront strike in late December, it is probable that sugar inventories in the hands of retailers, wholesalers, and food processing industries will be above-average at the beginning of next year. As a result of the very large beet sugar crop now being harvested, it is also probable that constructive distribution by beet sugar processors during the closing weeks of the current year for physical delivery next January and February will be well above average. Inventories held by the secondary distributors and sugar consuming industries at the end of next year, as well as constructive deliveries at that time by beet sugar processors cannot now be foreseen with any accuracy. Yet, it is likely that the trend in both cases will be toward a more normal situation. Accordingly, the estimated consumption of sugar of 10,600,000 tons in 1969, may result in reported distribution by primary distributors that year of about 10,500,000 tons.

Inventories of quota sugar held by refiners and importers at the beginning of next year are expected to be about the same as this year but there is presently no fully satisfactory basis for anticipating either an increase or a decrease during 1969. The refining loss during next year, though, can be estimated as between 60,000 and 75,000 tons.

The domestic price of raw sugar increased moderately during the first 10 months of 1968. The average for that period was 7.50 cents per pound or 3 percent higher than the 7.26 cents per pound average for the first 10 months of 1967. In the development of this determination, consideration has been given to the desirability of obtaining generally stable prices that will carry out, over the long term, the price objectives of the act.

In view of all of these considerations, it is hereby determined that the amount of sugar needed to meet the requirements of consumers in the continental United States during 1969 is 10,600,000 tons.

A quota of 1,200,000 short tons, raw value, is established herein for Hawaii pursuant to section 202(a)(2)(B) of the Act. Such quota is subject to adjustment pending final data on the production and marketing of sugar by Hawaii in 1968.

The quotas for foreign countries established in the regulation as issued herewith are based on the assumption that each country will fill its final 1968 quota within a reasonable tolerance. However, during the year Thailand,

Panama, Nicaragua, and Haiti each notified the Department of its inability to fill the quota which had been established for it. Accordingly, deficits determined for these countries were prorated to other countries. Findings have been made by the Secretary of Agriculture that the failure of Thailand and Panama to fill their respective 1968 quotas was determined to have resulted from crop disaster or other force majeure. On the basis of information available to the Department, it is herein determined that the failure of Nicaragua and Haiti to fill their respective 1968 quotas was the result of crop disaster or other force majeure. Drought conditions curtailed substantially the production of sugar normally expected to be harvested from the past crop in both areas. In view of the force majeure finding with respect to the short fall in the quota for each country, the quotas for Thailand, Panama, Nicaragua, and Haiti will not be subject to reduction by reason of such short falls.

The quota for Southern Rhodesia has been withheld pursuant to Executive Order 11322 issued on January 7, 1967, and is prorated herein to Western Hemisphere countries pursuant to section 202(d)(1)(B) of the Act.

Since the United States is a lucrative market for foreign sugar and because interest and other carrying charges are much higher in the sugar exporting countries with quotas in this market, than similar charges in the United States, there is a notable desire by foreign suppliers to market a disproportionate share of their manual quotas during the early months of the year. The large sugar surpluses in the exporting countries of the world appear to be shrinking somewhat recently. However, this process has not yet progressed to the point where availability of sugar alone would equate exports to this market with the demand in the early part of the year. Accordingly, to provide an orderly market throughout the year, it is hereby determined that imports of foreign sugar shall be limited during the first and second quarters of the year.

For the first time since 1966, beet sugar processors will have sufficient refined beet sugar available to market a seasonally appropriate share of their annual quota during the first half of the year. Mainland cane sugar processors will have an unusually large carryover of raw sugar at the beginning of the year. These facts will limit the demand by refiners for foreign raw sugar during the first half of the year. Imports during the first half will be limited to 2 million tons, of which quantity imports before April 1 will be limited to the sum of 850,000 tons and the quantity of 1969 quota sugar which entered under bond in 1968 for refining and storage, a quantity now estimated at slightly more than 100,000 tons.

To give recognition to the seasonality of production and movement of sugar from the foreign countries, quota allocations to foreign countries during the first quarter and first half of 1969 will primarily be based on average imports from such foreign countries during such periods for the 4-year period 1965 through 1968.

The second priority provision has been revised to give greater recognition and provide more flexibility to countries with the smallest quotas as well as to those from which little or no sugar was imported during the base period, by permitting sugar from such countries to be imported in the first quarter of up to 5,000 tons and in the first half of up to 10,000 tons.

With respect to quarterly quotas, the regulation issued herewith differs from that in the proposed regulation in that first quarter limits have been increased by 100,000 tons and first half limits have been increased a like quantity to 2 million tons. These changes appear necessary in view of the fact that refiners' deliveries in 1968 will be higher than previously estimated and that entry of over-quota sugar in late 1968 will be less than anticipated. The combined effect of higher distribution and lower 1968 entries of over-quota sugar will decrease refiners estimated stocks on January 1, 1969, below those previously estimated.

The following views were received with respect to the proposed determination of sugar requirements and quotas for 1969:

The Industrial Sugar Users Group recommended the following changes: (1) Initial requirements of not less than 11.2 million short tons, raw value, (2) an immediate reallocation of a Puerto Rican deficit of at least 400,000 tons, and (3) elimination of quarterly import limitations on foreign sugar, but if retained, the quantity permitted to be imported during the first half year should be not less than 2,380,000 tons with at least 950,000 tons of that for the first quarter, inclusive of the bonded imports in 1968 chargeable against the 1969 quota. Beatrice Foods Co. recommended sugar requirements of 11.6 million tons and import limitations for the first quarter of 900,000 tons and for the first half of 2,400,000 tons. Borden, Inc., believed total requirements were too low, that deficits should be reallocated and that no quarterly limitations should be imposed.

The U.S. Cane Sugar Refiners Association recommended the removal of quarterly import limitations on foreign sugar. This was also the recommendation of American Sugar Co. and Refined Syrups and Sugars, Inc. Bache and Co., a securities and commodities commission firm, also supported the removal of quarterly import limitations.

The statement submitted on behalf of domestic beet sugar processors recommended that initial requirements be established at 10.4 million tons.

The National Sugar Beet Growers Federation concurred with the Department on the initial requirement level of 10.6 million tons and quarterly import limitations, but noted that if quarterly limitations were not imposed then requirements should be 10.4 million tons.

The Association of Sugar Producers of Puerto Rico considered the Department's proposed determination of requirements of 10.6 million tons to be on the liberal side. It was the view of the Association that the establishment of requirements and quarterly limitations were integral parts of a single package and must be considered in conjunction with each other.

The American Sugar Cane League and the Florida Sugar Cane League representing the mainland cane sugar area concurred with the initial requirements level proposed by the Department.

A brief on behalf of Brazil recommended the most recent 3-year average base in computing history for purposes of prorating quarterly quotas instead of a 4-year base as proposed by the Department. A brief submitted on behalf of the Bahama Islands which will receive a quota for the first time in 1969 requested larger quarterly quotas for that country, than proposed by the Department.

Sec.
811.70 Sugar requirements 1969.
811.71 Quotas for domestic areas.
811.72 [Reserved]
811.73 Quotas for foreign countries.
811.74 Applicability of quotas.
811.75 Restrictions on importations and marketings within quotas.

AUTHORITY: §§ 811.70 to 811.75 issued under sec. 403, 61 Stat. 932, 7 U.S.C. 1153. Interprets or applies to secs. 201, 202, 207, 208, 209, 210; 61 Stat. 923, as amended, 924, as amended, 925, as amended, 927, as amended, and 928, as amended; 7 U.S.C. 1111, 1112, 1117, 1118, 1119, and 1120.

§ 811.70 Sugar requirements 1969.

The amount of sugar needed to meet the requirements of consumers in the continental United States for the calendar year 1969 is hereby determined to be 10,600,000 short tons, raw value.

§ 811.71 Quotas for domestic areas.

(a) For the calendar year 1969, domestic area quotas limiting the quantities of sugar which may be brought into or marketed for consumption in the continental United States are established, pursuant to section 202(a) of the Act in column (1), and the amounts of such quotas for offshore areas that may be filled by direct-consumption sugar are established, pursuant to section 207 of the Act in column (2), as follows:

Area	Quotas (1)	Direct-consumption limits (2)
	[Short tons, raw value]	
Domestic beet sugar	3,120,333	No limit
Mainland cane sugar	1,134,667	No limit
Hawaii	1,200,000	36,252
Puerto Rico	1,140,000	159,000
Virgin Islands	15,000	0

(b) Of the quantity established in paragraph (a) of this section for Puerto Rico which may be filled by direct-consumption sugar, 126,033 short tons, raw value, may be filled only by sugar principally of crystalline structure.

§ 811.72 [Reserved]

§ 811.73 Quotas for foreign countries.

(a) The quotas or prorations for foreign countries limiting the quantities of

sugar which may be imported into the continental United States during the calendar year 1969 for consumption therein and the amounts of such quotas and prorations that may be filled by direct-consumption sugar are hereby established as set forth in the following paragraphs (b), (c), (d), and (e) of this section.

(b) For the calendar year 1969, the quota for the Republic of the Philippines is 1,126,020 short tons, raw value, and the quantity of such quota that may be filled by direct-consumption sugar is 59,920 short tons, raw value.

(c) For the calendar year 1969, the prorations or allocations to individual foreign countries other than the Republic of the Philippines pursuant to section 202(c) (3) and (4) and section 202(d) of the act are as follows:

Production area	Basic quotas	Temporary quotas and prorations pursuant to Sec. 202(d)	Total quotas and prorations
	[Short tons, raw value]		
Mexico	220,199	233,927	454,126
Dominican Republic	215,356	228,782	444,138
Brazil	215,356	228,782	444,138
Peru	171,772	182,481	354,253
British West Indies	86,029	73,610	159,639
Ecuador	31,335	33,289	64,624
French West Indies	27,062	23,156	50,218
Argentina	26,492	28,144	54,636
Costa Rica	25,353	26,933	52,286
Nicaragua	25,353	26,933	52,286
Colombia	22,789	24,210	46,999
Guatemala	21,365	22,697	44,062
Panama	15,952	16,947	32,899
El Salvador	15,668	16,644	32,312
Haiti	11,964	12,710	24,674
Venezuela	10,825	11,500	22,325
British Honduras	6,267	5,363	11,630
Bolivia	2,564	2,723	5,287
Honduras	2,564	2,723	5,287
Australia	102,551	87,194	189,745
Republic of China	42,729	36,331	79,060
India	41,020	34,878	75,898
South Africa	30,195	25,674	55,869
Fiji Islands	22,504	19,134	41,638
Thailand	9,401	7,993	17,394
Mauritius	9,401	7,993	17,394
Malagasy Republic	4,843	4,117	8,960
Swaziland	3,703	3,149	6,852
Ireland	5,351		5,351
Bahamas	10,000		10,000
Total	1,435,963	1,428,017	2,863,980

(d) (1) Of the total quotas and prorations for foreign countries established in paragraphs (b) and (c) of this section, an amount not to exceed 2 million short tons, raw value, of raw sugar, which includes quantities imported in late 1968 under bond for refining and storage, may be charged against such 1969 quotas and authorized for importation or release from bond from all such foreign countries in accordance with Part 817 of this chapter during the first 6 months of 1969. Such charges to such 1969 quotas shall be made in the following manner: (i) The quantities imported in late 1968 under bond for refining and storage will be released from bond and charged to such quotas on January 1, 1969; (ii) in addition, 850,000 short tons, raw value, of sugar will be authorized for importation and charged to such quotas during the first quarter of the year and; (iii) that part of the 2 million short tons, raw value, not charged to such 1969 quotas under subdivisions (i) and (ii) of this subparagraph will be authorized for importation and charged to such quotas during the second quarter of 1969.

(2) (i) The importation of raw sugar within the annual quotas and the quarterly limitations specified in subdivisions (ii) and (iii) of subparagraph (1) of this paragraph (d) will be authorized on the basis of applications for "Set Aside of Quota" on Form SU–8A or "Sugar Quota Clearance" on Form SU–3 in accordance with the provisions of Part 817 of this chapter, subject to the priorities for countries as provided in subparagraph (3) of this paragraph for first quarter importations and in subparagraph (4) of this paragraph for second quarter importations and the limitations as provided in subdivision (ii) of this subparagraph. Applications to import raw sugar from the Republic of the Philippines must, before final approval within the quantity reserved for the Republic of the Philippines pursuant to subparagraphs (3) and (4) of this paragraph, be supplemented by certification from the Sugar Quota Administrator for the Government of the Philippines granting the applicant the permission to export sugar to the United States market.

(ii) Applications for the importation of sugar during the first quarter received on or before 5 days after the effective date of this subdivision will be considered as having been received at the same time. Applications for the importation of sugar during the second quarter received on or before January 15, 1969, will be considered as having been received at the same time.

(3) (i) Allocations of first quarter importations among countries will be made in the following manner within the limits of applications received.

(ii) First priority shall be given to countries from which sugar was imported during the first quarter of 1965, 1966, 1967, or 1968, but not to exceed the average of the country's first quarter importations as set forth in subparagraph (5) of this paragraph: *Provided*, That if the quantity of sugar which may be imported during the first quarter is less than the quantity needed to approve all applications for importation in the first quarter, the quantity of sugar which may be imported during the first quarter under this priority shall be prorated among countries on the basis of first quarter importations from countries as set forth in subparagraph (5) of this paragraph.

(iii) Second priority shall be given to countries by making an initial allocation under this priority to countries in order of size of quota, smallest first, limiting such initial allocation to any country to the amount by which 5,000 short tons, raw value, exceeds the allocation made under subdivision (ii) of this subparagraph (3). Additional allocations under this priority shall be made to those countries whose accumulated allocations for the first quarter, including any initial allocation made under this priority, is less than 20 percent of the country's annual quota, which additional allocation to any such country shall be so limited that the total allocations under priorities in subdivision (ii) of this subparagraph and this subdivision (iii) during the first quarter for such country as a percentage of its annual quota will not exceed the percentage similarly calculated for any other such country and shall be further limited so that the total quantity which may be imported from such country during the first quarter shall not exceed 20 percent of the country's annual quota.

(iv) Any quantity not allocated under subdivisions (ii) and (iii) of this subparagraph shall be prorated among countries having priority under subdivision (ii) of this subparagraph that received allocations less than the full amount applied for, and such additional proration shall be made on the basis of the average imports of sugar from the countries during the first quarter as set forth in subparagraph (5) of this paragraph.

(4) (i) Allocations of second quarter importations among countries will be made in the following manner within the limits of applications received.

(ii) First priority shall be given to countries from which sugar was imported during the first half of 1965, 1966, 1967, or 1968, but not to permit charges to the quotas of such countries by virtue of this subdivision during the first half to exceed the average importations from such country as set forth in subparagraph (5) of this paragraph: *Provided*, That if the quantity of sugar which may be imported during the second quarter is less than the quantity needed to approve all applications for importation in the second quarter, the quantity of sugar which may be imported during the second quarter under this priority shall be prorated among countries on the basis of first half importations from countries as set forth in subparagraph (5) of this paragraph.

(iii) Second priority shall be given to countries by making an initial allocation under this priority to countries in order of size of quota, smallest first, limiting such initial allocation to any country to the amount by which 5,000 short tons, raw value, exceeds the allocation made under subdivision (ii) of this subparagraph (4). Additional allocations under this priority shall be made to those countries whose accumulated allocations for the first half, including any initial allocation made under this priority, is less than 50 percent of the country's annual quota, which additional allocation to any such country shall be so limited that the total quota charges under subparagraph (3) of this paragraph, subdivision (ii) of this subparagraph and this subdivision during the first half for such country as a percentage of its annual quota will not exceed the percentage similarly calculated for any other such country; and shall be further limited so that the total quantity which may be imported from such country during the first half shall not exceed 50 percent of the country's annual quota.

(iv) Any quantity not allocated under subdivisions (ii) and (iii) of this subparagraph shall be prorated among countries having priority under subdivision

(ii) of this subparagraph that received allocations less than the full amount applied for, and such proration shall be made on the basis of the average imports of sugar from the countries during the first half as set forth in subparagraph (5) of this paragraph.

(5) Average importations into the continental United States within quotas, during the first quarter and first half of the years 1965, 1966, 1967, and 1968 are as follows:

Country	First quarter	First half
	[Short tons, raw value]	
Philippines	236,852	556,112
Mexico	135,377	318,420
Dominican Republic	100,654	285,946
Brazil	96,775	187,066
Peru	74,147	154,246
British West Indies	27,579	85,612
Ecuador	11,227	23,269
French West Indies	8,275	41,552
Argentina	8,623	30,438
Costa Rica	13,882	34,664
Nicaragua	8,028	22,044
Colombia	6,715	19,229
Guatemala	17,763	39,309
Panama	4,596	13,877
El Salvador	10,618	20,608
Haiti	6,391	18,141
Venezuela	1,615	7,123
British Honduras	165	4,636
Bolivia	30	30
Honduras	1,216	1,216
Australia	2,187	2,187
Republic of China	4,554	56,189
India	2,988	48,486
South Africa	23,118	25,465
Fiji Islands	650	649
Thailand	183	183
Mauritius	290	290
Malagasy Republic	0	0
Swaziland	204	204
Total	804,702	1,997,191

(e) For the calendar year 1969, the quantity of each proration established in paragraph (c) of this section that may be filled by direct-consumption sugar pursuant to section 207(e) of the act is as follows:

Country	Short tons, raw value
Ireland	5,351
Panama	3,817

(f) For the calendar year 1969, the quota for liquid sugar for foreign countries as a group is 2 million gallons of sirup of cane juice of the type of Barbados molasses, limited to liquid sugar containing soluble nonsugar solids (excluding any foreign substance that may have been added or developed in the product) of more than 5 percent of the total soluble solids, which is not to be used as a component of any direct-consumption sugar but is to be used as molasses without substantial modification of its characteristics after importation.

§ 811.74 Applicability of quotas.

(a) All sugar and liquid sugar marketed or imported into the continental United States is subject to the provisions of Part 816 or Part 817 of this chapter which prescribe the time, manner, and conditions under which quotas and prorations are filled by the marketing and importation of sugar or liquid sugar.

(b) The quantitative limitations established by §§ 811.71 to 811.73, inclusive, do not apply to sugar or liquid sugar marketed or imported pursuant to sections 211 and 212 of the act in accordance with the provisions of Part 816 or Part 817 of this chapter.

§ 811.75 Restrictions on importations and marketings within quotas.

Subject to the provisions of Parts 816 and 817 of this chapter all persons are prohibited from bringing or importing into or marketing in the continental United States, (a) any sugar or liquid sugar from any country for which no quota is established or in excess of or after the applicable quota or quantity set forth in §§ 811.71 to 811.73 inclusive has been filled, or (b) any sugar or liquid sugar as direct-consumption sugar from any country for which no direct-consumption sugar limitation is established or after the direct-consumption portion of the applicable quota has been filled.

Effective date. The Act provides that the Secretary of Agriculture shall, during the last 3 months of 1968, determine sugar requirements and establish sugar quotas for the continental United States for the calendar year 1969. The regulations determining 1969 sugar requirements and quotas apply not only to sugar imported or marketed beginning January 1, 1969, but also to any sugar imported prior thereto for refining, storage, and subsequent release within 1969 quotas as may be provided for by regulation. Accordingly, it is hereby found to be impracticable and not in the public interest to comply with the 30-day effective date requirements in 5 U.S.C. 553. The aspects of § 811.73 relating to the submission and approval or acceptance of applications shall be effective when filed with the FEDERAL REGISTER and all other provisions of this regulation shall become effective January 1, 1969.

Signed at Washington, D.C., on December 20, 1968.

JOHN A. SCHNITTKER,
Acting Secretary.

[F.R. Doc. 68-15340; Filed, Dec. 20, 1968; 3:00 p.m.]

Chapter IX—Consumer and Marketing Service (Marketing Agreements and Orders; Fruits, Vegetables, Nuts), Department of Agriculture

[Lemon Reg. 352, Amdt. 1]

PART 910—LEMONS GROWN IN CALIFORNIA AND ARIZONA

Limitation of Handling

(a) *Findings.* (1) Pursuant to the marketing agreement, as amended, and Order No. 910, as amended (7 CFR Part 910), regulating the handling of lemons grown in California and Arizona, effective under the applicable provisions of the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601-674), and upon the basis of the recommendations and information submitted by the Lemon Administrative Committee, established under the said amended marketing agreement and order, and upon other available information, it is hereby found that the limitation of handling of such lemons, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) It is hereby further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective date of this amendment until 30 days after publication hereof in the FEDERAL REGISTER (5 U.S.C. 553) because the time intervening between the date when information upon which this amendment is based became available and the time when this amendment must become effective in order to effectuate the declared policy of the act is insufficient, and this amendment relieves restriction on the handling of lemons grown in California and Arizona.

(b) *Order, as amended.* The provisions in paragraph (b)(1) (i), (ii), and (iii) of § 910.652 (Lemon Reg. 352, 33 F.R. 18581) are hereby amended to read as follows:

§ 910.652 Lemon Regulation 352.

* * * * *

(b) *Order.* (1) * * *

(i) District 1: 22,320 cartons;

(ii) District 2: 73,470 cartons;

(iii) District 3: 150,660 cartons.

* * * * *

(Secs. 1-19, 48 Stat. 31, as amended; 7 U.S.C. 601-674)

Dated: December 20, 1968.

PAUL A. NICHOLSON,
Deputy Director, Fruit and Vegetable Division, Consumer and Marketing Service.

[F.R. Doc. 68-15355; Filed, Dec. 24, 1968; 8:46 a.m.]

[Lime Reg. 3, Amdt. 8]

PART 944—FRUIT; IMPORT REGULATIONS

Limes

Pursuant to the provisions of section 8e of the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601-674), the provisions of paragraph (a) preceding (a)(1) and of subparagraph (4) thereof, of § 944.202 (Lime Reg. 3; 33 F.R. 5039, 6096, 6518) are hereby amended to read as follows:

§ 944.202 Lime Regulation 3.

(a) On and after December 30, 1968, the importation into the United States of any limes is prohibited unless such limes are inspected and meet the following requirements:

* * * * *

(4) Notwithstanding the provisions of subparagraph (3) of this paragraph, not to exceed 10 percent, by count, of limes in any lot of containers, may fail to meet the applicable size requirement: *Provided,* That no individual container of limes having a net weight of more than 4 pounds may have more than 15 percent, by count, of limes which fail to meet such applicable size requirement.

* * * * *

It is hereby found that it is impracticable, unnecessary, and contrary to the public interest to give preliminary notice, engage in public rule-making procedure, and postpone the effective time of this amendment beyond that hereinafter specified (5 U.S.C. 553) in that (a) the requirements of this amended import regulation are imposed pursuant to section 8e of the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601–674), which makes such regulation mandatory; (b) such regulation imposes the same restrictions being made applicable to domestic shipments of limes under amended Lime Regulation 25 (§ 911.327), which becomes effective December 30, 1968; (c) compliance with this amended import regulation will not require any special preparation which cannot be completed by the effective time hereof; (d) notice hereof in excess of 3 days, the minimum that is prescribed by section 8e, is given with respect to such regulation; and (e) such notice is hereby determined under the circumstances, to be reasonable.

(Secs. 1–19, 48 Stat. 31, as amended; 7 U.S.C. 601–674)

Dated, December 20, 1968, to become effective December 30, 1968.

PAUL A. NICHOLSON,
Deputy Director, Fruit and Vegetable Division, Consumer and Marketing Service.

[F.R. Doc. 68–15357; Filed, Dec. 24, 1968; 8:47 a.m.]

Title 21—FOOD AND DRUGS

Chapter I—Food and Drug Administration, Department of Health, Education, and Welfare

SUBCHAPTER C—DRUGS

PART 141—TESTS AND METHODS OF ASSAY OF ANTIBIOTIC AND ANTIBIOTIC-CONTAINING DRUGS

Miscellaneous Amendments

Pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 507, 59 Stat. 463, as amended; 21 U.S.C. 357) and under authority delegated to the Commissioner of Food and Drugs (21 CFR 2.120), the following editorial or minor technical changes are made in Part 141:

1. Section 141.102 *Solutions* is amended by changing in paragraph (a) the word "Standardize" to "Adjust" in all eight places in which it occurs.

2. Section 141.104 *Test organisms* is amended:

a. By changing in paragraph (a), second sentence, the words "letters A through L and M" to read "letters A through K, M, and N".

b. In the table in paragraph (a): By changing for "Test organism E" the incubation period "3 to 5 days" to "48 hours"; by deleting from "Test organism G" the dilution factor "1:11"; by changing for "Test organism L" the incubation period "48 hours" to "24 hours"; and by changing for "Test organism T" the incubation period "3 to 5 days" to "48 hours".

3. Section 141.110 *Microbiological agar diffusion assay* is amended:

a. In the table in paragraph (a) by changing for the item "Chloramphenicol" the "2" in the second column to "1".

b. In the table in paragraph (b): For the item "Amphotericin B" by changing "5" in the seventh column to "10"; for the item "Chlortetracycline" by changing "5 days" in the sixth column to "4 days"; for the item "Colistimethate, sodium" by changing "2 weeks" in the sixth column to "1 day" and by changing "2" in the seventh column to "6"; for the item "Colistin" by changing "2" in the seventh column to "6"; for the item "Nystatin" by changing "2" in the seventh column to "6"; for the item "Oxytetracycline" by changing "7 days" in the sixth column to "4 days"; for the item "Phenoxymethyl penicillin" by changing "2 days" in the sixth column to "4 days"; for the item "Polymyxin B" by changing "2" in the seventh column to "6"; and for the item "Triacetyloleandomycin" by changing "5" in the seventh column to "10".

4. Section 141.111 *Microbiological turbidimetric assay* is amended in the table in paragraph (a):

a. For the item "Chlortetracycline" by changing "5 days" in the sixth column to "4 days".

b. For the item "Cycloserine" by changing the concentrations in the last column to "32.0, 40.0, 50.0, 62.5, 78.1 μg."

c. For the item "Doxycycline" by changing "7 days" in the sixth column to "5 days".

d. For the item "Oxytetracycline" by changing "7 days" in the sixth column to "4 days".

e. For the item "Triacetyloleandomycin" by changing "13" in the third column to "15".

This order makes editorial and minor technical changes in the subject antibiotic-drug regulations; therefore, notice and public procedure and delayed effective date are not prerequisites to this promulgation.

Effective date. This order shall be effective upon publication in the FEDERAL REGISTER.

(Sec. 507, 59 Stat. 463, as amended; 21 U.S.C. 357)

Dated: December 19, 1968.

J. K. KIRK,
Associate Commissioner for Compliance.

[F.R. Doc. 68–15342; Filed, Dec. 24, 1968; 8:45 a.m.]

Title 23—HIGHWAYS AND VEHICLES

Chapter II—Vehicle and Highway Safety

PART 209—GENERAL PROCEDURAL RULES

PART 216—RULE-MAKING PROCEDURES: MOTOR VEHICLE SAFETY STANDARDS

PART 217—APPLICATION FOR TEMPORARY EXEMPTIONS FROM MOTOR VEHICLE SAFETY STANDARDS FOR LIMITED PRODUCTION MOTOR VEHICLES

PART 255—INITIAL FEDERAL MOTOR VEHICLE SAFETY STANDARDS

CROSS REFERENCE: For a document redesignating Parts 209, 216, 217, and 255 of Chapter II of Title 23 as Parts 351, 353, 355, and 371, respectively, of new Chapter III of Title 49, see F.R. Doc. 68–15287, 49 CFR Chapter III, Part II of this issue, *infra*.

Title 36—PARKS, FORESTS, AND MEMORIALS

Chapter V—Smithsonian Institution

PART 500—STANDARDS OF CONDUCT

Teaching, Lecturing, and Writing and Holding Office Under State or Local Government

Pursuant to and in conformity with sections 201 through 209 of the United States Code, Executive Order 11222 of May 8, 1965 (30 F.R. 6469), and Title 5, Chapter I, Part 735 of the Code of Federal Regulations, Part 500, Chapter V, Title 36 of the Code of Federal Regulations is amended as follows:

Subpart C of the Smithsonian Institution's regulations, in accordance with Executive Order 11408, dated April 25, 1968, is amended by revoking § 500.735–305 and by revising § 500.735–304 as follows:

§ 500.735–304 Teaching, lecturing, and writing.

Employees are encouraged to engage in teaching, lecturing, and writing that is not prohibited by law, the Executive order, or the Smithsonian regulations. However, an employee shall not, either for or without compensation, engage in teaching, lecturing, or writing, including teaching, lecturing, or writing for the purpose of the special preparation of a person or class of persons for an examination of the Commission or Board of Examiners for the Foreign Service, that

depends on information obtained as a result of his Government employment, except when that information has been made available to the general public or will be made available on request, or when the Secretary of the Smithsonian Institution gives written authorization for use of nonpublic information on the basis that the use is in the public interest. In addition, an employee who is a Presidential appointee covered by section 401(a) of Executive Order 11222 shall not receive compensation or anything of monetary value for any consultation, lecture, discussion, writing, or appearance, the subject matter of which is devoted substantially to the responsibilities, programs, or operations of the Smithsonian, or which draws substantially on official data or ideas which have not become part of the body of public information.

§ 500.735–305 [Revoked]

These amendments were approved by the Civil Service Commission on May 21, 1968, and are effective upon publication in the FEDERAL REGISTER.

S. DILLON RIPLEY,
Secretary.

[F.R. Doc. 68–15352; Filed, Dec. 24, 1968; 8:46 a.m.]

Title 49—TRANSPORTATION

Chapter X—Interstate Commerce Commission

SUBCHAPTER A—GENERAL RULES AND REGULATIONS

PART 1023—STANDARDS FOR REGISTRATION OF CERTIFICATES AND PERMITS WITH STATES

Motor Carrier Standards; Evidencing Lawfulness of Interstate Operation

Order. At a general session of the Interstate Commerce Commission, held at its office in Washington, D.C., on 19th day of December 1968.

Pursuant to section 202(b) of the Interstate Commerce Act, the Commission promulgated standards for registering with the various States, certificates and permits issued by the Commission. These standards are contained in Part 1023 of Title 49 of the Code of Federal Regulations.

The National Association of Regulatory Utility Commissioners has certified to the Commission amendments to these standards. The amendments set forth below relate only to form and not to the substance of the regulations published in Part 1023. The resolution is set forth below.[1]

In accordance with the provisions of section 202(b) of the Interstate Commerce Act (49 U.S.C. 302(b)) and upon consideration of the resolution; now therefore:

It is ordered, That Part 1023 of Chapter X of Title 49 of the Code of Federal Regulations be amended as follows:

1. Section 1023.34 is revised to read as follows:

§ 1023.34 Execution of application for cab card.

The application for the issuance of such cards shall be duly executed by an official of the motor carrier.

2. Section 1023.36 is amended as follows:

§ 1023.36 Form of cab card.

The cab card referred to above shall be in the form set forth in Form D appended to this part and made a part of this section and shall bear the seal of the NARUC. * * *

3. Section 1023.101 is revised to read as follows:

§ 1023.101 Reproduction of form.

(a) In order to achieve complete uniformity in the reproduction of the Uniform Identification Cab Card, as set forth in Form D appended to this part, the NARUC shall reproduce and supply an adequate quantity of such forms for use under the provisions of these Standards. No person or organization, other than the NARUC, shall reproduce such form for use under the provisions of these Standards, and any such form reproduced by such an unauthorized person or organization are hereby declared to be void.

(b) The NARUC, upon request, shall supply such form to the State Commissions and motor carriers. The NARUC shall fix and charge a reasonable fee in connection with the reproduction and supply of such form. Each state Commission supplying such form shall charge the fee fixed therefor by the NARUC.

4. Form C, entitled "Uniform Application for Identification Cab Card" is deleted from the Appendix of Forms following Part 1023.

(Secs. 1, 49 Stat. 543, as amended, 546 as amended; 49 U.S.C. 302, 304)

It is further ordered, That since these amendments relate to form only and not to substance, they shall be effective concurrently with the original standards promulgated by the Commission which is 5 years from the 14th day of December 1966.

And it is further ordered, That notice of this order shall be given to the general public by depositing a copy hereof in the Office of the Secretary of the Commission, Washington, D.C., and by filing a copy with the Director, Office of the Federal Register. Notice shall also be served upon the Governors and Chairman of the Public Utility Commissions of the several states.

By the Commission.

[SEAL] H. NEIL GARSON,
Secretary.

[F.R. Doc. 68–15345; Filed, Dec. 24, 1968; 8:46 a.m.]

[1] Resolution filed as part of original document.

Proposed Rule Making

DEPARTMENT OF AGRICULTURE

Consumer and Marketing Service

[7 CFR Part 52]

CANNED SPINACH

Standards for Grades; Extension of Time for Filing Comments

Three notices of proposed rule making were published in the FEDERAL REGISTER of March 1, 1966 (31 F.R. 3253), May 4, 1967 (32 F.R. 6848), and March 8, 1968 (33 F.R. 4335), regarding a proposed revision of the U.S. Standards for Grades of Canned Spinach. Interested persons were invited to submit data, views, and comments until January 1, 1969, regarding the proposal.

In consideration of statements from the Canners League of California that California canners have not had the opportunity to meet and review results of tests of the latest proposed grade standards and develop suitable comments, notice is hereby given that additional time until February 1, 1969, is allowed in which to file comments concerning the aforementioned proposal with the Hearing Clerk, U.S. Department of Agriculture, Room 112, Administration Building, Washington, D.C. 20250. All written submissions made pursuant to this notice will be made available for public inspection at the office of the Hearing Clerk during regular business hours (7 CFR 1.27(b)).

Dated: December 20, 1968.

JOHN E. TROMER,
Acting Deputy Administrator, Marketing Services.

[F.R. Doc. 68-15358; Filed, Dec. 24, 1968; 8:47 a.m.]

[9 CFR Parts 301, 317, 328]

MEAT INSPECTION

Compositional and Labeling Requirements for Certain Sausage Products

This Department has been petitioned to amend the Federal Meat Inspection Regulations (9 CFR Chapter III, Subchapter A) under the Federal Meat Inspection Act (21 U.S.C. 601 et seq.) so as to permit the sausage products that are designated as frankfurter, wiener, vienna, bologna, garlic bologna, knockwurst, and similar products to contain chicken and turkey products as ingredients. It is proposed that such poultry products be allowed to comprise, individually or collectively, 25 percent of the sausage formula without label declaration of these ingredients except in the ingredient statements. The petitions further requested that oral public hearings on the proposal for these sausage products be promptly convened.

Accordingly, notice is hereby given that four oral public hearings will be held with respect to proposed amendments to the Federal Meat Inspection Regulations as set forth below pertaining to frankfurter, wiener, vienna, bologna, garlic bologna, knockwurst and similar products. The first hearing will commence at 10 a.m. on February 19 and 20, 1969, in Room 218A, Administration Building, U.S. Department of Agriculture, 14th and Independence Avenue, Washington, D.C. The second hearing will commence at 10 a.m. on February 24 and 25 in Room 268, Peachtree-Seventh Building, 50 Seventh Street, Atlanta, Ga. The third hearing will commence at 10 a.m. on February 27 in Room 2588 K, Federal Building, 219 South Dearborn Street, Chicago, Ill. The fourth hearing will commence at 10 a.m. March 3 in Room 1430, Federal Building and U.S. Courthouse, 1961 Stout Street, Denver, Colo.

The Presiding Officer at the hearings will be a hearing examiner from the Office of Hearing Examiners of the Department designated for that purpose.

Any interested person may present any data, views, or arguments he wishes to offer at the hearings. It will facilitate the conduct of the hearings if persons who wish to testify at the hearings will notify the Director, Technical Services Division, Consumer and Marketing Service, U.S. Department of Agriculture, Washington, D.C. 20250, in writing or by telephone (area code 703-557-4391) as soon as possible to that effect, stating they wish to testify and how long a time they would like to have to present their testimony. However, any person who wishes to testify at the hearings will be afforded opportunity to do so, whether he has given such advance notice or not. (Testimony will not be under oath and cross examination will not be allowed. However, any person at the hearings may submit written questions to the Presiding Officer who will address them to the witness designated in the question.

Written comments on the proposal in lieu of, or in adition to, oral testimony may be submitted by any interested person to the Office of the Hearing Clerk, U.S. Department of Agriculture, Washington, D.C. 20250, on or before March 10, 1969, and will be available there for public inspection during normal office hours (9 a.m. to 5:30 p.m. Mondays through Fridays, except holidays).

The hearings will be open to the public. A stenographic transcript will be made of the hearings and copies of the transcript can be obtained from the reporter by any person upon request and payment of the cost of such copies.

Pursuant to the petitions, the Department has drafted proposed amendments to the meat inspection regulations that would implement the proposal to allow chicken and other poultry products in the sausage formulas and would impose a maximum fat content on the finished products. The proposals also include provisions which represent requirements that have been applied and are presently applied, by regulations and policies, for label approval purposes to the cooked and smoked sausage products designated as frankfurter, wiener, vienna, bologna, garlic bologna, knockwurst and similar products.

The fat content limitation proposal is based on extensive analytical data accumulated by the Department's meat inspection laboratories through sample examinations for a number of periods extending beyond the past decade and represents the maximum fat content that has been found to be normal to this class of sausage products.

After the hearings, the Department will evaluate all relevant material presented at the hearings or otherwise in the possession of the Department and will determine what action should be taken with respect to the proposed amendments.

Information relating to the proposed amendments is on file in the office of the Hearing Clerk, Room 112A of the U.S. Department of Agriculture, Washington, D.C. 20250, where it is available for review during the normal office hours at 9 a.m. to 5:30 p.m., Mondays through Fridays, excepting holidays.

The proposed amendments are as follows:

A. The following definitions would be added in § 301.1 in "Part 301—Definitions" of the regulations.

§ 301.1 Definitions.

* * * * *

(dd) *Poultry.* Any live or slaughtered domesticated birds (such as chickens, turkeys, ducks, geese, or guineas).

(ee) *Poultry product.* Any poultry carcass or part thereof or any poultry food product.

(ff) *Poultry food product.* Any product made wholly or in part from any poultry carcass or part thereof unless such product is exempted by the Administrator from definition as a poultry product.

(gg) *Poultry byproduct.* Any edible part, other than poultry meat, including detached skin and fat, which has been derived from one or more poultry.

(hh) *Chicken.* The meat from chickens and other edible parts of chickens, such as skin and fat not in excess of natural proportions normally associated with whole carcass chickens.

(ii) *Chicken meat.* White and dark meat of chickens in natural proportions.

(jj) *Comminuted chicken from (specified parts).* Very finely chopped, ground, or comminuted deboned chicken tissue from parts of carcasses, free from kidneys and sex glands, and with skin and fat not in excess of natural proportions for the chicken parts specified.

(kk) *Turkey.* The meat from turkeys and other edible parts of turkeys, such as skin and fat not in excess of natural proportions normally associated with whole carcass turkeys.

(ll) *Turkey meat.* White and dark meat of turkeys in natural proportions.

(mm) *Comminuted turkey from (specified parts).* Very finely chopped, ground, or comminuted deboned turkey tissue from parts of carcasses, free from kidneys and sex glands, with skin and fat not in excess of natural proportions for the turkey parts specified.

B. The following provisions would be added to Part 317 of the regulations: "When sausage within §_____ of this subchapter is canned in water or brine the net weight specified on the label shall be the net weight of the sausage placed in the can. When meat broth, meat stock, or barbecue sauce is the packing medium, the sausage component placed in the can shall comprise 80 percent of the total net contents specified on the label."

C. A new section would be added to Part 328 of the regulations to read:

§ 328._____ Frankfurter, wiener, vienna, bologna, garlic bologna, knockwurst, and similar products; ingredients; labeling and preparation.

(a) *Definition.* (1) The general class of sausage that includes frankfurter, wiener, vienna, bologna, garlic bologna, knockwurst, and similar products consists of the semisolid meat food products which are prepared from one or more of the kinds of meat, and one or more of the curing agents, as specified in paragraph (b) of this section and which may contain one or more of the optional ingredients as specified in paragraph (c) of this section. These ingredients are comminuted, thoroughly mixed, emulsified, de-aerated, encased in casings and linked or placed in molds to give typical shape and form, smoked, and cooked to an internal temperature of 148° F. to 163° F. in vats of water, steam cabinets or smokehouses. The sausages are chilled and refrigerated. The casing or surface of the product may be artificially colored but the color shall not penetrate the product. The finished products have a cured appearance. The finished products shall not contain more than 30 percent fat.

(2) Specific definitions:

(i) Frankfurters, franks, or wieners are sausages which comply with the definition in subparagraph (1) of this paragraph and are cylindrical in form with a diameter ranging from about ¾ to 1 inch (19 to 26 mm) and length approximately 4 to 5½ times the diameter. Cocktail frankfurters are similar frankfurters, except that they are very small with diameters up to one-half inch (13 mm) and lengths up to 2 inches (51 mm).

(ii) Vienna is a sausage which complies with the definition in subparagraph (1) of this paragraph and is cylindrical in form with a diameter ranging from one-half to five-eighth inch (13 to 16 mm). This sausage is frequently cut into short lengths and packed in water, broth or brine in cans or jars.

(iii) Bologna is a sausage which complies with the definition in subparagraph (1) of this paragraph and is cylindrical in form with a diameter ranging from about 4 to 5 inches (101 mm to 127 mm), except when encased in natural casings, e.g., beef rounds about 1½ inches (38 mm), beef middles about 2½ inches (64 mm), and beef bungs about 3½ to 4 inches (89 mm to 101 mm) or in artificial casings to simulate shapes characteristic of these natural casings or when encased in a cylindrical shaped artificial casing of small diameter about 2 inches (51 mm) and relatively short length forming a chub-type product weighing about 1 pound. Ring bologna is packed in approximately 1½ inch (38 mm) casings (beef rounds) shaped into a ring.

(iv) Garlic bologna is a sausage which complies with the definition in subparagraph (1) of this paragraph and is similar in shape and form to bologna, except that it has a characterizing garlic flavor.

(v) Knockwurst is a sausage which complies with the definition in subparagraph (1) of this paragraph and is in a cylindrical form approximately 1½ inches (38 mm) in diameter and 3 to 4 inches (76 mm to 101 mm) in length.

(b) *Required ingredients.* The required ingredients for the kinds of sausage defined in paragraph (a) of this section are:

(1) One or more of the following meats:

(i) Beef, which may include beef specified in paragraph (c)(6) of this section.

(ii) Pork, which may include pork specified in paragraph (c)(3), (4), (5), or (6) of this section.

(iii) Veal.

(iv) Lamb or mutton.

(v) Goat.

(2) One or more of the following curing agents used in accordance with § 318.7(b) of this subchapter.

(i) Ascorbic acid.

(ii) Erythorbic acid.

(iii) Glucono delta lactone.

(iv) Sodium ascorbate.

(v) Sodium erythorbate.

(vi) Citric acid or sodium citrate.

(vii) Sodium or potassium nitrate.

(viii) Sodium or potassium nitrite.

(c) *Optional ingredients.* The optional ingredients for the kinds of sausage defined in paragraph (a) of this section are:

(1) Meat byproducts:

(i) Beef and/or veal byproducts: Fat, lips, lungs, spleen, tripe.

(ii) Pork byproducts: Fat, lips, pate, snout, spleen, stomach.

(iii) Lamb and/or mutton byproducts: Fat, lungs, spleen, tripe.

(iv) Goat byproducts: Fat, lungs, spleen, tripe.

(2) Partially defatted pork (beef) fatty tissue in an amount not exceeding 15 percent of the meat and/or meat byproducts ingredients.

(3) Uncooked cured pork which does or does not contain approved phosphates.

(4) Unskinned pork jowls and/or unskinned pork shoulder trimmings free of hair roots, in an amount not exceeding 50 percent of the meat ingredients and ground to the fineness necessary to prevent a change in the character of the sausage.

(5) Bacon in an amount not exceeding 10 percent of the total ingredients, excluding water, in the sausage.

(6) Partially defatted chopped pork and/or beef in an amount not exceeding 15 percent of the meat and/or meat byproducts ingredients.

(7) One or more of the following poultry products and byproducts, which individually or collectively shall not exceed 25 percent of the total ingredients, excluding water, in the sausage:

(i) Chicken.

(ii) Chicken meat.

(iii) Comminuted chicken from (specified parts).

(iv) Turkey.

(v) Turkey meat.

(vi) Comminuted turkey from (specified parts).

(vii) Chicken byproducts: Fat, gizzard, heart, skin.

(viii) Turkey byproducts: Fat, gizzard, heart, skin.

(8) Seasonings: A condimental amount of salt, natural spices, oleoresins, and/or other spice extractives; mustard in an amount not exceeding 1 percent of all the ingredients, excluding water, in the sausage; and/or corn syrup solids, corn syrup, glucose syrup, dextrose, sucrose, natural smoke flavoring and/or artificial smoke flavoring.

(9) One or more of the following binders or extenders, which individually or collectively shall not exceed 3½ percent of the total ingredients in the sausage, except that 2 percent of isolated soy protein shall be deemed to be the equivalent of 3½ percent of any one or more of the other binders.

(i) Dried milk.

(ii) Nonfat dry milk.

(iii) Calcium reduced dried skim milk.

(iv) Cereal.

(v) Vegetable starch.

(vi) Starchy vegetable flour.

(vii) Soy flour.

(viii) Soy protein concentrate.

(ix) Isolated soy protein.

(10) Water and/or ice to facilitate chopping or mixing or to dissolve the curing ingredients, but the sausage shall contain no more than 10 percent of added water. If the sausage is canned in water, brine, meat broth, meat stock or barbecue sauce, the sausage shall comply with this added moisture requirement before canning.

(11) "Rework" from any sausage prepared in compliance with this section.

(d) *Labeling and preparation.* Frankfurter, frank, wiener, vienna, bologna, garlic bologna, and knockwurst sausage and similar products shall comply with labeling requirements as follows:

(1) They shall bear the appropriate product name if any specified in paragraph (a)(2) of this section; otherwise the common or usual name of the product.

(2) If labeled "All Meat," they shall contain, either individually or collectively, beef, pork, veal, mutton, lamb, or goat meat and may contain chicken meat or turkey meat as provided in this section, but shall not contain meat byproducts, poultry byproducts, unskinned pork jowls, or unskinned pork shoulder trimmings, or binders and/or extenders.

(3) If labeled "All (species) Franks," e.g., "All Beef Franks" or "All Pork Franks," they shall contain meat of only the specified species and no added fat, meat byproducts, poultry products, poultry byproducts, binders and/or extenders.

(4) Products containing approved binders and/or extenders as permitted under paragraph (c) of this section shall have such binders and/or extenders reflected in the product name as "Added," e.g., "Frankfurters, Cereal Added."

(5) All products shall be otherwise marked and labeled in accordance with Parts 316 and 317 of this subchapter and prepared in accordance with Part 318 and all other applicable provisions of this subchapter.

Done at Washington, D.C. 20250, this 20th day of December 1968.

R. K. SOMERS,
Deputy Administrator,
Consumer Protection.

[F.R. Doc. 68-15337; Filed, Dec. 24, 1968; 8:45 a.m.]

FEDERAL COMMUNICATIONS COMMISSION

[47 CFR Parts 2, 21, 87]

PUBLIC AIR-GROUND RADIOTELEPHONE SERVICE

Extension of Time for Filing Comments

In the matter of amendment of Parts 2, 21, and 87 of the Commission's rules to establish a public air-ground radiotelephone service, Docket No. 16073; amendment of Part 21 of the Commission's rules governing domestic public radio services (other than maritime mobile) to provide for the assignment of frequencies in the 450-460 Mc/s band to control stations in the domestic public land mobile and point-to-point microwave radio services, Docket No. 13348.

1. In a third notice of proposed rule making released September 4, 1968 (FCC 68-886), the Commission invited comments on the above captioned matter.

2. The time for filing comments in this proceeding expired December 2, 1968, but replies thereto are not due until January 2, 1969.

3. On December 16, 1968, Interstate Radio Telephone Corp. requested formally that the time for filing such reply comments be extended to March 3, 1969. Interstate states that the additional time is needed to cull the pertinent facts from interested members of the industry and prepare helpful reply comments.

4. We are of the view that good cause has been shown for an extension of time for a period of 30 days for filing reply comments. *Accordingly, it is ordered,* Pursuant to § 0.303(c) of the Commission's Statement of Delegation of Authority, that the instant request is granted, and that the time for filing the reply comments is extended to February 3, 1969.

Adopted: December 19, 1968.

Released: December 20, 1968.

FEDERAL COMMUNICATIONS COMMISSION,
[SEAL] BERNARD STRASSBURG,
Chief,
Common Carrier Bureau.

[F.R. Doc. 68-15339; Filed, Dec. 24, 1968; 8:45 a.m.]

SECURITIES AND EXCHANGE COMMISSION

[17 CFR Part 240]

[Release No. 34-8467]

STOCKHOLDER INFORMATION STATEMENT; CORPORATE ACTIONS ON WRITTEN AUTHORIZATION OF STOCKHOLDERS

Notice of Proposed Rule Making

Notice is hereby given that the Securities and Exchange Commission (pursuant to the authority contained in the Securities Exchange Act of 1934, particularly sections 14(c) and 23(a) thereof, 48 Stat. 895 and 501, as amended; 15 U.S.C. 78n and 78w), has under consideration a proposed amendment to Rule 14c-2 (17 CFR 240.14(c)-2) of Regulation 14C (17 CFR 240.14(c)-1 et seq.) under the Securities Exchange Act of 1934. Regulation 14C implements section 14(c) of the Act which requires that issuers registered pursuant to section 12 of the Act shall transmit to security holders from whom proxies are not solicited information comparable to that which would be furnished in proxy material if proxies were solicited as prescribed by the rules and regulations of the Commission under section 14(a) of the Act.

Rule 14c-2 as presently in effect requires the transmission of such information only where action is to be taken at an annual or other meeting of the holders of a class of registered securities. It is proposed to amend the rule so that it would apply, not only where action is to be taken at a meeting of security holders, but also where corporate action is to be taken with the written authorization or consent of the holders of a class of registered securities.

Recent changes in the corporate codes of certain States (notably Delaware and Pennsylvania) permit the taking of certain corporate action, which would normally be voted upon at a meeting of security holders, by securing the written authorization or consent of the requisite percentage of the holders of securities of the class entitled to vote. This has made it necessary to amend Rule 14c-2 to require the furnishing of an information statement to all security holders from whom the authorization or consent is not to be solicited to the same extent as if the matter were to be acted upon at a formal meeting of security holders. In the absence of such an amendment important corporate action can be taken under the above-mentioned statutory provisions by a relatively few large stockholders without the prior knowledge or consent of the other stockholders.

The text of § 240.14(c)-2 of Chapter II of Title 17 of the Code of Federal Regulations as proposed to be amended is as follows:

§ 240.14c-2 Distribution of information statement.

(a) In connection with every annual or other meeting of the holders of a class of securities registered pursuant to section 12 of the Act, and in connection with the taking of corporate action with the written authorization or consent of the holders of a class of securities so registered, the issuer of such securities shall transmit a written information statement containing the information specified in Schedule 14C (§ 240.14c-1 et seq.) to every such security holder who is entitled to vote or give an authorization or consent in regard to any matter to be acted upon and from whom a proxy, authorization or consent is not solicited on behalf of the management of the issuer pursuant to section 14(a) of the Act: *Provided,* That in the case of a class of securities in unregistered or bearer form, such statement need be transmitted only to those security holders whose names are known to the issuer.

(b) The information statement shall be sent or given at least 20 days prior to the meeting date or, in the case of corporate action taken with the written authorization or consent of security holders, at least 20 days prior to the earliest date on which the corporate action may be taken.

All interested persons are invited to submit their views and comments on the proposed amendment, in writing, to the Securities and Exchange Commission, Washington, D.C. 20549, on or before January 15, 1969. Except where it is requested that such communication not be disclosed, they will be considered available for public inspection.

By the Commission, December 13, 1968.

[SEAL] ORVAL L. DUBOIS,
Secretary.

[F.R. Doc. 68-15335; Filed, Dec. 24, 1968; 8:45 a.m.]

FEDERAL HOME LOAN BANK BOARD

[12 CFR Part 563]

[22,410]

FEDERAL SAVINGS AND LOAN INSURANCE CORPORATION

Reports and Bond Coverage; Correction

DECEMBER 19, 1968.

The proposed amendments relating to Reports and Bond Coverage published in the FEDERAL REGISTER of December 18, 1968 (33 F.R. 18711), as F.R. Doc. 68–15056 are corrected by changing the table in paragraph (b) of § 563.19, to read as follows:

§ 563.19 Bonds for directors, officers, employees, and agents; form of and amount of bonds.

* * * * *

(b) * * *

Bond base	*Permissible deduction*
Under $1,000,000	$500
$1,000,001 to $10,000,000	1,000
$10,000,001 to $50,000,000	1,500
$50,000,001 to $100,000,000	2,500
$100,000,001 to $150,000,000	5,000
$150,000,001 to $200,000,000	7,500
$200,000,001 and over	10,000

* * * * *

By the Federal Home Loan Bank Board.

[SEAL] GRENVILLE L. MILLARD, Jr.,
Assistant Secretary.

[F.R. Doc. 68–15343; Filed, Dec. 24, 1968; 8:45 a.m.]

Notices

DEPARTMENT OF THE INTERIOR

Bureau of Indian Affairs

[Bureau Order 551, Amdt. 123]

AREA DIRECTORS

Delegation of Authority Regarding Forestry Matters

DECEMBER 18, 1968.

Paragraph (b) of section 230 of Bureau Order 551, an order by which the Commissioner of Indian Affairs delegates authority to Bureau Area Directors, as amended, is further amended by the revision of subparagraph (3). The revision will confer upon the Area Directors authority to approve exceptions, in special circumstances, to the requirement of sole beneficial interest in an allotment before the Special Allotment Timber Cutting Permit can be used for cutting and selling of designated timber from an allotment.

The revised subsection reads as follows:

SEC. 230. *Forest management.* * * *

(b) The authority granted in paragraph (a) of this section shall not include authority to:

* * * * *

(3) Approve forms of contracts and permits to be used in the sale or free-use cutting of timber, pursuant to 25 CFR 141.12 and 141.19, or essential departures from the fundamental requirements of such forms; except that in special circumstances the Area Director may approve exceptions to the requirement of sole beneficial interest in an allotment before the Special Allotment Timber Cutting Permit can be used (33 F.R. 16339, Nov. 7, 1968).

ROBERT L. BENNETT,
Commissioner.

[F.R. Doc. 68-15334; Filed, Dec. 24, 1968; 8:45 a.m.]

DEPARTMENT OF AGRICULTURE

Commodity Credit Corporation

GRAINS AND SIMILARLY HANDLED COMMODITIES

Notice of Maturity of Loans Made Under 1965 Crop Tung Oil Warehouse-Stored Loan Program

Notice is hereby given that, pursuant to the General Regulations Governing Price Support for 1964 and Subsequent Crops of Grain and Similarly Handled Commodities (29 F.R. 2686), as amended, and § 1421.3682 of the 1965 Crop Tung Oil Warehouse-Stored Loan Program Supplement (30 F.R. 12835), loans made by the Commodity Credit Corporation (hereinafter called "CCC") on 1965 crop warehouse-stored tung oil mature and are due and payable on December 31, 1968. Title to the loan collateral tung oil shall, as of the close of business on December 31, 1968, immediately vest in CCC without a sale thereof, and CCC shall have no obligation to pay for any market value which the loan collateral tung oil may have in excess of the loan indebtedness.

This notice applies to all warehouse-stored 1965 crop tung oil which was pledged to CCC as security for price support loans and which was placed in a loan pool by CCC.

(Secs. 4, 5, 62 Stat. 1070, as amended, 1072; 15 U.S.C. 714 b and c; secs. 201, 401, 405, 63 Stat. 1052, as amended, 1054, as amended; 7 U.S.C. 1446, 1421, and 1425)

Signed at Washington, D.C., on December 19, 1968.

H. D. GODFREY,
Executive Vice President,
Commodity Credit Corporation.

[F.R. Doc. 68-15359; Filed, Dec. 24, 1968; 8:47 a.m.]

Office of the Secretary

MISSISSIPPI

Designation of Areas for Emergency Loans

For the purpose of making emergency loans pursuant to section 321 of the Consolidated Farmers Home Administration Act of 1961 (7 U.S.C. 1961), it has been determined that in the hereinafter-named counties in the State of Mississippi, natural disasters have caused a need for agricultural credit not readily available from commercial banks, cooperative lending agencies, or other responsible sources.

MISSISSIPPI

Alcorn.	Lawrence.
De Soto.	Marshall.
Lafayette.	Tippah.

Pursuant to the authority set forth above, emergency loans will not be made in the above-named counties after June 30, 1969, except to applicants who previously received emergency or special livestock loan assistance and who can qualify under established policies and procedures.

Done at Washington, D.C., this 20th day of December 1968.

ORVILLE L. FREEMAN,
Secretary.

[F.R. Doc. 68-15360; Filed, Dec. 24, 1968; 8:47 a.m.]

DEPARTMENT OF COMMERCE

Office of the Secretary

[Dept. Order 90-B]

NATIONAL BUREAU OF STANDARDS

Organization and Functions

This material supersedes the material appearing at 33 F.R. 7770 of May 28, 1968, and 33 F.R. 12262 of August 30, 1968.

SECTION 1. *Purpose.* The purpose of this order is to prescribe the organization and assignment of functions within the National Bureau of Standards.

SEC. 2. *Organization.* The organization structure and line of authority of the National Bureau of Standards shall be as depicted in the attached organization chart.

SEC. 3. *Office of the Director.* .01 The Director determines the policies of the Bureau and directs the development and execution of its programs.

.02 The Deputy Director assists the Director in the direction of the Bureau, with particular regard to planning and internal coordination of its programs, and performs the functions of the Director in the latter's absence.

SEC. 4. *Staff units reporting to the Director.* .01 The Office of Academic Liaison serves as the focal point for the Bureau's cooperation with the academic institutions, and serves as liaison office for cooperative research activities between the Bureau and other Government agencies.

.02 The Special Assistant for Program Planning assists the Director in developing guidelines for Bureau programs and in reviewing plans submitted by Bureau program managers.

.03 The Legal Advisor provides necessary legal advice and assistance, subject to the technical supervision of the Office of the General Counsel.

SEC. 5. *Staff and technical support units reporting to the Deputy Director.* .01 The Office of Industrial Services examines the needs for joint industry-NBS research activities; recommends how NBS research results may best be transmitted for utilization in industry and commerce; promotes cooperatives research by industry for the solution of its technical problems; and develops the Research Associate Program.

.02 The Office of Engineering Standards Liaison provides liaison between NBS and engineering standards bodies, both domestic and international; evaluates effectiveness of NBS engineering standards activities; and develops recommendations for engineering standards policy and legislation.

.03 The Instrument Shops Division designs, constructs, and repairs precision scientific instruments and auxiliary equipment.

.04 The Measurement Engineering Division serves the Bureau in an engineering consulting capacity in measurement technology; and provides technical advice and apparatus development supported by appropriate research, especially in electronics, and in the combination of electronics with mechanical, thermal, and optical techniques.

SEC. 6. *Office of the Associate Director for Administration.* .01 The Associate Director for Administration is the principal assistant and adviser to the Director on management matters and is responsible for the conduct of administrative management functions, including the management of NBS buildings, plants, and nonscientific facilities. He carries out these responsibilities primarily through the organization units specified below, which are under his direction.

.02 The Accounting Division administers the official system of central fiscal records, payments and reports, and provides staff assistance on accounting and related matters.

.03 The Administrative Services Division has responsibility for security, safety emergency planning, and civil defense activities; provides mail, messenger, communications, duplicating, and related office services; manages use of auditorium and conference rooms; and operates an NBS records holding area.

.04 The Budget Division provides advice and assistance to line management in the preparation, review, presentation, and management of the Bureau's budget, encompassing its total financial resources.

.05 The Management and Organization Division provides consultative services to line management in organization, procedures, and management practices; develops administrative information systems; maintains the directives system; conducts a records management program; and performs reports and forms management functions.

.06 The Personnel Division advises on personnel policy and utilization, and administers recruitment, placement, classification, employee development and employee relations activities, and assists operating officials on these and other aspects of personnel management.

.07 The Plant Division maintains the physical plant at Gaithersburg, Md., and performs staff work in planning and providing grounds, buildings, and improvements at other Bureau locations.

.08 The Supply Division performs or facilitates the procurement and distribution of material, keeps records and promotes effective utilization of property, acts as the contracting office for all research, construction, supply and lease contracts entered into by the Bureau, and administers communication services.

SEC. 7. *Office of the Associate Director for Information Programs.* .01 The Office of the Associate Director for Information Programs promotes optimum dissemination and accessibility of scientific information generated within NBS and other agencies of the Federal Government; promotes the development of the National Standard Reference Data System and a system of information analysis centers dealing with the broader aspects of the National Measurement System; provides appropriate services to ensure that the NBS staff has optimum acessibility to the scientific information of the world; and directs public information activities of the Bureau.

.02 The Office of Standard Reference Data administers the National Standard Reference Data System which provides critically evaluated data in the physical sciences on a national basis. This requires arrangement for the continuing systematic review of the national and international scientific literature in the physical sciences, the evaluation of the data it contains, the stimulation of research needed to fill important gaps in the data, and the compilation and dissemination of evaluated data through a variety of publication and reference services tailored to user needs in science and industry.

.03 The Clearinghouse for Federal Scientific and Technical Information provides a single point of contact in the Federal Government through which current research efforts and the results of Government-sponsored research in science and technology are made available to industry, commerce, and the general public; and provides for a central service for the translation of foreign and technical documents.

.04 The Office of Technical Information and Publications fosters the outward communication of the Bureau's scientific findings and related technical data to science and industry through reports, articles, conferences and meetings, films, correspondence and other appropriate mechanisms; and assists in the preparation, scheduling, printing and distribution of Bureau publications.

.05 The Library Division furnishes diversified information services to the staff of the Bureau, including conventional library services, bibliographic, reference, and translation services; and serves as a reference and distribution center for Congressional legislative materials and issuances of other agencies.

.06 The Office of Public Information conducts the public information activities of the Bureau, including coordination of relations with the general press, and policy guidance for inquiry service for the general public.

.07 The Office of International Relations serves as the focal point for Bureau activities in the area of international scientific exchanges.

SEC. 8. *Center for Radiation Research.* .01 The Center for Radiation Research constitutes a prime resource within the Bureau for the application of radiation, not only to Bureau mission problems, but also to those of other agencies and other institutions. The resulting multipurpose and collaborative type functions reinforce the capability of the Center for response to Bureau mission problems.

.02 The Director directs the development, execution, and evaluation of the programs of the Center. The Deputy Director assists in the direction of the Center and performs the functions of the Director in the absence of the latter.

.03 The organizational units of the Center for Radiation Research are as follows:

Reactor Radiation Division.
Linac Radiation Division.
Nuclear Radiation Division.
Applied Radiation Division.

Each of these Divisions engages in research, measurement, and application of radiation to the solution of Bureau and other institutional problems, primarily through collaboration.

SEC. 9. *Center for Computer Sciences and Technology.* .01 The Center for Computer Sciences and Technology conducts research and provides technical services designed to aid Government agencies in improving cost effectiveness in the conduct of their programs through the selection, acquisition, and effective utilization of automatic data processing equipment (Public Law 89-306); and serves as the principal focus within the Executive Branch for the development of Federal standards for automatic data processing equipment, techniques, and computer languages.

.02 The Director directs the development, execution, and evaluation of the programs of the Center.

.03 The functions of the organizational units of the Center are as follows:

a. The Office of Information Processing Standards provides leadership and Coordination for Government efforts in the development of information processing standards at the Federal, national, and international levels.

b. The Office of Computer Information functions as a specialized information center for computer sciences and technology.

c. The Computer Services Division provides computing and data conversion services to NBS and other agencies on a reimbursable basis; and provides supporting problem analysis and computer programing as required.

d. The Systems Development Division conducts research in information sciences and computer programing; develops advanced concepts for the design and implementation of data processing systems; and provides consultative services to other agencies in software aspects of the design and implementation of data processing systems.

e. The Information Processing Technology Division conducts research and development in selected areas of information processing technology and related disciplines to improve methodologies and to match developing needs with new or improved techniques and tools.

SEC. 10. *Institute for Basic Standards.* .01 The Institute for Basic Standards provides the central basis within the United States of a complete and consistent system of physical measurement;

coordinates that system with measurement systems of other nations; and furnishes essential services leading to accurate and uniform physical measurements throughout the Nation's scientific community, industry, and commerce.

.02 The Office of the Director.

a. The Director directs the development, execution, and evaluation of the programs of the Institute.

b. The Deputy Director assists in the direction of the institute and performs the functions of the Director in the latter's absence.

c. The Deputy Director, Institute for Basic Standards/Boulder, assists in the direction of the Institute's programs at Boulder and reports to the Associate Director for Administration through the Director, IBS, in supervising the administrative support units at Boulder.

d. The administrative support units reporting to the Deputy Director, Institute for Basic Standards/Boulder, are as follows:

Administrative Services Division.
Instrument Shops Division.
Plant Division.

These Divisions provide administrative guidance, technical and public information services, physical facilities, management planning, financial management, and related technical and administrative services for the NBS organization at Boulder, Colo. The administrative support units are also responsible for servicing, as needed, Environmental Science Services Administration units at Boulder, Colo., and appropriate fields stations of the Boulder organizations of NBS and ESSA.

.03 The Office of Measurement Services coordinates the Bureau's measurement services program, including development and dissemination of uniform policies on Bureau calibration practices.

.04 The other organization units of the Institute for Basic Standards are as follows:

LOCATED AT BUREAU HEADQUARTERS

Applied Mathematics Division.
Electricity Division.
Mechanics Division.
Heat Division.
Atomic and Molecular Physics Division.
Metrology Division.

LOCATED AT BOULDER, COLO.

Cryogenics Division.
Laboratory Astrophysics Division.
Radio Standards Physics Division.
Radio Standards Engineering Division.
Time and Frequency Division.

a. Each division except the Applied Mathematics Division engages in such of the following functions as are appropriate to the subject matter field of the division:

1. Develop and maintain the national standards for physical measurement, develop appropriate multiples and submultiples of prototype standards, and develop transfer standards and standard instruments;

2. Determine important fundamental physical constants which may serve as reference standards, and analyze the self-consistencies of their measured values;

3. Conduct experimental and theoretical studies of fundamental physical phenomena of interest to scientists and engineers with the general objective of improving or creating new measurement methods and standards to meet existing or anticipated needs;

4. Conduct general research and development on basic measurement techniques and instrumentation, including research on the interaction of basic measuring processes on the properties of matter and physical and chemical processes;

5. Calibrate instruments in terms of the national standards, and provide other measurement services to promote accuracy and uniformity of physical measurements;

6. Correlate with other nations the national standards and definitions of the units of measurement; and

7. Provide advisory services to Government, science, and industry on basic measurement problems.

b. The Applied Mathematics Division conducts research in various fields of mathematics important to physical and engineering sciences, automatic data processing, and operations research, with emphasis on statistical, numerical and combinatorial analysis and mathematical physics; provides consultative services to the Bureau and other Federal agencies; and develops and advises on the use of mathematical tools, in checking mathematical tables, handbooks, manuals, mathematical models, and computational methods.

SEC. 11. *Institute for Materials Research.* .01 The Institute for Materials Research conducts materials research leading to improved methods of measurement, standards, and data on the properties of materials needed by industry, commerce, educational institutions, and Government; provides advisory and research services to other Government agencies; and develops, produces, and distributes standard reference materials.

.02 The Director directs the development, execution and evaluation of the programs of the Institute. The Deputy Director assists in the direction of the Institute and performs the functions of the Director in the latter's absence.

.03 The Office of Standard Reference Materials evaluates the requirements of science and industry for carefully characterized reference materials which provide a basis for calibration of instruments and equipment, comparison of measurements and materials, and aid in the control of production processes in industry; and stimulates the Bureau's efforts to develop methods for production of needed reference materials and directs their production and distribution.

.04 The other organization units of the Institute for Materials Research are as follows:

Analytical Chemistry Division.
Polymers Division.
Metallurgy Division.
Inorganic Materials Division.
Physical Chemistry Division.

Each division engages in such of the following functions as are appropriate to the subject matter field of the division:

a. Conduct research on the chemical and physical constants, constitution, structure, and properties of matter and materials;

b. Devise and improve methods for the preparation, purification, analysis, and characterization of materials;

c. Investigate fundamental chemical and physical phenomena related to materials of importance to science and industry, such as fatigue and fracture, crystal growth and imperfections, stress, corrosion, etc.;

d. Develop techniques for measurement of the properties of materials under carefully controlled conditions including extremes of high and low temperature and pressure and exposure to different types of radiation and environmental conditions;

e. Assist in the development of standard methods of measurement and equipment for evaluating the properties of materials;

f. Conduct research and development methodology leading to the production of standard reference materials, and produce these materials;

g. Provide advisory services to Government, industry, universities, and the scientific and technological community on problems related to materials;

h. Assist industry and national standards organizations in the development and establishment of standards; and

i. Cooperate with and assist national and international organizations engaged in the development of international standards.

SEC. 12. *Institute for Applied Technology.* .01 The Institute for Applied Technology provides technical services to promote the use of available technology and to facilitate technological innovation in industry and Government. The Institute also maintains cooperation with public and private organizations leading to the development of technological standards (including mandatory safety standards), codes, and methods of test; and provides technical advice and services to Government agencies upon request.

.02 The Director directs the development, execution, and evaluation of the programs of the Institute. The Deputy Director assists in the direction of the Institute and performs the functions of the Director in the latter's absence.

.03 The Manager, Engineering Standards, plans and administers the programs of the Office of Weights and Measures and the Office of Engineering Standards Services and participates in the formulation of policy with respect to engineering standards activities.

a. The Office of Weights and Measures provides technical assistance to the States with regard to model laws and technical regulations, and to the States, business, and industry in the areas of testing, specifications, and tolerances for weighing and measuring devices, the design, construction, and use of standards

of weight and measure of associated instruments, and the training of State and local weights and measures officials. The office includes the Master Railway Track Scale Depot, Clearing, Ill.

b. The Office of Engineering Standards Services cooperates with and assists producers, distributors, users and consumers of products, and agencies of the Federal, State, and local governments in the development of standards for products; develops safety standards required by statute; conducts appropriate sampling, testing and evaluation; and provides information services with respect to engineering standards.

.04 The Office of Invention and Innovation analyzes the effect of Federal laws and policies (e.g., tax, antitrust, and regulatory policies) on the national climate for invention and innovation; undertakes studies in related areas with other agencies; and assists and encourages inventors through inventors' services and programs, including cooperative activities with the States.

.05 The Office of Vehicle Systems Research, as mutually agreed upon by the Bureau and the National Highway Safety Bureau, performs for the latter, or under contract or grant obtains the performance of, the research, development, testing and evaluation necessary to provide the technical basis for Federal safety standards for motor vehicles and motor equipment; develops methods of testing to determine compliance with these standards; and performs other related services.

.06 The Building Research Division develops criteria for performance standards of building products, structures, and systems; and cooperates with industry, other Government agencies, and the professional associations of the industry in the development of standards and measurement.

.07 The Electronic Technology Division develops criteria for the evaluation of products and services in the general field of electronic instrumentation; cooperates with appropriate public and private organizations in identifying needs for improved technology in this field; and cooperates in the development of standards, codes and specifications. Further, it applies the technology of electronic instrumentation to the development of methods of practical measurement of physical quantities and properties of materials.

.08 The Technical Analysis Division conducts benefit-cost analyses and other basic studies required in planning and carrying out programs of the Institute. This includes the development simulations of industrial systems and of Government interactions with industry, and the conduct of studies of alternative Institute programs. On request, the division provides similar analytic services for other programs of the Department of Commerce, in particular those of the science-based bureaus, and, as appropriate, for other agencies of the Executive Branch.

.09 The Product Evaluation Division develops measurement techniques and test methods for evaluating the performance of technological materials and for determining their properties; establishes and maintains standard reference materials for rubber and paper; cooperates in standardizing activities with Government agencies and with national and international organizations; and conducts for other Government agencies research and evaluations on technological materials of specific interest to them.

Effective date: December 11, 1968.

DAVID R. BALDWIN,
Assistant Secretary for Administration.

[F.R. Doc. 68-15332; Filed, Dec. 24, 1968; 8:45 a.m.]

ATOMIC ENERGY COMMISSION

[Docket No. 115-2]

CITY OF PIQUA

Notice of Issuance of Order Regarding Piqua Nuclear Power Facility

The Atomic Energy Commission has issued an order, as set forth below, authorizing the city of Piqua to complete the dismantling of the Piqua Nuclear Power Facility, located in Piqua, Ohio, and covered by AEC Operating Authorization No. DPRA-2, as amended. An order authorizing partial dismantling of the facility was issued by the Commission on August 7, 1968.

Copies of the application dated September 3, 1968, and the related staff safety evaluation are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. A copy of the staff safety evaluation may be obtained upon request addressed to the Atomic Energy Commission, Washington, D.C. 20545, Attention: Director, Division of Reactor Licensing.

Dated at Bethesda, Md., this 16th day of December 1968.

For the Atomic Energy Commission.

PETER A. MORRIS,
Director,
Division of Reactor Licensing.

ORDER AUTHORIZING DISMANTLING OF FACILITY

By application dated September 3, 1968 (the application), the city of Piqua (COP) requested authorization to complete the dismantling of the shut down Piqua Nuclear Power Facility (PNPF).

Operation of the PNPF has been discontinued and it has been deactivated by removing all the fuel and the organic coolant from the reactor. An order authorizing partial dismantling of the facility was issued by the Commission on August 7, 1968.

We have reviewed the application in accordance with the provisions of the Commission's regulations and have found that the dismantling and disposal will be accomplished in accordance with the regulations in Title 10, Chapter 1, CFR, and will not be inimical to the common defense and security or to the health and safety of the public.

Accordingly, it is hereby ordered that COP may proceed, in accordance with the terms and conditions of the application, with the dismantling of the PNPF covered by Operating Authorization No. DPRA-2, as amended.

After the completion of the dismantling and decontamination of the facility, the submission of a report describing the condition of the remaining structures, and an inspection by representatives of the Commission, consideration will be given to whether a further order should be issued terminating Operating Authorization No. DPRA-2.

Date of issuance: December 16, 1968.

For the Atomic Energy Commission.

PETER A. MORRIS,
Director,
Division of Reactor Licensing.

[F.R. Doc. 68-15330; Filed, Dec. 24, 1968; 8:45 a.m.]

[Docket No. 50-294]

MICHIGAN STATE UNIVERSITY

Notice of Extension of Completion Date

The Commission has issued an order extending to June 30, 1969, the latest completion date specified in Construction Permit No. CPRR-103 for construction of the TRIGA Mark I type nuclear reactor being constructed on the Michigan State University's campus at East Lansing, Mich.

Copies of the order and of the application dated November 20, 1968, by the Michigan State University are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C.

Dated at Bethesda, Md., this 16th day of December 1968.

For the Atomic Energy Commission.

PETER A. MORRIS,
Director,
Division of Reactor Licensing.

[F.R. Doc. 68-15331; Filed, Dec. 24, 1968; 8:45 a.m.]

FEDERAL HOME LOAN BANK BOARD

[No. 22,436]

DIRECTOR OR DEPUTY DIRECTOR OF OFFICE OF EXAMINATIONS AND SUPERVISION

Delegation of Authority

DECEMBER 19, 1968.

Resolved that the Federal Home Loan Bank Board, upon the basis of consideration by it of the advisability of stating and publishing a final delegation of authority with respect to § 584.6 (12 CFR 584.6) of the Regulations for Savings and Loan Holding Companies, does hereby adopt the following:

The Director of the Office of Examinations and Supervision, or the Deputy Director, is hereby delegated authority to approve, pursuant to section 408(g) of the National Housing Act, as amended, and § 584.6 of the Regulations for Savings and Loan Holding Companies, applications for the incurrence of debt by

any savings and loan holding company or any subsidiary thereof which is not an insured institution: *Provided*, That the debt for which approval is sought is in substitution for a debt whose incurrence was previously approved by the Federal Savings and Loan Insurance Corporation: *And provided further*, That the amount, rate of interest and other terms of the debt for which approval is sought, are not more onerous than those previously approved by the Corporation.

Resolved further that the Secretary to the Board is directed to transmit the foregoing to the Office of the Federal Register for publication.

By the Federal Home Loan Bank Board.

[SEAL] JACK CARTER,
Secretary.

[F.R. Doc. 68-15344; Filed, Dec. 24, 1968; 8:46 a.m.]

FEDERAL MARITIME COMMISSION

ATLANTIC & GULF AMERICAN-FLAG BERTH OPERATORS

Notice of Agreement Filed for Approval

Notice is hereby given that the following agreement has been filed with the Commission for approval pursuant to section 15 of the Shipping Act, 1916, as amended (39 Stat. 733, 75 Stat. 763, 46 U.S.C. 814).

Interested parties may inspect and obtain a copy of the agreement at the Washington office of the Federal Maritime Commission, 1405 I Street NW., Room 1202; or may inspect agreement at the offices of the District Managers, New York, N.Y., New Orleans, La., and San Francisco, Calif. Comments with reference to an agreement including a request for hearing, if desired, may be submitted to the Secretary, Federal Maritime Commission, Washington, D.C. 20573, within 20 days after publication of this notice in the FEDERAL REGISTER. A copy of any such statement should also be forwarded to the party filing the agreement (as indicated hereinafter) and the comments should indicate that this has been done.

Notice of agreement filed for approval by:

Mr. R. L. Hansen, Secretary, Atlantic & Gulf American-Flag Berth Operators, Post Office Box 130, Hawley, Pa. 18428.

Agreement No. 9355-4, between the members of the Atlantic & Gulf American-Flag Berth Operators, amends Article 3(b) of the basic agreement which presently provides that a record of the vote of each individual member by name on each question voted on, shall be retained by the Secretary for at least 2 years, to read: "A record of the vote on each question voted on shall be retained by the Secretary for at least 2 years."

Dated: December 20, 1968.

By order of the Federal Maritime Commission.

FRANCIS C. HURNEY,
Assistant Secretary.

[F.R. Doc. 68-15362; Filed, Dec. 24, 1968; 8:47 a.m.]

EMPRESA HONDURENA DE VAPORES, S.A., AND UNITED FRUIT CO.

Notice of Agreement Filed for Approval

Notice is hereby given that the following agreement has been filed with the Commission for approval pursuant to section 15 of the Shipping Act, 1916, as amended (39 Stat. 733, 75 Stat. 763, 46 U.S.C. 814).

Interested parties may inspect and obtain a copy of the agreement at the Washington office of the Federal Maritime Commission, 1405 I Street NW., Room 1202; or may inspect agreement at the offices of the District Managers, New York, N.Y., New Orleans, La., and San Francisco, Calif. Comments with reference to an agreement including a request for hearing, if desired, may be submitted to the Secretary, Federal Maritime Commission, Washington, D.C. 20573, within 20 days after publication of this notice in the FEDERAL REGISTER. A copy of any such statement should also be forwarded to the party filing the agreement (as indicated hereinafter) and the comments should indicate that this has been done.

Notice of agreement filed for approval by:

Alan F. Wohlstetter, Esquire, Denning & Wohlstetter, 1 Farragut Square South, Washington, D.C. 20006.

Agreement No. 9763, between Empresa Hondurena de Vapores, S.A. (Empresa) and United Fruit Co. (United Fruit) provides that United Fruit will furnish agency services to Empresa for the purpose of assisting Empresa in establishing steamship services between ports in the United States, Central America, the West Indies, Panama, and other foreign ports.

United Fruit will perform agency services relative to the transportation of cargo and passengers by Empresa such as scheduling of vessels, arranging for all shoreside operations, solicitation of cargo and passengers, billing and other associated paperwork, collection of transportation charges, processing and settling claims, bunkering and husbanding of vessels, establishing, publishing and filing of tariffs as required, representing Empresa in all conference matters, appointing subagents and solicitation agents at foreign ports and assisting in the chartering and purchase of vessels for Empresa, all in accordance with the terms and conditions set forth in the Agreement.

Dated: December 20, 1968.

By order of the Federal Maritime Commission.

FRANCIS C. HURNEY,
Assistant Secretary.

[F.R. Doc. 68-15363; Filed, Dec. 24, 1968; 8:47 a.m.]

[Independent Ocean Freight Forwarder License No. 404]

SEIFERT STEAMSHIP AGENCY

Revocation of License

By letter dated December 10, 1968, the attorneys for the Administrator of the Estate of Walter H. Seifert, deceased, and Conservator of the Estate of Carrie J. Seifert, Incompetent, advised the Commission that the licensee, Mrs. Carrie J. Seifert doing business as Seifert Steamship Agency, F.M.C. License No. 404, 327 South La Salle Street, Chicago, Ill. 60604, is no longer engaged in the ocean freight forwarding business.

By virtue of the authority vested in me by the Federal Maritime Commission as set forth in Manual of Orders, Commission Order 201.1, § 6.03:

It is ordered, That the Independent Ocean Freight Forwarder License No. 404 of Mrs. Carrie J. Seifert doing business as Seifert Steamship Agency, be and is hereby revoked effective December 16, 1968.

It is further ordered, That this cancellation is without prejudice to reapplication at a later date.

It is further ordered, That Independent Ocean Freight Forwarder License No. 404 be returned to the Commission for cancellation.

It is further ordered, That a copy of this order be published in the FEDERAL REGISTER and served upon the licensee.

LEROY F. FULLER,
Director,
Bureau of Domestic Regulation.

[F.R. Doc. 68-15364; Filed, Dec. 24, 1968; 8:47 a.m.]

FEDERAL RESERVE SYSTEM

DEPOSITORS CORP.

Order Approving Application Under Bank Holding Company Act

In the matter of the application of Depositors Corp., Augusta, Maine, for approval of acquisition of at least 51 percent of the voting shares of The First National Bank of Fort Fairfield, Fort Fairfield, Maine.

There has come before the Board of Governors, pursuant to section 3(a)(3) of the Bank Holding Company Act of 1956 (12 U.S.C. 1842(a)(3)) and § 222.3(a) of Federal Reserve Regulation Y (12 CFR 222.3(a)), an application by Depositors Corp., Augusta, Maine, a registered bank holding company, for the Board's prior approval of the acquisition of at least 51 percent of the voting shares

of The First National Bank of Fort Fairfield, Fort Fairfield, Maine.

As required by section 3(b) of the Act, the Board notified the Comptroller of the Currency of receipt of the application and requested his views and recommendation. The Comptroller recommended approval of the application.

Notice of receipt of the application was published in the FEDERAL REGISTER on October 3, 1968 (33 F.R. 14799), providing an opportunity for interested persons to submit comments and views with respect to the proposal. A copy of the application was forwarded to the Department of Justice for its consideration. Time for filing comments and views has expired and all those received have been considered by the Board.

It is hereby ordered, For the reasons set forth in the Board's statement[1] of this date, that said application be and hereby is approved, provided that the acquisition so approved shall not be consummated (a) before the 30th calendar day following the date of this order or (b) later than 3 months after the date of this order unless such period is extended for good cause by the Board or by the Federal Reserve Bank of Boston pursuant to delegated authority.

Dated at Washington, D.C., this 11th day of December 1968.

By order of the Board of Governors.[2]

[SEAL] ROBERT P. FORRESTAL,
Assistant Secretary.

[F.R. Doc. 68-15333; Filed, Dec. 24, 1968; 8:45 a.m.]

INTERSTATE COMMERCE COMMISSION

[Notice 264]

MOTOR CARRIER TRANSFER PROCEEDINGS

DECEMBER 20, 1968.

Synopses of orders entered pursuant to section 212(b) of the Interstate Commerce Act, and rules and regulations prescribed thereunder (49 CFR Part 1132), appear below:

As provided in the Commission's special rules of practice any interested person may file a petition seeking reconsideration of the following numbered proceedings within 20 days from the date of publication of this notice. Pursuant to section 17(8) of the Interstate Commerce Act, the filing of such a petition will postpone the effective date of the order in that proceeding pending its disposition. The matters relied upon by petitioners must be specified in their petitions with particularity.

No. MC-FC-35425. By order of November 29, 1968, the Transfer Board approved the lease for a period of 1 year to Carl Schaefer Jr. Truck Line, Inc., Terre Haute, Ind., of certificate No. MC-78684, issued August 11, 1960, to Wallace Kosiba, Gary, Ind., authorizing the transportation of a wide variety of specified commodities from, to, and between specified points in Indiana and Illinois. W. L. Jordan, 205 Merchants Savings Building, Terre Haute, Ind. 47801; representative for applicants.

No. MC-FC-70811. By order of December 6, 1968, the Transfer Board approved the transfer to Araminta Belle Caldwell, doing business as Caldwell Bus Service, Glen Burnie, Md., of certificate No. MC-109199 (Sub-No. 1), issued October 24, 1952, to Clyde B. Didlake, doing business as Clyde's Charter Bus Service, Glen Burnie, Md., authorizing the transportation of: Passengers and their baggage, restricted to traffic originating at the point and in the territory indicated, in charter operations, from Baltimore, Md., to points in Maryland, the District of Columbia, Virginia, Pennsylvania, and Delaware, and return. S. Harrison Kahn, Suite 733, Investment Building, Washington, D.C. 20005; attorney for applicants.

No. MC-FC-70934. By order of November 29, 1968, the Transfer Board approved the transfer to Edmac Trucking Co., Inc., Fayetteville, N.C., of certificates Nos. MC-110969, MC-110969 (Sub-No. 4), MC-110969 (Sub-No. 6), and MC-110969 (Sub-No. 9), issued July 23, 1954, April 17, 1958, May 13, 1958, and February 10, 1961, respectively, to W. L. Butler, doing business as W. L. Butler Transfer, Elizabethtown, N.C., authorizing the transportation of: Lumber, from Elizabethtown, N.C., and points within 25 miles of Elizabethtown, to points in New Jersey, Pennsylvania, South Carolina, Virginia, and the District of Columbia, and animal and poultry feed, on return; lumber (except veneer and plywood), from Elizabethtown, N.C., and points within 2 miles of Elizabethtown, to points in Delaware and Maryland; lumber, from Hallsboro, N.C., to Knoxville, Tenn., Charles Town, Keyser, and Romney, W. Va.; insecticides and fungicides, from Elizabethtown, N.C., and points within 2 miles of Elizabethtown, to points in South Carolina, Norfolk, Va., and points in Virginia on and south of U.S. Highway 460, and products used in the manufacture of insecticides and fungicides, on return; roofing, from York, Pa., and Baltimore, Md., to Lumberton, N.C., and points in North Carolina within 50 miles of Lumberton; lumber, from Elizabethtown, N.C., and points within 25 miles thereof, to points in Kentucky and Tennessee; lumber (except veneer and plywood), between Elizabethtown, N.C., and points within 25 miles thereof; and boats, from points in North Carolina within 50 miles of Elizabethtown, N.C., including Elizabethtown, to points in New York, New Jersey, Maryland, Pennsylvania, Connecticut, Indiana, Massachusetts, Vermont, Ohio, West Virginia, Virginia, Kentucky, Tennessee, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Florida, and the District of Columbia. *Dual operations* were authorized. A. W. Flynn, Jr., Post Office Box 127, Greensboro, N.C. 27402; attorney for applicants.

[SEAL] H. NEIL GARSON,
Secretary.

[F.R. Doc. 68-15346; Filed, Dec. 24, 1968; 8:46 a.m.]

[Notice 264A]

MOTOR CARRIER TRANSFER PROCEEDINGS

DECEMBER 20, 1968.

Synopses of orders entered pursuant to section 212(b) of the Interstate Commerce Act, and rules and regulations prescribed thereunder (49 CFR Part 279), appear below:

As provided in the Commission's special rules of practice any interested person may file a petition seeking reconsideration of the following numbered proceedings within 20 days from the date of publication of this notice. Pursuant to section 17(8) of the Interstate Commerce Act, the filing of such a petition will postpone the effective date of the order in that proceeding pending its disposition. The matters relied upon by petitioners must be specified in their petitions with particularity.

No. MC-FC-70865. By order of December 11, 1968, the Transfer Board approved the transfer to H. Herschel Omps, doing business as H. H. Omps, Winchester, Va., of a portion of certificate No. MC-114367 (Sub-No. 1), issued November 10, 1955, to Charles Courtney Taylor, doing business as Chas. C. Taylor, Winchester, Va., authorizing the transportation of: Oil, from Baltimore, Md., to Winchester, Va. S. Harrison Kahn, 733 Investment Building, Washington, D.C. 20005; attorney for applicants.

No. MC-FC-70908. By order of December 11, 1968, the Transfer Board approved the transfer to Kessell Transfer & Storage Co., Inc., Altus, Okla., of portion of the certificate No. MC-44678 (Sub-No. 2), issued May 20, 1955, to Edward W. Lynes, doing business as Eureka Transfer & Storage Co., El Dorado, Okla., authorizing the transportation of household goods as defined by the Commission, over irregular routes, between Eureka, Kans., and points within 45 miles of Eureka, on the one hand, and, on the other, points in Arkansas. Earl H. Scudder, Jr., Box 2028, Lincoln, Nebr. 68501; attorney for applicants.

No. MC-FC-70958. By order of December 11, 1968, the Transfer Board approved the transfer to Best Refrigerated Express, Inc., Council Bluffs, Iowa, of the operating rights in certificate No. MC-33516 issued August 23, 1957, to Hubert Zobrist, doing business as Zobrist Trucking Service, Hancock, Iowa, authorizing the transportation of general commodities, with usual exceptions, between Avoca, Iowa, and points within 15 miles thereof, on the one hand, and, on the other, Omaha, Nebr. John E. North, 1414

[1] Filed as part of the original document. Copies available upon request to the Board of Governors of the Federal Reserve System, Washington, D.C. 20551, or to the Federal Reserve Bank of Boston.

[2] Voting for this action: Chairman Martin and Governors Robertson, Mitchell, Daane, Maisel, and Brimmer. Absent and not voting: Governor Sherrill.

First National Bank Building, Omaha, Nebr. 68102; attorney for applicants.

No. MC–FC–70964. By order of December 11, 1968, the Transfer Board approved the transfer to Northeast Kansas Motor & Implement Co., Inc., Hiawatha, Kans., of certificate No. MC–69852, issued October 9, 1964, to Lambert L. Bailey, doing business as Bailey Truck Line, Hiawatha, Kans., authorizing the transportation of: General commodities, except those of unusual value, classes A and B explosives, household goods, as defined by the Commission, commodities requiring special equipment, and those injurious or contaminating to other lading, between White Cloud, Kans., and South St. Joseph, Mo., serving the intermediate and off-route points of St. Joseph, Mo., and those within 10 miles of White Cloud, Kans., from White Cloud over Kansas Highway 7 to Sparks, Kans., thence over U.S. Highway 36 to St. Joseph, Mo., and thence over city streets to South St. Joseph, and return over the same route. Erie W. Francis, Suite 719, 700 Kansas Avenue, Topeka, Kans. 66603; attorney for applicants.

[SEAL] H. NEIL GARSON,
Secretary.

[F.R. Doc. 68–15347; Filed, Dec. 24, 1968; 8:46 a.m.]

[S.O. 1002; Car Distribution Direction 8–A]

BOSTON AND MAINE CORP. ET AL.

Car Distribution

Upon further consideration of Car Distribution Direction No. 8 (Boston and Maine Corp; Penn Central Co.; Chicago and North Western Railway Co.) and good cause appearing therefor:

It is ordered, That:

Car Distribution Direction No. 8 be, and it is hereby vacated.

It is further ordered, That this order shall become effective at 9 a.m., December 19, 1968, and that it shall be served upon the Association of American Railroads, Car Service Division, as agent of all railroads subscribing to the car service and per diem agreement under the terms of that agreement; and that it be filed with the Director, Office of the Federal Register.

Issued at Washington, D.C., December 19, 1968.

INTERSTATE COMMERCE COMMISSION,
[SEAL] R. D. PFAHLER,
Agent.

[F.R. Doc. 68–15348; Filed, Dec. 24, 1968; 8:46 a.m.]

[S.O. 1002; Car Distribution Direction 19–A]

CHESAPEAKE AND OHIO RAILWAY CO. AND CHICAGO AND NORTH WESTERN RAILWAY CO.

Car Distribution

Upon further consideration of Car Distribution Direction No. 19 (The Chesapeake and Ohio Railway Co.; Chicago and North Western Railway Co.) and good cause appearing therefor:

It is ordered, That:

Car Distribution Direction No. 19 be, and it is hereby vacated.

It is further ordered, That this order shall become effective at 9 a.m., December 19, 1968, and that it shall be served upon the Association of American Railroads, Car Service Division, as agent of all railroads subscribing to the car service and per diem agreement under the terms of that agreement; and that it be filed with the Director, Office of the Federal Register.

Issued at Washington, D.C., December 19, 1968.

INTERSTATE COMMERCE COMMISSION,
[SEAL] R. D. PFAHLER,
Agent.

[F.R. Doc. 68–15350; Filed, Dec. 24, 1968; 8:46 a.m.]

[S.O. 1002; Car Distribution Direction 12–A]

KANSAS CITY SOUTHERN RAILWAY CO. AND CHICAGO AND NORTH WESTERN RAILWAY CO.

Car Distribution

Upon further consideration of Car Distribution Direction No. 12 (The Kansas City Southern Railway Co.; Chicago and North Western Railway Co.) and good cause appearing therefor:

It is ordered, That:

Car Distribution Direction No. 12 be, and it is hereby vacated.

It is further ordered, That this order shall become effective at 9 a.m., December 19, 1968, and that it shall be served upon the Association of American Railroads, Car Service Division, as agent of all railroads subscribing to the car service and per diem agreement under the terms of that agreement; and that it be filed with the Director, Office of the Federal Register.

Issued at Washington, D.C., December 19, 1968.

INTERSTATE COMMERCE COMMISSION,
[SEAL] R. D. PFAHLER,
Agent.

[F.R. Doc. 68–15349; Filed, Dec. 24, 1968; 8:46 a.m.]

[S.O. 1002; Car Distribution Direction 22–A]

ST. LOUIS-SAN FRANCISCO RAILWAY CO. AND CHICAGO AND NORTH WESTERN RAILWAY CO.

Car Distribution

Upon further consideration of Car Distribution Direction No. 22 (St. Louis-San Francisco Railway Co.; Chicago and North Western Railway Co.) and good cause appearing therefor:

It is ordered, That:

Car Distribution Direction No. 22 be, and it is hereby vacated.

It is further ordered, That this order shall become effective at 9 a.m., December 19, 1968, and that it shall be served upon the Association of American Railroads, Car Service Division, as agent of all railroads subscribing to the car service and per diem agreement under the terms of that agreement; and that it be filed with the Director, Office of the Federal Register.

Issued at Washington, D.C., December 19, 1968.

INTERSTATE COMMERCE COMMISSION,
[SEAL] R. D. PFAHLER,
Agent.

[F.R. Doc. 68–15351; Filed, Dec. 24, 1968; 8:46 a.m.]

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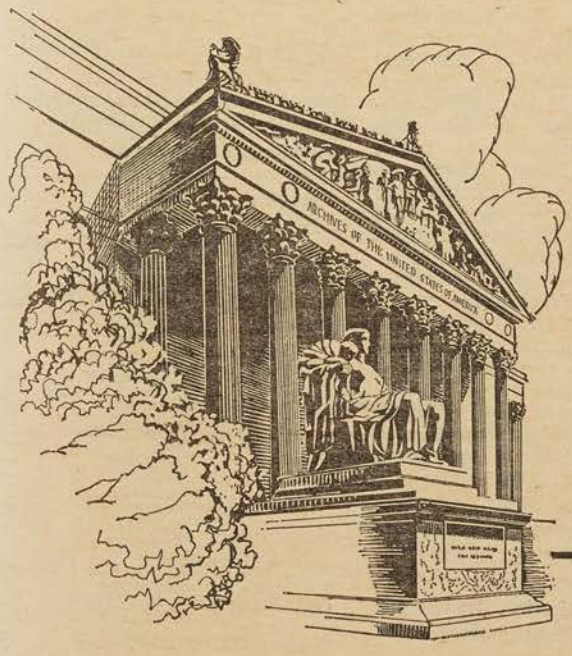
Wednesday, December 25, 1968 • Washington, D.C.

PART II

Department of Transportation

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Reorganization



Title 49—TRANSPORTATION

Subtitle A—Office of the Secretary of Transportation

PART 71—STANDARD TIME ZONE BOUNDARIES

PART 79—MEDALS OF HONOR

Redesignation and Republication

This amendment redesignates and transfers former Parts 239 and 109 from Subtitle B of Title 49 of the Code of Federal Regulations, to Subtitle A as Parts 71 and 79, as set forth below.

Since this amendment merely renumbers existing regulatory material and makes minor nonsubstantive corrections therein, notice and public procedure thereon are unnecessary and good cause exists for making it effective on less than 30 days notice.

Issued in Washington, D.C., on December 18, 1968.

ALAN S. BOYD,
Secretary of Transportation.

PART 71—STANDARD TIME ZONE BOUNDARIES

Sec.

71.1 Limits defined; exceptions authorized for operating purposes only.
71.2 Atlantic zone.
71.3 Eastern zone.
71.4 Boundary line between eastern and central zones.
71.5 Central zone.
71.6 Boundary line between central and mountain zones.
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71.10 Yukon zone.
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71.12 Bering zone.

AUTHORITY: The provisions of this Part 71 issued under secs. 2–7, 80 Stat. 107–109, sec. 6(e)(5), 80 Stat. 937; 15 U.S.C. 260–267, 49 U.S.C. 1655(e)(5).

§ 71.1 Limits defined; exceptions authorized for operating purposes only.

The limits of the first, second, third, fourth, fifth, sixth, seventh, and eighth standard time zones, created by the Standard Time Act and designated as the Atlantic, Eastern, Central, Mountain, Pacific, Yukon, Alaska-Hawaii, and Bering Zones, respectively, are hereby defined as shown in §§ 71.2 through 71.12. Some exceptions are made whereby certain carriers are permitted to carry their standard of time over into the general limits of an adjoining time zone. In such cases the Secretary of Transportation expects that the carriers will, in their published advertisements, their time cards, bulletin boards in stations, and in other like ways show the arrival and departure of their trains with reference to the standard of time herein prescribed for general use in the various communities, although, for operating purposes, permission may be herein granted to maintain the time of a neighboring zone.

§ 71.2 Atlantic zone.

The first zone, designated as the U.S. standard Atlantic time zone, includes all territory of the United States between 52°30′ W. longitude and 67°30′ W. longitude, except that it does not include any part of the State of Maine. In addition, the zone includes that portion of the Commonwealth of Puerto Rico lying west of 67°30′ W. longitude.

§ 71.3 Eastern zone.

The second zone, designated as the U.S. standard Eastern time zone, shall include that portion of continental United States lying east of the line described in § 71.4, with the exceptions and inclusions enumerated therein, and west of the lines described in § 71.2, with the exceptions and inclusions enumerated therein.

§ 71.4 Boundary line between Eastern and Central zones.

(a) *Michigan.* Beginning on the boundary line between the United States and Canada at the point south of Drummond Island where the said boundary line turns in a northeasterly direction through False Detour Channel; thence westerly up Lake Huron through the middle of South Channel and the Straits of Mackinac to and along the north shore of the northernmost island in Charlevoix County; thence southwesterly to and along the west shore of Gull Island; thence by direct line to the western boundary of the State of Michigan at a point in the middle of Lake Michigan opposite the main channel of Green Bay; thence southerly along the western boundary of the State of Michigan to its junction with the southern boundary thereof and the northern boundary of the State of Indiana.

(b) *Indiana.* From the juncture of the western boundary of the State of Michigan with the northern boundary of the State of Indiana eastwardly along said northern boundary to the west line of Elkhart County; thence southerly along the west lines of Elkhart, Kosciusko, Wabash, Grant, and Madison Counties to the north line of Hamilton County; thence westerly along the north lines of Hamilton and Boone Counties to the northwest corner of Boone County; thence southerly along the west lines of Boone, Hendricks, and Morgan Counties to the southwest corner of Morgan County; thence easterly along the south lines of Morgan, Johnson, and Shelby Counties to the west line of Decatur County; thence southerly along the west line of Decatur County to the north line of Jennings County; thence westerly and southerly along the north and west lines of Jennings County and the west lines of Scott and Clark Counties to the north line of Floyd County; thence westerly along the north lines of Floyd and Harrison Counties and southerly along the west line of Harrison County to the Ohio River and the southern boundary of the State; in each case including the various off-sets in the named county lines.

(c) *Kentucky.* From the juncture of the west line of Harrison County, Ind., with the Ohio River in a generally southwesterly direction down that river to the northwest corner of Meade County; thence southeasterly and southwesterly along the west lines of Meade and Hardin Counties to the southwest corner of Hardin County; thence along the south lines of Hardin and Larue Counties to the northwest corner of Taylor County; thence southeasterly along the west (southwest) line of Taylor County and northeasterly along the east (southeast) line of that county to the west line of Casey County; and thence along the west or south lines of Casey, Pulaski, and McCreary Counties to the southern boundary of the State.

(d) *Tennessee.* From the southwest corner of McCreary County, Ky., westerly along the northern boundary of the State of Tennessee to the west line of Scott County, Tenn.; thence in a generally southerly direction along the west line of Scott County, the north and west lines of Morgan County, and the north line of Roane County to the north line of Rhea County; thence northwesterly along the north line of Rhea County; and thence southwesterly along the west lines of Rhea and Hamilton Counties to the boundary between the States of Tennessee and Georgia.

(e) *Georgia.* From the last-mentioned point west along said State boundary line to the west boundary of Georgia; thence southerly along said State boundary line to the southwest corner of the State.

(f) *Florida.* From the last-mentioned point southerly along the main channel of the Apalachicola River to Apalachicola Bay and the Gulf of Mexico.

(g) *Operating exceptions*—(1) *Lines east of boundary excepted from eastern zone.* Those portions of the lines of railroad, below named, located east of the zone boundary above described, shall for operating purposes only, be excepted from the United States standard eastern time zone and included within the United States standard central time zone, viz:

Railroad	From—	To—
Atlanta & West Point.[1]	Georgia-Alabama State line (west of West Point, Ga.).	Western limits of Atlanta, Ga.
Baltimore & Ohio.	West line of Elkhart County, Ind. (west of Nappanee, Ind.).	West yard limits of Garrett, Ind.
Do	West line of Hendricks County, Ind. (west of North Salem, Ind.).	West yard limits of Indianapolis, Ind.
Do	West line of Jennings County, Ind. (west of Hayden, Ind.).	West yard limits of North Vernon, Ind.
Chicago, Milwaukee, St. Paul & Pacific.	West line of Decatur County, Ind. (west of Alert, Ind.).	Westport, Ind.

See footnotes at end of table.

Railroad	From—	To—
Erie	West line of Wabash County, Ind. (east of Disko, Ind.).	Marion, Ohio.
Grand Trunk Western.[1]	Michigan-Indiana State line (north of Granger, Ind.).	Battle Creek, Mich.
Illinois Central	North line of Brown County, Ind. (north of Fruitdale, Ind.).	South yard limits of Indianapolis, Ind.
Do	West line of Hardin County, Ind. (west of Summit, Ky.).	Hodgenville, Ky., and south yard limits of Louisville, Ky.
Louisville & Nashville.	West line of Meade County, Ky. (west of Guston, Ky.).	Strawberry, Ky.
Do	South line of Hardin County, Ky. (south of Dombey, Ky.).	Lebanon Junction, Ky.
Do.[1]	West line of Hamilton County, Tenn. (west of Hooker, Ga.).	Western limits of Chattanooga, Tenn.
Do.[1]	Apalachicola River.	River Junction, Fla.
Monon	North line of Boone County, Ind. (northwest of Terhune, Ind.).	North yard limits of Indianapolis, Ind.
Do	West line of Clark County, Ind. (west of Borden, Ind.).	North yard limits of New Albany, Ind.
New York Central.[1]	Michigan-Indiana State line (south of Grand Beach, Mich.).	Niles, Mich.
Do.[1]	Michigan-Indiana State line (south of Bertrand, Mich.).	Benton Harbor and Baroda, Mich.
Do	West line of Elkhart County, Ind. (west of Elkhart, Ind.). Two lines.	Tower B (4.9 miles east of the west line of Elkhart County, Ind.
Do	North line of Boone County, Ind. (southeast of Colfax, Ind.).	North yard limits of Indianapolis, Ind.
Do	West line of Boone County, Ind. (east of New Ross, Ind.).	West yard limits of Indianapolis Ind.
Do	West line of Hendricks County, Ind. (west of Reno, Ind.).	Do.
New York, Chicago & St. Louis.	West line of Kosciusko County, Ind. (west of Mentone, Ind.).	West yard limits of Fort Wayne, Ind.
Do	North line of Hamilton County, Ind. (north of Atlanta, Ind.).	North yard limits of Indianapolis, Ind.
Pennsylvania	West line of Kosciusko County, Ind. (west of Etna Green, Ind.).	Fort Wayne, Ind
Do	West line of Wabash County, Ind. (southwest of Roann, Ind.).	Columbia City, Ind.
Do	North line of Boone County, Ind. (south of Reagan, Ind.).	Davis, Ind.
Pennsylvania	West line of Hendricks County, Ind. (west of Coatesville, Ind.).	Davis, Ind.
Do	West line of Morgan County, Ind. (west of Whitaker, Ind.).	Do.
Southern	West line of Harrison County, Ind. (east of Milltown, Ind.).	Junction with Baltimore & Ohio near Vincennes Street, New Albany, Ind.
Tennessee Central.[1]	North line of Roane County, Tenn. (west of Rockwood, Tenn.).	Emory Gap, Tenn.
Wabash	West line of Elkhart County, Ind. (west of Wakarusa, Ind.).	Toledo, Ohio.
Do	West line of Wabash County, Ind. (west of Richvalley, Ind.).	Toledo, Ohio, and Oakwood Junction, Mich.
Pennsylvania	West line of Madison County, Ind. (northwest of Elwood, Ind.).	Anoka, Ind.
Do	South line of Johnson County, Ind. (south of Edinburg, Ind.).	North line of Scott County, Ind. (north of Austin, Ind.).
Do	South line of Shelby County, Ind. (south of Flat Rock, Ind.).	Columbus, Ind.
Do	West line of Jennings County, Ind. (southeast of Elizabethtown, Ind.).	Do.
Seaboard Air Line.[1]	Georgia-Alabama State line (west of Esom, Ga.).	Jacksonville and Birmingham, Ala.
Do.[1]	Georgia-Alabama State line (west of Omaha, Ga.).	Montgomery, Ala.
Southern [1]	Georgia-Alabama State line (west of Early, Ga.).	Attalla, Ala.
Tennessee, Alabama & Georgia.[1]	Georgia-Alabama State line (southwest of Menlo, Ga.).	Gadsden, Ala.

[1] Existing exception continued.
[2] Consolidation of 2 existing exceptions, as modified to reflect intervening changes.

(2) *Lines west of boundary included in eastern zone.* Those portions of the lines of railroad, below named, located west of the zone boundary line above described, shall, for operating purposes only, be included within the United States standard eastern time zone, viz:

Railroad	From—	To—
Apalachicola Northern.[1]	Apalachicola, Fla., and Apalachicola River.	Port St. Joe, Fla.
Atlanta, Birmingham & Coast.[1]	Georgia-Alabama State line (near Evansville, Ga.).	Birmingham, Ala.
Atlantic Coast Line.[1]	Georgia-Alabama State line (west of Saffold, Ga.).	Abbeville, Elba, Luverne, and Montgomery, Ala.
Central of Georgia.[1]	Georgia-Alabama State line (west of Hilton, Ga.).	Dothan Ala.
Chesapeake & Ohio.[1]	Michigan-Indiana State line (south of New Buffalo, Mich.).	Porter Ind.
Do.[1]	do	La Crosse, Ind.
Do	West line of Grant County, Ind. (east of Converse, Ind.).	Griffith, Ind.
Louisville & Nashville.	West line of Taylor County, Ky. (east of Whitewood, Ky.).	Greensburg, Ky.
New York Central.	West line of Decatur County, Ind. (west of Burney, Ind.).	Columbus, Ind.
New York, Chicago & St. Louis.	West line of Grant County, Ind. (west of Sims, Ind.).	East yard limits of Frankfort, Ind.
Do	West line of Madison County, Ind. (west of Elwood, Ind.).	Do.
Pennsylvania	West line of Grant County, Ind. (east of Converse, Ind.)	Anoka, Ind.

[1] Existing exception continued.

(h) *Points on boundary line.* Apalachicola, Fla., located upon the above-described zone boundary line shall be considered as within the U.S. standard eastern time zone. All other municipalities located upon the above-described zone boundary line, not specifically named, shall be considered as within the U.S. standard central time zone.

§ 71.5 Central zone.

The third zone, designated as the U.S. standard central time zone, shall include that portion of continental United States lying west of the second zone as described in §§ 71.3 and 71.4, and east of the line described in § 71.6, with the exceptions and inclusions enumerated therein.

§ 71.6 Boundary line between central and mountain zones.

(a) *North Dakota.* Commencing at the point where the Missouri River enters the State of North Dakota; thence southerly and easterly along the middle of said river to the midpoint of the confluence of the Missouri and Yellowstone Rivers; thence southerly and easterly along the middle of the Yellowstone River to a point where said line is intersected by the north boundary of T. 150 N., R. 104 W.; thence east to the northwest corner of T. 150 N., R. 102 W.; thence south to the southwest corner of T. 149 N., R. 102 W.; thence east to the northwest corner of T. 148 N., R. 102 W.; thence south to the northwest corner of T. 147 N., R. 102 W.; thence east to the southwest corner of T. 148 N., R. 101 W.; thence south to a point where said line intersects the midpoint of the Little Missouri; thence easterly and northerly along the middle of said river to the midpoint of its confluence with the Missouri River; thence southerly and easterly along the middle of the Missouri River to a point where said line is intersected by the northern boundary of Morton

See footnotes at end of table.

County; thence west along said boundary to the northwest corner of T. 140 N., R. 83 W.; thence south to the southwest corner of T. 140 N., R. 83 W.; thence east to the southeast corner of T. 140 N., R. 83 W.; thence south to a point where said line intersects the midpoint of the Heart River; thence easterly and northerly along the middle of said river to a point where said line is intersected by the southern boundary of T. 139 N., R. 82 W.; thence east to a point where said line again intersects the midpoint of the Heart River; thence southerly and easterly along said line to the midpoint of the confluence of the Heart and Missouri Rivers; thence southerly and easterly along the middle of the Missouri River to a point where said line is intersected by the northern boundary of T. 130 N., R. 80 W.; thence west to the northwest corner of T. 130 N., R. 80 W.; thence south to the South Dakota border.

(b) *South Dakota.* From the intersection of the main channel of the Missouri River and the northern boundary line of the State of South Dakota, southerly along the main channel of said river to the crossing of the Chicago & North Western Railway near Pierre, detouring to the east in said course to include that portion of the Chicago, Milwaukee & St. Paul Railway which lies west of Mobridge; from Pierre southwesterly to the intersection of the base line and the seventh guide meridian west; thence south along said guide meridian to the White River, crossing in said course the Chicago, Milwaukee & St. Paul Railway at Murdo Mackenzie; thence along the channel of the White River to its intersection with the third guide meridian west; thence south along the third guide meridian with its offsets to the boundary line between Nebraska and South Dakota.

(c) *Nebraska.* From the intersection of the third guide meridian, west, and the north boundary line of the State of Nebraska, running south along the east line of Cherry County, Nebr., to the intersection of the north line of Blaine County; thence west along the north line of Blaine and Thomas Counties to the west line of Thomas County; thence south along the west line of Thomas County to the intersection of the north line of McPherson County; thence west along the north line of McPherson County to the west line of McPherson County; thence south along the west line of McPherson County to the intersection of the north line of Keith County; thence east along the north line of Keith County to the intersection of the west line of Lincoln County; thence south along the west line of Lincoln County to the intersection of the north line of Hayes County; thence west along the north line of Hayes County to the west line of Hayes County; thence south along the west line of Hayes and Hitchcock Counties to the boundary line between Kansas and Nebraska.

(d) *Kansas.* From the point last described, in a southerly direction through Phillipsburg, Stockton, and Plainville to Ellis, crossing in said course the Chicago, Rock Island & Pacific Railway at Phillipsburg, the Missouri Pacific Railroad near Glade, and the Union Pacific Railroad at Plainville and Ellis; thence south along the west line of Ellis County and the east line of Ness County to the northeast corner of Hodgeman County, crossing in said course the Missouri Pacific Railroad near McCracken and the Santa Fe near Alexander; thence west along the north line of Hodgeman County to the 100° meridian, west; thence south along said meridian to a point north of Dodge City; thence along the north and west boundary of Dodge City to the fifth standard parallel, south; thence westerly along said parallel and the southern boundary lines of Finney, Kearney, and Hamilton Counties to the Kansas-Colorado border; thence south along the border between Kansas and Colorado to the intersection of the boundary between such States with the boundary line of Oklahoma.

(e) *Oklahoma-Texas-New Mexico.* Thence westerly along said boundary line to the northwest corner of the State of Oklahoma; thence in a southerly direction along the west State boundary line of Oklahoma and the west State boundary line of Texas to the southeastern corner of the State of New Mexico; thence in a westerly direction along the State boundary line between the States of Texas and New Mexico to the Rio Grande River; thence down the Rio Grande River as the boundary line between the United States and Mexico.

(f) *Operating exceptions—(1) Lines east of boundary excepted from central zone.* Those portions of the lines of railroad, named in this subparagraph, located east of the zone boundary line above described, shall, for operating purposes only, be excepted from the U.S. standard central time zone and included within the U.S. standard mountain time zone, viz:

Name of railroad	From—	To—
Chicago, Burlington & Quincy.	Curtis Nebr.	Line between townships 30 and 31 west of sixth principal meridian.
Do.	Ravenna, Nebr.	Line between townships 18 and 19 north.
Chicago, Milwaukee, St. Paul & Pacific.	North Dakota-South Dakota State line.	New England, N. Dak.
Great Northern Railway.	Williston, N. Dak.	Montana State line.
Do.	Watford City, N. Dak.	North Dakota State line, and such portion of the line between Snowden and Fairview, Mont., as lies within State of North Dakota.
Missouri Pacific.	Hoisington, Kans.	East line of Ness County, Kans.
Northern Pacific.	North Dakota-Montana State line.	Mandan, N. Dak.
Do.	Mandan, N. Dak.	Mott and Kildeer.
Do.	Beach, N. Dak.	North Dakota-Montana State line.

(2) *Lines west of boundary included in central zone.* Those portions of the lines of railroad, below named, located west of the zone boundary line above described, shall, for operating purposes only, be included within the U.S. standard central time zone, viz:

Name of railroad	From—	To—
Atchison, Topeka & Santa Fe.	Colorado-Kansas State line.	Pritchett, Colo.
Do.	East line of Ness County, Kans.	Scott City, Kans.
Chicago, Rock Island & Pacific.	Texas-New Mexico State line.	Tucumcari, N. Mex.
Chicago, Rock Island & Gulf.	do.	Do.
Missouri Pacific.	Glade, Kans.	Lenora, Kans.
Soo Line.	North Dakota State line.	Whitetail, Mont.
Union Pacific [1]	Plainville, Kans.	Oakley, Kans.

[1] Not required to show mountain time in public announcements

(g) *Points on boundary line.* The following-named municipalities located upon the above-described zone boundary line shall be considered as within the U.S. standard central time zone: Murdo Mackenzie, S. Dak., and Phillipsburg, Stockton, Plainville, and Ellis, Kans. All other municipalities located upon the above-described zone boundary line, not specifically named, shall be considered as within the U.S. standard mountain time zone.

§ 71.7 Mountain zone.

The fourth zone, designated as the U.S. standard Mountain time zone, shall include that portion of continental United States lying west of the third zone, as described in §§ 71.5 and 71.6, and east of the line described in § 71.8, with the exceptions and inclusions enumerated therein.

§ 71.8 Boundary line between Mountain and Pacific zones.

(a) *Idaho-Oregon.* Beginning at the intersection of the boundary line between the United States and Canada with the boundary line between Idaho and Montana; thence southerly along the boundary line between Idaho and Montana to its intersection with the boundary line between Idaho and Lemhi Counties, Idaho; thence southwesterly along the boundary line between the counties mentioned to the main channel of the Salmon River; thence westerly and northerly along the main channel of the Salmon River to the western boundary of Idaho; thence southerly along the western boundary of Idaho to its intersection with the boundary line between Wallowa and Baker Counties, Oreg.; thence west along the north line of Baker County to meridian 117° west; thence south along said meridian to the Homestead branch of the Oregon Short Line Railroad; thence southerly immediately west of and parallel to said railroad to Blakes Junction, Oreg.; thence westerly immediately north of and parallel to the main line of said railroad to Huntington, Oreg.; thence easterly immediately south of and parallel to the said main line of railroad to the western boundary of Idaho; thence southerly along said western boundary to the main line of the Oregon Short Line Railroad between Payette, Idaho, and Ontario, Oreg.; thence southerly immmediately west of and parallel to said main line of railroad to Nyssa, Oreg., crossing in said

course the Oregon Eastern branch of the Oregon Short Line at Malheur Junction, Oreg.; thence southerly immediately west of and parallel to the Homedale branch of the same railroad to the west line of Idaho; thence south and east along the western and southern boundaries of Idaho to the Malad Valley branch of the Oregon Short Line Railroad near Woodruff, Idaho.

(b) *Utah.* From the point last described southerly immediately west of and parallel with the Oregon Short Line Railroad through Brigham to Ogden, crossing at Ogden a connection between the railroad of the Southern Pacific, Union Pacific Railway, and Denver & Rio Grande Railroad; thence southerly immediately west of and parallel with the Denver & Rio Grande Railroad to Salt Lake City; thence in a southwesterly direction immediately north of and parallel with the Los Angeles & Salt Lake Railroad to the boundary line between Nevada and Utah near Uvada; thence south along said boundary line to the southwest corner of Utah.

NOTE: While the order in 78 I. C. C. 606 did not in terms modify the boundary in Utah, the effect was a slight modification as "the point last described" in the preceding paragraph, as revised, is Woodruff, Idaho, on the Malad Valley branch of the Oregon Short Line Railroad (now the Union Pacific System), whereas prior to that order it was Weston, Idaho, on the main line of that road. The effect was to include in the mountain zone Utah points on the branch line and between it and the main line.

(c) *Arizona.* From the southwest corner of the State of Utah thence along the west line of the State of Arizona and the Colorado River to the boundary between the United States and Mexico, crossing in said course the Atchison, Topeka and Santa Fe Railway west of Topock, Ariz., and again west of Parker, Ariz., and the Southern Pacific Railway west of Yuma, Ariz.

(d) *Operating exceptions*—(1) *Lines east of boundary excepted from mountain zone.* Those portions of the lines of railroad, named in this subparagraph, located east of the zone boundary line above described, shall, for operating purposes only, be excepted from the U.S. standard mountain time zone and included within the U.S. standard Pacific time zone, viz.:

Name of railroad	From—	To—
Great Northern	Troy, Mont.	Montana-Idaho State line.
Northern Pacific	Paradise, Mont.	

(2) *Lines west of boundary included in mountain zone.* Those portions of the lines of railroad, named in this subparagraph, located west of the zone boundary line above described, shall, for operating purposes only, be excepted from the U.S. standard Pacific time zone and shall be included within the U.S. standard mountain time zone, viz.:

Name of railroad	From—	To—
Atchison, Topeka & Santa Fe.	Colorado River.	Southern limits of Needles, Calif.
Chicago, Milwaukee, St. Paul & Pacific.[1]	Montana-Idaho State line.	Avery, Idaho.
Union Pacific [2]	Malheur Junction, Oreg.	Crane, Oreg.
Do.[3]	Clearfield, Utah.	Syracuse, Utah.
Do.[3]	Utah-Nevada State line (west of Uvada, Utah).	Northern limits of Las Vegas, Nev.

[1] Formerly the Chicago, Milwaukee & St. Paul Ry.
[2] Previously authorized for the Oregon Short Line, now a part of the Union Pacific.
[3] Not required to show Pacific time in published announcements for operations at Caliente, Nev., and points in Nevada north and east of Caliente.

(e) *Points on boundary line.* All municipalities located upon the above-described zone boundary line shall be considered as within the United States standard mountain time zone, with the exception of Huntington, Oreg., which shall be considered as within the United States standard Pacific time zone.

§ 71.9 Pacific zone.

The fifth zone, designated as the U.S. standard Pacific time zone, shall include that portion of the United States lying west of the fourth zone, as described in §§ 71.7, and 71.8 and east of the line described in § 71.10, with the exceptions and inclusions enumerated therein.

§ 71.10 Yukon zone.

The sixth zone, designated as the U.S. standard Yukon time zone, includes all territory of the United States between 137° W. longitude and 141° W. longitude.

§ 71.11 Alaska-Hawaii zone.

The seventh zone, designated as the U.S. standard Alaska-Hawaii time zone, includes all territory of the United States located between 141° W. longitude and 162° W. longitude, and the entire State of Hawaii.

§ 71.12 Bering zone.

The eighth zone, designated as the U.S. standard Bering time zone, includes all territory of the United States between 162° W. longitude and 172°30′ W. longitude, and all of the Aleutian Islands which lie west of 172°30′ W. longitude, but does not include any part of the State of Hawaii.

PART 79—MEDALS OF HONOR

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79.6 Adoption and revision of designs.
79.7 Time limits for filing.

AUTHORITY: The provisions of this Part 79 issued under secs. 1, 2, 33 Stat. 743, as amended; 49 U.S.C. 1201 et seq.

§ 79.1 Applications and affidavits.

Applications for medals under the Medals of Honor Act, 33 Stat. 743, as amended by the act of June 13, 1957, 71 Stat. 69 (49 U.S.C. 1201 et seq.), shall be prepared in accordance with, and contain the information called for in, the form of application prescribed by the Department of Transportation consistent with these regulations, or any instructions which may be issued by the Department with respect to the filing of an application. Applications should be addressed to and filed with the Department of Transportation, Washington, D.C. The acts relied upon in the application must be of such a nature that the applicant would not be expected or required to perform such acts in performing the duties of his regular work or vocation. Satisfactory evidence of the facts upon which the application is based must be filed in each case. Such evidence should be in the form of affidavits made by witnesses of good repute and standing, testifying of their own knowledge. The affidavits should be made before an officer duly authorized to administer oaths, and should be accompanied by the certificate of a United States official of the district in which the affiants reside, such as a judge or clerk of a United States court, a district attorney, or a postmaster, to the effect that the affiants are reputable and credible persons. If the affidavits are taken before an officer without an official seal, his official character must be certified by the proper officer of a court of record under the seal thereof.

§ 79.2 Character of evidence.

The expression by a witness, or witnesses, of the opinion that the person for whom an award is sought acted with extreme daring and endangered his life is not sufficient basis for an award, but the affidavits or testimony should set forth the pertinent facts in detail, and show clearly in what manner and to what extent the life of the applicant was endangered and extreme daring manifested by him. The affidavits or testimony should also state the name of the city, town, or village in or near which the incident occurred, the railroad, public highway, road, or street, and the place thereon where the incident occurred, the date, time of day, and condition of the weather, the names and addresses of (1) the carrier or carriers, or person or persons, involved, (2) the police, fire, or other public officials who investigated the incident, and (3) all persons present, when practicable, and any other pertinent circumstances. These regulations shall not be construed as applicable to any motor-vehicle incident with respect to which no part of the directly related events takes place on a public highway, road, or street.

§ 79.3 Investigation by Department.

In addition to considering applications filed with it, the Department of Transportation may, upon its own motion, initiate proceedings for award of medals under the Medals of Honor Act and cause investigations to be made. Sworn testimony of witnesses taken before an

officer or employee of the Department designated by the Department for the purpose of taking such testimony shall become a part of the record in the case.

§ 79.4 Review of evidence; recommendations.

Applications for medals, together with all affidavits, testimony, and other evidence received in connection therewith, and the records developed in connection with investigations initiated by the Department of Transportation, shall be referred to a committee of three Department officials designated by the Secretary of Transportation. One of such officials shall be directly concerned with railroad safety, and another with motor-carrier safety. The committee shall carefully consider each application or record, and after thoroughly weighing the evidence shall prepare an abstract or brief covering the case and forward it, together with the committee's recommendation, to the Secretary of Transportation for his consideration.

§ 79.5 Award of Medals.

Upon approval by the Secretary of Transportation of the committee's recommendation in any case, the Secretary shall make the award of the medal in the name and on behalf of the President.

§ 79.6 Adoption and revision of designs.

The Secretary of Transportation is authorized to adopt and revise the existing designs for the medal, rosette, and ribbon provided for by the Act.

§ 79.7 Time limits for filing.

No application for a medal shall be considered unless it is filed within two years from the date of the occurrence of the incident upon which it is based.

[F.R. Doc. 68-15284; Filed, Dec. 24, 1968; 8:45 a.m.]

Subtitle B—Other Regulations Relating to Transportation

Chapter I—Department of transportation; Hazardous Materials Regulations Board

DESIGNATION OF CHAPTER

This amendment establishes a Chapter I of Subtitle B of Title 49 of the Code of Federal Regulations to contain the Hazardous Materials Regulations of the Department of Transportation. Parts 100 through 199 are assigned to Chapter I. Thus, the establishment of this new chapter does not affect the regulations presently contained in Parts 170 through 190 of Title 49.

This amendment is part of an overall reorganization of the regulations of the Department of Transportation contained in Title 49 of the Code of Federal Regulations. Under this reorganization Subtitle B of Title 49 will also contain a Chapter II, assigned to the Federal Railroad Administration; and a Chapter III, assigned to the Federal Highway Administration.

Since this amendment merely designates a new chapter and makes no changes in existing regulations, notice and public procedure thereon are unnecessary and good cause exists for making it effective on less than 30 days' notice.

In consideration of the foregoing, Title 49 of the Code of Federal Regulations is amended effective upon publication, by adding a new Chapter I to include Parts 100 through 199 to be entitled "Chapter I, Department of Transportation; Hazardous Materials Regulations Board".

(Title 18 U.S.C., sec. 831—835; sec. 9, Department of Transportation Act (49 U.S.C. 1657))

Issued in Washington, D.C., on December 18, 1968.

ALAN S. BOYD,
Secretary of Transportation.

[F.R. Doc. 68-15285; Filed, Dec. 24, 1968; 8:45 a.m.]

Chapter II—Federal Railroad Administration, Department of Transportation

ESTABLISHMENT OF CHAPTER

A new Chapter II is added to Title 49 of the Code of Federal Regulations. The purpose of this amendment is to organize the regulations of the Department of Transportation which are under the jurisdiction of Federal Railroad Administration.

Since this amendment merely reorganizes existing regulatory material, and makes minor nonsubstantive corrections therein, notice and public procedure thereon are unnecessary and good cause exists for making it effective in less than 30 days' notice.

The following redesignation table shows the relationship between the new and old part numbers:

New Part No.	*Old Part No.*
Omitted as obsolete	160
225	No change
228	161
230	191
231–236	No change
240	890

Issued in Washington, D.C., on December 18, 1968.

A. SCHEFFER LANG,
Federal Railroad Administrator.

Part

225 Railroad accidents; reports and classification.
228 Hours of Service of railroad employees.
230 Locomotive inspection.
231 Railroad safety appliance standards.
232 Railroad power brakes and drawbars.
233 Signal, interlocking, train-control, and train-order statistics.
234 Signal failure reports.
236 Installation, inspection, maintenance, and repair of systems, devices, and appliances.
240 Administration of Alaskan railroads.

PART 225—RAILROAD ACCIDENTS; REPORTS AND CLASSIFICATION

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CLASSIFICATION OF PERSONS

225.50 Classification of persons.

CODES FOR ACCIDENT REPORTING

225.55 Information.
225.56 Code causes.

AUTHORITY: The provisions of this Part 225 issued under secs. 12 and 20, 24 Stat. 383, 386, as amended, secs. 1–7, 36 Stat. 350, as amended, sec. 6 (e) and (f), 80 Stat. 939; 45 U.S.C. 38–43, 49 U.S.C. 12, 20, 1655.

§ 225.1 Telegraphic reports of certain accidents.

(a) On and after June 1, 1949, every common carrier engaged in interstate or foreign commerce by railroad shall by its general manager, superintendent, or other proper officer, immediately after the occurrence thereof, report by telegram to the Director, Bureau of Railroad Safety, Federal Railroad Administration, at its office in Washington, D.C., any collision or derailment of a train or of a hand car, section motor car or other self-propelled rail car upon the railroad operated by such common carrier resulting in the death or serious injury of one or more persons, including any collision with a motor vehicle at a grade crossing resulting in the death or serious injury of any passenger, employee, or other person riding on the train or on the hand car, section motor car or other self-propelled rail car involved in any such collision.

(b) The words "serious injury" as used in paragraph (a) of this section shall mean "an injury to any person sufficient, in the opinion of the reporting officer, to incapacitate the injured person from following his customary vocation or mode of life for a period of more than three days in the aggregate during the ten days immediately following the accident."

§ 225.2 Investigation.

It is the policy of the Federal Railroad Administration (FRA), under the authority of the Accident Reports Act, 45 U.S.C. Section 40, and other statutes administered by the FRA, to investigate all derailments and collisions involving trains, which result in the death of one or more persons, or the injury of a number of persons. Other accidents, including switching accidents, will be investigated where it appears that an investigation would substantially serve to promote safety of operations. Duly authorized representatives of the FRA are authorized to investigate accidents without prior specific authorization by the FRA, and have been issued credentials authorizing them to inspect the records and properties of carriers. Such employees are authorized and directed to obtain all relevant information concerning accidents under investigation, to make inquiries of persons having knowledge of the facts, conduct interviews and inquiries, and attend, as an observer, hearings conducted by carriers. Whenever practical, joint investigations will be conducted with State Commission representatives. FRA employees will cooperate in such matters to the fullest practicable extent with representatives of State Commissions and local authorities. Where it is deemed necessary to carry out the investigation, the FRA may authorize the issuance of subpoenas to require the production of records and the giving of testimony. Wherever that procedure appears necessary to fully develop the facts, the FRA may schedule a formal hearing before an authorized hearing officer, in which event testimony will be taken under oath, a record made, and opportunity allowed for cross-examination, in accordance with the FRA's general or special rules of practice. Information obtained through such investigations may be made the basis for a public report or it may be used for such other purposes as may be appropriate.

GENERAL INSTRUCTIONS

§ 225.9 Public examination of reports only after approval.

(a) Accident reports made by railroads in compliance with these rules shall be for the information of the Federal Railroad Administration and shall be open to public inspection only upon prior approval of an application by the FRA. Applications for public inspection will be granted if the FRA is satisfied that such inspection will not result in a violation of section 4 of the Accident Reports Act and is for the purpose of obtaining information to be presented before Federal and other governmental bodies, or which will contribute to the promotion of safety in railroad operations.

(b) Requests for access to Monthly Reports of Railroad Accidents filed by the railroads with the FRA shall state with full particularity how the information will be used and how such use will contribute to the promotion of safety in railroad operation. Each such request shall be substantially in the following form:

REQUEST TO THE FEDERAL RAILROAD ADMINISTRATION

WASHINGTON, D.C. 20591

Application for Examination of Monthly Reports of Railroad Accidents.

Pursuant to the requirements of § 225.9 of Title 49 Code of Federal Regulations, public examination of reports only after approval, I hereby request the Federal Railroad Administration to grant access, for the period of _____ (not exceeding 1 year) during regular working hours, to _____ as representative of _____ to the following monthly reports of railroad accidents filed with the FRA as required by the Accident

Reports Act:
Carrier(s) _____
State(s) _____
Type(s) of accident_____
Year(s) accidents occurred_____
The information obtained from said accident reports will be used for the following purpose: [1]

I certify the access requested herein will not result in any violation of the Accident Reports Act and will not be used for any purpose in any suit or action for damages growing out of any matter mentioned in the reports examined.

Signed _____
For _____
Address _____
(Street and number, city or town, State)

_____, 19__

§ 225.10 Purpose.

The purpose of reporting to the FRA accidents and injuries to persons arising from the operation of a railroad is to carry out the intent of Congress as expressed in the Accident Reports Act, as amended, namely, the disclosure of hazards arising in the provision of common carrier transportation by railroad.

§ 225.11 Definition of the phrase "Arising from the operation of such railroad".

Section 7 of the Accident Reports Act, as amended, defines the phrase "arising from the operation of such railroad", as used in the Act, to "include all activities of the railroad which are related to the performance of its transportation business." The scope of this definition includes all the usual activities of a railroad. Insofar as employees on duty are concerned, it includes all such employees as are reported to the Interstate Commerce Commission under the "Rules Governing the Classification of Railroad Employees and Reports of their Service and Compensation" (49 CFR, Part 1245).

§ 225.12 Definition of "Accident".

An accident is a collision, derailment, or other accidental event resulting in death or injury to any person or damage to equipment or roadbed. As used herein, "accident" and "injury" are not synonymous terms. For purpose of example and not limitation, an accident which results in death or injury to a person presupposes an occurrence, such as coming in contact with a locomotive, car, machine, device, apparatus, tool, on-track or off-track vehicle, material, or object, a slip, trip, fall, or blow, or any unforeseen mishap.

§ 225.14 Accidents to be reported.

An accident which results in one or more of the following, must be reported:

(a) Death of a person: A death resulting from an accident within 24 hours immediately following the accident is reportable as a fatality; if death occurs after the expiration of the 24-hour period, the casualty is reportable as an injury and also as a subsequent fatality;

(b) Injury to an employee on duty sufficient to incapacitate him from performing fully and acceptably and without extra assistance all the duties customarily included in the assignment of the employee at the time of the injury for more than 24 hours in the aggregate during the 10 days (240 hours) immediately following the accident. Under this subsection incapacitation includes Sundays, holidays, and lay-off days, and begins whenever the pain or inconvenience resulting from the accident becomes so serious that it would prevent the injured person from performing all of his duties, whether or not there is necessity or opportunity for him to do so at the time. Incapacitation ends whenever the injured person has recovered sufficiently to be able to resume performance of all his duties whether or not there is necessity or opportunity for him to do so at the time;

(c) Injury to any person other than an employee on duty if the injury is sufficient to incapacitate the injured person from following his customary vocation or mode of life or more than 24 hours in the aggregate during the 10 days (240 hours) immediately following the accident; and

(d) Collisions, derailments or other train accidents with more than $750 damage to equipment, track, or roadbed, excluding cost of clearing wreck. The term "other train accident" does not include equipment failures resulting from ordinary wear and tear.

§ 225.15 Accidents or occurrences not to be reported.

(a) Accidents at highway or street crossings, or on parts of highways within railroad rights-of-way, not involving the presence or operations of trains, locomotives, cars, track cars, or similar equipment and not involving employees then engaged in the operation of a railroad;

(b) Accidents in or about living quarters not arising from the operation of a railroad;

(c) Disability resulting solely from illness, disease or a preexisting abnormal physical condition (only to the person afflicted);

(d) Suicides as determined by a coroner or other public authority, or attempted suicides;

(e) The consequences of horseplay, insofar as the participants are concerned; and

(f) Disability to an employee on duty from an assault wholly unconnected to the performance of his duties.

§ 225.16 Doubtful cases.

(a) The reporting officer of a railroad will ordinarily determine the reportability or nonreportability of an accident after examining all evidence available. The FRA, however, cannot delegate authority to decide matters of judgment when facts are in dispute. In all such instances the decision shall be that of the FRA.

(b) Even though there may be no witness to an accident, if there is evidence indicating that an accident may have occurred, a report of that accident must be made. In contrast, if there is no evidence of an accident due to the operation of a railroad, the accident should not be reported.

(c) All accidents reported as "claimed but not admitted by the carrier" are given special examination by the FRA, sometimes with and sometimes without further inquiry. Accidents accepted as reportable, are tabulated and included in the various statistical statements issued by the FRA. The denial of any knowledge or refusal to admit responsibility by the carrier does not operate to exclude such accidents from monthly and annual figures. Facts stated by a carrier that tend to refute the claim of an injured person are given consideration, and when such facts seem sufficient to support the carrier's position, the case is not allocated to the reporting carrier.

§ 225.17 Joint operations.

(a) "Joint operations" is a term intended to cover operations conducted on terminal or other tracks used jointly or in common by two or more reporting carrier, or where the equipment of one carrier moves as its own train over the track of another carrier.

(b) Locomotives, with or without crews, if loaned or leased by one carrier to another, are not thereby made subject to the rules relative to "joint operations."

(c) Trains or locomotives of a nonreporting carrier which may become involved in reportable accidents on the line of a reporting carrier do not fall under the rules pertaining to "joint operations"; such accidents, however, must be included in the report of the reporting carrier.

(d) If a reportable accident occurs on a private siding or track of like character, it must be reported by the carrier having possession of the locomotive concerned or employing the persons involved, but not as a joint-operation accident.

(e) The question of responsibility among carriers for accidents classifiable under the rules applicable to joint operations is not to be considered in relation to the making of reports concerning them, but all carriers involved must make reports as respectively required.

(f) Train accidents resulting in death or injury and damage to equipment, track, or roadbed, in excess of $750, or collisions, derailments, or other accidents, with damage to equipment, track, or roadbed in excess of $750, occurring on tracks used by two or more reporting carriers must be severally reported by the carrier or carriers whose equipment or employees are involved and the car-

[1] The purpose must state with particularity how the information will be used and how such use will contribute to the promotion of safety in railroad operation. Generalized or vague statements are insufficient and will be cause for denial of the request.

rier whose superintendent is in immediate charge of the track on which the accident occurs. Each carrier concerned in such an accident must report the death or injury, if any, and the damage to its equipment and other items of expense (estimating, if unknown) as provided in the report form and state the death or injury, if any, and the amount of damage sustained by the other carriers involved, the names of which must be respectively indicated before casualties and the items of damage. If a reportable train accident, though occurring on jointly used track, involves only the equipment and employees of the carrier whose superintendent is in immediate charge of such track, the accident must be reported only by the carrier concerned.

(g) Train-service accidents occuring on terminal or other tracks used jointly or in common by two or more reporting carriers involving employees on duty should be reported by the carrier or carriers involved in the accident. Casualties to other persons should be reported by the carrier whose equipment is involved.

(h) Death or injury to railroad employees on an adjacent track of another railroad must be reported by both railroads, whether or not a joint operation is involved.

(i) In all cases involving joint operation, whether one or more trains are involved, each carrier will be allocated casualties to all persons on its own train. Casualties to employees not on train, whether on or off duty, will be allocated to the employing railroad. Casualties to all other classes of persons not on trains will be allocated to the carrier whose equipment is involved. Any person found dead on or adjacent to the premises or right of way of a carrier should be reported by that carrier if the evidence indicates that such person's death resulted from the operation of its railway.

(j) Nontrain casualties will be allocated to the carrier whose rolling stock (motor cars, etc., not equipped with A.A.R. couplers) is involved.

CLASSIFICATION OF RAILROAD ACCIDENTS

§ 225.21 Primary groups and their definitions.

(a) *Guides for reporting accidents.* Sections 225.21 to 225.24, relating to classification of railroad accidents, are intended solely as a guide to reporting and do not limit in any way those accidents to be reported, as set forth in § 225.14.

(b) *Reportable accidents.* Reportable railroad accidents are divided into three groups:

Group I—Train accidents.
Group II—Train-service accidents.
Group III—Nontrain accidents.

(c) *Group I.* Train accidents are those arising from the operation or movement of trains, locomotives, or cars which result in:

(1) A reportable death or injury and more than $750 damage to equipment, track or roadbed;[1] or

(2) A collision, derailment or other train accident, with more than $750 damage to equipment, track or roadbed.[1]

(d) *Group II.* Train-service accidents are those arising from the operation or movement of trains, locomotives, or cars which result in a reportable death or injury but not more than $750 damage to equipment, track, or roadbed.[1]

(e) *Group III.* Nontrain accidents are those which do not result from the operation or movement of trains, locomotives, or cars.

§ 225.22 Group I—Train accidents.

Train accidents should be classified as:

(1) Collision (Class C), which is an impact of a train, locomotive, or car with some other train, locomotive, or car while both are on rails. Accidents, however, in which cars are not in suitable condition to withstand common train usage, that when coupled in trains, may be damaged through ordinary train movements, should be classified as other train accidents, and not as collisions. Accidents caused by trains, etc., striking bumping posts, or track motor cars and like roadway machines not equipped with A.A.R. couplers, except when operating under train rules and subject to the protection afforded to trains, are not classified as collisions.

Reports of collisions, in addition to furnishing the information required by sections of these rules having general application, should describe briefly the method of operation in use for the track involved, stating whether a signal system was in use, and, if in use, whether it was manual, controlled manual, automatic block, interlocking, C.T.C., cab signal, automatic train control, automatic train stop, or train order.

In the case of a collision, the number of main tracks in use in the locality of the accident should be stated.

Collisions are to be subclassed as follows:

(a) *Rear-end collisions.* A rear-end collision is a collision in which the trains or locomotives involved are bound in the same direction on the same track.[2]

(b) *Head-on collisions.* A head-on collision is a collision in which the trains or locomotives involved are bound in opposite direction on the same track.[2]

(c) *Broken-train collisions.* A broken-train collision is a collision in which a moving train breaks into parts and a violent impact of two or more of the uncoupled parts of the same train occurs, or one or more of the parts collide with another train, locomotive, or car. Collisions in which the equipment involved is employed in a switching movement are not to be included in this class.

(d) *Side or raking collisions.* This class does not include collisions of trains with cars classifiable under (f) or collisions of equipment employed in switching movements classifiable under (g). An accident caused by parts of equipment on one track coming in contact with equipment on a parallel track should not be classified as a collision, but as a miscellaneous train accident, unless a derailment occurs.

(e) *Crossing collisions at railroad crossings.* The term "crossing collisions at railroad crossings" is used herein to mean collisions occurring at crossings or junctions involving trains, locomotives, or cars operated on the intersecting tracks.[3] This class does not include accidents due to striking automobiles or other highway vehicles.

(f) *Collisions of trains with cars not in trains.* This class does not include collisions of train with cars, subject by train rules to the protection afforded to trains, which should be classified as (a), (b), (c), (d), or (e), in accordance with the circumstances of the particular cases.

(g) *Switching collisions.* This term "switching collisions" is used herein to mean collisions occurring to equipment being switched, as in making or breaking up trains, shifting or setting out cars, etc., including accidents to locomotives involved in such service. A collision should not receive this classification when two or more locomotives, trains, or cuts of cars are involved unless both or all such units of equipment are employed in switching movements at the time of accident, but it should be classified as (a), (b), (c), (d), (e), (f), or (h), in accordance with the circumstances of the particular case.

(h) *Collisions not elsewhere classifiable.* This class includes collisions between light locomotives moving to or from servicing facilities; also collisions between a locomotive and cars of a train or cut of cars occurring in recoupling the locomotive after it has been cut off for servicing, but does not include collisions between locomotives and cars while engaged in switching movements as described in paragraph (g).

(2) Derailment (Class D): In reporting derailments the information required by provisions of these rules having general application must be furnished, and this must be indicated in particular, by initials and number, or name, the equipment causing the derailment. The term "derailment" does not include derailment of track-motor cars and like roadway machines not equipped with A.A.R. couplers.

Derailments are to be subclassed as follows:

(a) Derailments due to defects in or failures of brake apparatus, hose, etc.

(b) Derailments due to defects in or failures of couplers.

(c) Derailments due to other defects in or failures of locomotives or cars.

(d) Derailments due to defects in track, bridges, switches, and signals, or other defects in roadway.

(e) Derailments due to obstructions on track.

(f) Derailments due to accidents at public highway crossings.

(g) Derailments due to negligence, mistake, or misconduct of trainmen or other employees.

(h) Derailments due to mistake or misconduct of persons other than employees.

(i) Derailments due to two or more causes.

(j) Derailments due to causes not classifiable under any preceding heading.

(3) Other train accidents (Class O), include all train accidents other than collisions and derailments, as defined in § 225.21.

§ 225.23 Group II—Train-service accidents.

(a) Train-service accidents (Class S), are those arising from the operation or

[1] Excludes cost of clearing wreck.

[2] The timetable or schedule direction, when applicable, should govern the classification of collisons if at the time of the accident either of the trains or locomotives is at rest or if its incidental movement temporarily differs from the schedule direction.

[3] Crossing collisions must be reported by each carrier affected. Items of damage and casualties to persons must be reported in the same manner as described in connection with "joint operation" accidents, § 225.17.

movement of trains, locomotives, or cars which result in a reportable death or injury but not more than $750 damage to equipment, track or roadbed, excluding cost of clearing wreck.

(b) Train-service accidents are to be subclassed as follows:

(a) Accidents to employees while engaged in coupling or uncoupling locomotives or cars.

(b) Accidents to employees while engaged in coupling or uncoupling air hose (or turning angle cocks in connection therewith), steam hose, and safety chains.

(c) Accidents to employees while operating locomotives.

(d) Accidents to employees while operating hand brakes.

(e) Accidents to employees while operating switches.

(f) Accidents to persons on moving cars or locomotives resulting from coming in contact with any structure or fixture above or at side of track.

(g) Accidents to persons while getting on or off cars or locomotives.

(h) Accidents at highway grade crossings.

(i) Struck or run over by cars or locomotives not classifiable above.

(j) Miscellaneous train-service accidents not elsewhere classifiable.

§ 225.24 Group III—Nontrain accidents.

(a) Nontrain accidents (Class N). This group covers accidents that do not occur directly in connection with the operation or movement of trains, locomotives, or cars. Examples of this class would be accidents occurring in connection with the construction, repair or painting of buildings, tracks, or other structures or equipment, accidents in offices, stations, and shops and accidents to employees on duty while traveling off railroad property, reportable accidents resulting from the movement of locomotives or cars on shop tracks, the movement of locomotives at servicing facilities by inside hostlers, and accidents involving track-motor cars and other roadway equipment. Accidents in which injuries are received by trackmen, bridge and building men, and other classes of employees or other persons and which are caused by trains, locomotives, or cars striking hand cars, tools, or other objects, should be appropriately reported as train accidents or train-service accidents. Accidents from the operation of vessels and buses arising from the operation of a railroad are also considered nontrain accidents, and resulting casualties are reportable.

(b) Nontrain accidents are to be subclassed as follows:

(a) Construction, servicing, maintenance and dismantling of locomotives.

(b) Construction, servicing, maintenance and dismantling of cars and floating equipment.

(c) Miscellaneous vehicles.

(d) Construction, repair, maintenance or dismantling of facilities for equipment and vehicles.

(e) Bridges, tunnels, culverts, etc.; stations, warehouses, roadway building and grain elevators; maintenance of way, bridge and building, signal shop facilities, etc.; other miscellaneous structures.

(f) Cuts, fills, retaining walls, cribbing, fences and signs.

(g) Ties, switch timbers, tie plates and fasteners; rail; other materials.

(h) Crossing signals; telephone, telegraph, and radio communications.

(i) Operation, servicing and maintenance of track motor cars and other roadway machines.

(j) Operation, servicing, maintenance or dismantling of power plants and substations, transmission and distribution systems.

(k) Miscellaneous causes, all classes of persons.

FORM AND ARRANGEMENT OF REPORTS

§ 225.25 Forms used and duplicate reports.

(a) Sections 225.25 to 225.32 on form and arrangement are intended solely as a guide to reporting, and do not limit in any way those accidents to be reported, as set forth in § 225.14

(b) Monthly reports of railroad accidents must be made on forms provided by FRA or on forms identical therewith in arrangement, size, and in color and weight of paper, and every reporting carrier is required to retain in its file a duplicate of each report rendered to the FRA. For the reporting railroads' files, this duplicate must also show the name or names of the casualty or casualties reported and the precise location at which the accident occurred. The forms provided, which are of three kinds, are designated as Forms V, T, and Supplement to T.

(c) The first sheet of each report must show in the appropriate place the name of the company for which it is filed; the following sheets may designate the name of the company by a commonly used short version or initials. Each sheet of each report must show the month and year to which the report relates, and all other particulars called for by the form. Each sheet of each report following Form V must bear the autograph signature of a responsible officer or employee.

§ 225.26 Form V (Verification).

A report must be made on this form each month, even though no reportable (train, train-service, or nontrain) accident occurred during the month covered. Such report must include an oath or verification, made by the proper officer of the reporting carrier, as provided for attestation on Form V, which must show the total number of train, train-service, and nontrain accidents that occurred during the month for which the report is made, and the number of sheets, inclusive of Form V. If no reportable accident occurred during the month, that fact must be stated on this form. Section A must contain a recapitulation of all casualties, by class of person, in train, train-service, and nontrain accidents. Section B must contain a recapitulation of highway grade casualties by class of person. Subsequent fatalities are to be reported in section C. Form V must also show the total number of locomotive and motor-train miles run during the month, computed in accordance with Train-Mile, Locomotive-Mile and Car-Mile accounts in the Uniform System of Accounts for Railroad Companies prescribed by the Interestate Commerce Commission.

§ 225.27 Form T (Train, train-service, and nontrain accidents).

(a) A separate Form T sheet must be used for each reportable train accident, train-service accident, or nontrain accident and must show the required particulars concerning the accident.

(b) Information called for in each of the items shown on Form T must be supplied except where the answers would not be significant, in which case the space provided for the answer may be left blank or blanked out.

§ 225.28 Supplement to Form T.

A supplement to each Form T sheet also must be used for each reportable:

(a) Derailment due to a highway grade crossing.

(b) Other train accident due to a highway grade crossing.

(c) Train-service accident due to a highway grade crossing.

(d) Nontrain accident due to a highway grade crossing.

§ 225.30 Subsequent fatalities.

If, as the result of an injury, a person dies more than 24 hours after the occurrence of the accident the casualty must be reported as an injury and, in addition, a memorandum of the death must be given on Form V in accordance with the requirements of that form. This report is to be made in connection with the report for the month in which the accident occurred, if practicable, otherwise it must separately accompany the first monthly report filed after the death has come to the knowledge of the carrier.

§ 225.31 Classification symbols.

Symbols indicating the class of train, train-service, or nontrain accidents and the class of persons involved should be entered in the appropriate spaces on Form T as follows:

(a) *Class of accident.* Sheets carrying reports of collisions are to be marked "C"; those relating to derailments, "D"; those relating to other train accidents, "O"; those relating to train-service accidents, "S", and those relating to nontrain accidents, "N". To each of the primary class symbols of train, train-service and nontrain accidents should be added the proper small letter to indicate the subclass covering the accident.

(b) *Class of person.* The designation of the class of person should include the applicable capital letter preceding the name of the class. The number of the "Reporting Division" with such other descriptive detail as may be appropriate should be added in the case of employees.

§ 225.32 Arrangement and numbering of sheets.

(a) All the forms in a monthly report should be arranged with V sheet first, followed by T sheets. Supplements to T sheets should follow the T sheets to which each refers. All Forms T should

be further grouped in accordance with the character of the accidents and arranged in the order C, D, O, S, and N. These groups should be subgrouped by subclasses for example C(a), C(b); D(a), D(b); S(a), S(b); N(a), N(b), etc., throughout the series. All sheets are to be numbered consecutively beginning with number 1 for Form V. When properly arranged and numbered, all sheets including Form V should be securely fastened.

(b) In no case should the report for any month include a Form T sheet completed for an accident that did not occur during the month covered by the report. Should it be discovered by a carrier that the report of a particular accident on a Form T has, through mistake or otherwise, been improperly omitted from its regular monthly accident report, the sheet covering such accident must be separately transmitted to FRA's Bureau of Railroad Safety, with a suitable letter of explanation.

PARTICULARS TO BE REPORTED

§ 225.40 General.

The Code causes shown in § 225.56 are for the use of the FRA only. They have been designed, so far as that is practicable, to indicate the primary causes of the accidents reported. The Reporting Officer should supply sufficient information to enable the Federal Railroad Administration to supply the code number and also to classify all other data called for as they pertain to each of the accidents reported.

§ 225.41 Yard.

A system of tracks within defined limits provided for the making up or breaking up of trains, for the storing of cars, and for other purposes over which movements not authorized by timetable, or by train order, may be made, subject to prescribed signals and rules or under special instructions.

§ 225.42 Trains, locomotives, and cars.

(a) For the purpose of reporting railroad accidents, a train is defined as a unit of equipment, or a combination of units of equipment (exclusive of light locomotives), in condition for movement over tracks by self-contained motor equipment. A locomotive is a self-propelled unit of equipment designed solely for moving other equipment. A light locomotive is a locomotive in condition for movement by its own motor equipment, uncoupled to cars, work equipment, or dead locomotives. A motor car is a self-propelled unit of equipment designed to carry freight or passenger traffic, and is not to be considered a locomotive. (Train or train-service accidents may result from the movement of cars without the use of a locomotive.) Track motor cars and like roadway machines not equipped with A.A.R. couplers are not regarded as "cars" within the meaning here used.

(b) In reporting accidents involving trains, locomotives, or cars, sufficient particulars should be given to show definitely to which of the four classes of service described below the equipment was assigned. Definite information is required in this respect and descriptive terms of local application, such as "milk", "transfer", "mine", etc., should not be used to designate classes of trains. In connection with this matter, a light locomotive involved in an accident should be classified as belonging to that class of service to which its assignment at the time of the accident was related.

(c) Transportation service-freight includes trains run between terminals or stations containing loaded or empty freight-train cars and trains consisting of a locomotive and caboose running light in connection with such service. Trains which contain passenger-train cars shall be classed as freight trains whenever the number of freight-train cars is in excess of the number of passenger-train cars in them.[4]

(d) Transportation service-passenger includes trains run between terminals or stations containing loaded or empty passenger-train cars. Trains which contain freight-train cars shall be classed as passenger trains whenever the number of passenger-train cars is in excess of the number of freight-train cars in them.[4]

(e) Work service includes nonrevenue trains run in the administration and upkeep service of the railroad, such as official trains, inspection trains, pay trains, special trains running with company fire apparatus to save the railroad's property from destruction, and trains run for the purpose of transporting the railroad's employees to and from work when no transportation charge is made; wrecking trains; construction and upkeep trains run in connection with maintenance and improvement work, the cost of operating such trains being chargeable to the appropriate capital or maintenance accounts for rail-line operations; and material and supply trains run in connection with operation.

(f) Work service trains do not include solid fuel trains and other freight trains laden with company material and running from station to station under the same operating conditions as ordinary revenue freight trains.

(g) Yard service includes the handling of equipment being switched or used in switching other equipment, as, for example, in making up or breaking up trains, serving industrial tracks, storing, weighing, or classifying cars, and other like operations. Operations incidental to a road run when performed by a road train crew are not included.

(h) When significant, state the number of cars in the train, where and when locomotives, cars, and brakes were last inspected; and under what orders the train was moving and what were its rights of track at the particular time and place of the accident.

[4] Box or refrigerator cars equipped for passenger-train service are counted as passenger-train cars.

§ 225.47 Casualties.

In reporting casualties to persons, personal injuries should be sufficiently described to indicate:

(a) The part of body injured and the specific nature and extent of the injury received which should be reported in sufficient detail to enable the Federal Railroad Administration to classify the injury. Indefinite terms such as "mashed", "crushed", "injured", "hurt", etc., should not be used. In case of loss of any part, the extent should be indicated, as, for example, tip of index finger of right hand, two middle fingers to second joint of left hand, left arm to elbow, loss of right eye, etc.

(b) The actual number of days of disability if ascertained at the time the report is made, but if the disability has not terminated by that time or is not ascertainable, an estimate of the number should be shown in the appropriate column on Form T, or the absence of an estimate fully explained. When the injury is of a permanent nature, that fact may be stated in lieu of the number of days' disability.

(c) The degree to which the person is maimed, if at all.

§ 225.48 Damage.

(a) Item (12) on Form T, which calls for the dollar amount of damage occasioned by an accident should be completed only in the case of train accidents. No entry is necessary for train-service or nontrain accidents.

(b) Amounts of damage should not only include damage to equipment (including damage to foreign cars), track, or roadbed of the reporting railroad but should include comparable expenses of all reporting railroads. Other expenses of reporting railroads occasioned by the accident (such as overhead, cost of clearing wrecks, loss and damage, etc.), all expenses of nonreporting railroads, and contingent expenses because of personal injuries are not to be included. If the amount of damage is not known at the time the report is filed, it should be estimated as accurately as practicable and the fact that it is estimated should be stated.

CLASSIFICATION OF PERSONS

§ 225.50 Classification of persons.

(a) For the purpose of permitting an appropriate classification, sufficient particulars of each person involved in a train, train-service, or nontrain accident should be given on Form T. The aggregate of all persons of each class involved in all railway accidents should be given on Form V.

(b) The classes "employees (A) and (B)" apply to any person having such classification or relationship to a reporting railroad. As used herein, it is intended to include every person in the service of the reporting carrier who is subject to its continuing authority to supervise and direct the manner of rendering his service.

(c) When a casualty is known or believed to be an employee of another reporting railroad that fact should be stated and appropriate class symbols indicating the customary occupation of the employee, with the name of the railroad by which he is employed, should be entered.

(d) Employees on duty, class (A): Employees on duty are those persons who are engaged in the operation of a railroad as defined in § 225.11 above. Ordinarily the fact that the employee is or is not under pay will determine whether he is or is not "on duty". There may, however, be exceptions such as employees "trading time" or doing work which they are expected to do but actually perform before pay starts or after pay stops. Such persons must be considered as "employees on duty".

(e) Employees not on duty, class (B): Employees not on duty are those persons who are on railroad property, before and after duty, for purposes connected with their employment or with other railroad permission. An employee is "not on duty" until: He actually begins duty in the operation of a railroad as defined in § 225.11 above; while he has been relieved from the performance of any and all service for a definite time; when he has willfully left the vicinity of his post of duty contrary to accepted or tolerated practice; or when he has completed his duty.

(f) Employees (including members of train and engine crews deadheading between terminals) on trains for the purpose of travel and riding in that part of the train assigned to the use of passengers should be included in class (C) as passengers. Employees trespassing should be included in class (E) as trespassers.

(g) List of employee reporting divisions: The following list of 128 Reporting Divisions into which all the distinctive classes of railroad positions are grouped is derived from the "Rules Governing the Classification of Railroad Employees and Reports of Their Service and Compensation" prescribed by the Interstate Commerce Commission (49 CFR 1245.1–1245.7). The returns on all accident report forms should, with respect to the classification of employees, be made in conformity with these Reporting Divisions. For each employee reported on Form T as killed or injured there should be given the correct number of the Reporting Division to which the employee is properly assignable, and also the pay-roll or distinctive class title of his occupational position. The letter (A) or (B) should be used to indicate respectively whether he was on or off duty at the time of accident. Abbreviations or contractions may be used in the indication of position titles if their meaning is sufficiently clear. For example, to indicate a casualty sustained by a road freight brakeman (through freight) on duty, the proper designation of class of person on Form T should be A–117, Road freight brakemen and flagmen (through freight), while that of a casualty incurred in a train-service accident by a train attendant on duty would be a A–101, Train attendants.

LIST OF REPORTING DIVISIONS FOR EMPLOYEES

I—EXECUTIVES, OFFICIALS, AND STAFF ASSISTANTS

Division No.	*Reporting division*
1	Executives, general officers, and assistants.
2	Division officers, assistants, and staff assistants.

II—PROFESSIONAL, CLERICAL, AND GENERAL

3	Professional and subprofessional assistance.
4	Supervisory or chief clerks (major departments).
5	Chief clerks (minor departments) and assistant chief clerks and supervising cashiers.
6	Clerks and clerical specialists (A).
7	Clerks (B) and (C).
8	Mechanical device operators (office).
9	Stenographers and secretaries (A).
10	Stenographers and typists (B).
11	Storekeepers, sales agents, and buyers.
12	Ticket agents and assistant ticket agents.
13	Traveling auditors or accountants.
14	Telephone switchboard operators and office assistants.
15	Messengers and office boys.
16	Elevator operators and other office attendants.
17	Lieutenants and sergeants of police.
18	Patrolmen and watchmen.
19	Traffic and various other agents, inspectors, and investigators.
20	Claim agents or investigators.
21	Freight claim agents or investigators.
22	Chief claim agents or investigators.
23	Miscellaneous trade workers (other than plumbers).
24	Motor vehicle and motor car operators.
25	Teamsters and stablemen.
26	Janitors and cleaners.

III—MAINTENANCE OF WAY AND STRUCTURES

27	Roadmasters, general foreman, and assistants.
28	Maintenance of way and scale inspectors.
29	Bridge and building gang foremen (skilled labor).
30	Bridge and building carpenters.
31	Bridge and building ironworkers.
32	Bridge and building painters.
33	Masons, bricklayers, plasterers, and plumbers.
34	Maintenance of way and structures helpers and apprentices.
35	Portable steam equipment operators.
36	Portable steam equipment operator helpers.
37	Pumping equipment operators.
38	Gang foremen (extra gang and work-train laborers).
39	Gang foremen (bridge and building, signal and telegraph laborers).
40	Gang or section foremen.
41	Extra gang men.
42	Section men.
43	Maintenance of way laborers (other than track and roadway) and gardeners and farmers.
44	General and assistant general foremen and inspectors (signal, telegraph, and electrical transmission).
45	Gang foremen (signal and telegraph skilled trades labor).

III—MAINTENANCE OF WAY AND STRUCTURES—Con.

46	Signalmen and signal maintainers.
47	Linemen and groundmen.
48	Assistant signalmen and assistant signal maintainers.
49	Signalman and signal maintainer helpers.

IV—MAINTENANCE OF EQUIPMENT AND STORES

50	General, assistant general, and department foremen.
51	General and assistant general foreman (stores).
52	Equipment, shop, electrical, material and supplies inspectors.
53	Gang foremen and gang leaders (skilled labor).
54	Blacksmiths.
55	Boilermakers.
56	Carmen (A and B).
57	Carmen (C and D).
58	Electrical workers (A).
59	Electrical workers (B).
60	Electrical workers (C).
61	Machinists.
62	Molders.
63	Sheet-metal workers.
64	Skilled trades helpers (M. of E. and stores).
65	Helper apprentices (M. of E. and stores).
66	Regular apprentices (M. of E. and stores).
67	Coach cleaners.
68	Gang foremen (shops, engine houses, and power plants).
69	Gang foremen (stores and ice, reclamation, and timber-treating plants).
70	Classified laborers (shops, engine houses and power plants).
71	General laborers (shops, engine houses, and power plants).
72	General laborers (stores and ice, reclamation, and timber-treating plants).
73	Stationary engineers (steam).
74	Stationary firemen, oilers, coal passers, and water tenders.

V—TRANSPORTATION (OTHER THAN TRAIN, ENGINE, AND YARD)

75	Chief train dispatchers.
76	Train dispatchers.
77	Train directors.
78	Station agents (supervisory, major stations, nontelegraphers).
79	Station agents (smaller stations, nontelegraphers).
80	Station agents (telegraphers and telephoners).
81	Chief telegraphers and telephoners or wire chiefs.
82	Clerk-telegraphers and clerk-telephoners.
83	Telegraphers, telephoners, and towermen.
84	Stationmasters and assistants.
85	Supervising baggage agents.
86	Baggage agents and assistants.
87	Baggage, parcel room, and station attendants.
88	General foremen (freight stations, warehouses, grain elevators, and docks).
89	Assistant general foremen (freight stations, warehouses, grain elevators, and docks).
90	Gang foremen (freight station, warehouse, grain elevator, and dock labor).

V—TRANSPORTATION (OTHER THAN TRAIN, ENGINE, AND YARD)—Con.

Division No.	Reporting division
91	Callers, loaders, sealers, scalers, and perishable-freight inspectors.
92	Truckers (stations, warehouses, and platforms).
93	Laborers (coal and ore docks and grain elevators).
94	Common laborers (stations, warehouses, platforms, and grain elevators).
95	Stewards, restaurant and lodging-house managers, and dining-car supervisors.
96	Chefs and cooks (restaurants or dining cars).
97	Waiters, camp cooks, kitchen helpers, etc.
98	Officers, workers, and attendants on barges, launches, ferry boats, towing vessels, steamers, and shore workers.
99	Transportation and dining-service inspectors.
100	Parlor and sleeping car conductors.
101	Train attendants.
102	Bridge operators and helpers.
103	Crossing and bridge flagmen and gatemen.
104	Foremen (laundry) and laundry workers.

VI—TRANSPORTATION

(a)	Yardmasters, switchtenders, and hostlers:
105	Yardmasters.
106	Assistant yardmasters.
107	Switch tenders.
108	Outside hostlers.
109	Inside hostlers.
110	Outside hostler helpers.
(b)	Train and engine:
111	Road passenger conductors.
112	Assistant road passenger conductors and ticket collectors.
113	Road freight conductors (through freight).
114	Road freight conductors (local and way freight).
115	Road passenger baggagemen.
116	Road passenger brakemen and flagmen.
117	Road freight brakemen and flagmen (through freight).
118	Road freight brakemen and flagmen (local and way freight).
119	Yard conductors and yard foremen.
120	Yard brakemen and yard helpers.
121	Road passenger engineers and motormen.
122	Road freight engineers and motormen (through freight).
123	Road freight engineers and motormen (local and way freight).
124	Yard engineers and motormen.
125	Road passenger firemen and helpers.
126	Road freight firemen and helpers (through freight).
127	Road freight firemen and helpers (local and way freight).
128	Yard firemen and helpers.

(h) Passengers on trains, class (C): Passengers on trains are persons who are on, or boarding, or alighting from, railroad cars for the purpose of travel.

(i) Nontrespassers, class (D): Nontrespassers are persons who are lawfully on that part of railroad property which is used in railroad operation, as defined in § 225.11 above (other than those herein defined as employees, passengers, or trespassers), and persons adjacent to railroad premises when injured as the result of the operation of a railroad. This class also includes other persons or vessels or buses, whose use arises from the operation of a railroad.

(j) Trespassers, Class (E): Trespassers are persons who are on that part of railroad property which is used in railroad operation, as defined in § 225.11 above, whose presence is prohibited, forbidden, or unlawful.

(k) Whenever persons are classed as "trespassers" the report should state the circumstances that warrant such a classification and, if possible, the regular ocupation of such persons killed or injured.

(l) A person should not be classed as a trespasser on a highway grade crossing unless the crossing is protected by gates, or other similar barriers, which were closed when the person went on the crossing, or unless the person attempted to pass over or under trains or cars at the crossing.

CODES FOR ACCIDENT REPORTING

§ 225.55 Information.

This section contains information to be used in completing Forms V and T.

TRAINS OR CARS

1. Freight.
2. Passenger.
3. Work.
4. Yard.
5. Locomotive, handled by hostler.
6. Standing cars.
7. Runaway cars.
8. Industrial.
9. Unknown.

KIND OF EQUIPMENT

1. Locomotive.
2. Freight-train car (or work equipment).
3. Passenger-train car (including rail motor car).

KIND OF TRACK

1. Main line track.
2. Branch line track.
3. Way switching, yard switching, or other track.

HIGHWAY CROSSING PROTECTION

0. Gates, automatic.
1. Gates, manual.
2. Watchman.
3. Employee other than watchman.
4. Audible and visual signal.
5. Audible signal.
6. Visual signal.
7. Fixed signs.

CLASS OF PERSON

Employees on duty (A).
Employees not on duty (B).
Passengers (C).
Nontrespassers (D).
Trespassers (E).

TRESPASSERS—EMPLOYEES

Trespassers, employees (F):

1. Walking along track (a).
2. Crossing tracks at public highway crossings (b).
3. Crossing tracks at other places (c).
4. On or getting on or off trains (d).
5. Not otherwise classed (e).

TRESPASSERS—OTHER THAN EMPLOYEES

Trespassers, under 14 years of age (G):

1. Walking along track (a).
2. Crossing tracks at public highway crossings (b).
3. Crossing tracks at other places (c).
4. On or getting on or off trains (d).
5. Not otherwise classed (e).

Trespassers, 14 to 21 years of age (H):

1. Walking along track (a).
2. Crossing tracks at public highway crossings (b).
3. Crossing tracks at other places (c).
4. On or getting on or off trains (d).
5. Not otherwise classed (e).

Trespassers, adult hoboes or tramps (I):

1. Walking along track (a).
2. Crossing tracks at public highway crossings (b).
3. Crossing tracks at other places (c).
4. On or getting on or off trains (d).
5. Not otherwise classed (e).

Trespassers, adults except hoboes or tramps (J).

1. Walking along track (a).
2. Crossing tracks at public highway crossings (b).
3. Crossing tracks at other places (c).
4. On or getting on or off trains (d).
5. Not otherwise classed (e).

NATURE OF INJURY

Bruise.	Fracture.
Sprain or strain.	Amputation.
Cut or laceration.	Not classifiable above, such as concussion, nervous, shock, internal injuries, etc.
Electrical shock or burn.	
Other burn.	
Dislocation.	

Each of the above classes should be subdivided to show the part of the body injured and other information as follows:

One eye, causing blindness therein.	Collar bone.
Both eyes, causing total blindness.	Ribs.
Other injury to eyes.	Spine.
Scalp.	Back (other part).
Nose.	Chest (other part).
Ears.	Abdomen (not internal injury).
Mouth or teeth.	Other body injury (external).
Skull.	Internal body injury.
Face or head (other part).	Private parts.
Upper arm.	Shoulder.
Elbow.	Upper leg.
Lower arm.	Knee.
Wrist.	Lower leg.
Hand.	Ankle.
Finger or thumb.	Foot.
Hip.	Toes.
	Heel.

§ 225.56 Code causes.

The following list of accident cause codes is for information only. All coding will be done by the FRA based on information furnished on Forms T.

TRAIN ACCIDENTS

1. NEGLIGENCE OF EMPLOYEES

Train Orders

1001	Error in transmission or copying except radio.
1002	Error in transmission or copying radio.
1003	Misunderstanding by train or engine crew.
1004	Other improper handling by dispatcher.
1005	Other improper handling by operator.
1006	Other improper handling by train or engine crew (including failure to pick up, read or obey).
1007	Meeting point overrunning.
1088	Other negligence in connection with train orders.

Cab Signals

1101	Failure to operate train in accordance with cab signal indication.

Automatic Train Control

1201	Failure to operate train in accordance with automatic train control.

Fixed Signals

1301 Clear signal displayed for occupied block.
1302 Clear approach signal displayed with home signal at stop.
1303 Train order signal, improperly displayed.
1304 Failure to restore signals other than train order signals to normal.
1305 Signal changed in face of approaching train.
1306 Other improper display of signals.
1307 Stop signal, or board, disregard of.
1308 Restricting signal, disregard of.
1309 Train-order signal, disregard of.
1310 Switch signal or indicator, disregard of.
1311 Signal light out, disregard of.
1312 Failure to keep proper lookout for signals necessitating emergency application of brakes.
1388 Other improper observance or disregard of signals.

Hand Signals

1401 Failure to give hand signal.
1402 Failure to pass hand signal, including failure to be in position to pass.
1403 Failure to regard hand signal, including failure to watch for.
1404 Failure to stop when hand signal could not be seen.
1405 Wrong hand signal given.
1406 Misunderstanding of hand signals given by member of own train or yard crew.
1407 Acceptance of hand signal given by member of another train or yard crew.
1488 Other negligence in connection with hand signals.

Train Flagging

1501 Failure to flag.
1502 Failure to go back or ahead a sufficient distance.
1503 Torpedoes, failure to use or place properly.
1504 Fusees, failure to use or place properly.
1505 Other improper flagging, including failure to carry flagman's equipment.
1506 Failure to regard flag, including failure to watch for.
1507 Torpedoes, failure to regard.
1508 Fusees, failure to regard.
1588 Other negligence in connection with train flagging.

Air Brakes

1601 Insufficient air pressure, failure of engineman to regard.
1602 Improperly releasing air brakes.
1603 Emergency or severe application from locomotive, unjustifiable.
1604 Improper handling of independent air brake.
1605 Other improper handling by engineman.
1606 Failure to test or test properly.
1607 Application from train, unjustifiable.
1608 Pressure retaining valves, failure to set sufficient number.
1609 Failure to have sufficient air brakes in service.
1610 Air not fully coupled.
1611 Other improper handling of air brakes by train or yard crew.
1688 Other negligence in connection with air brakes.

Hand Brakes

1701 Failure to control by hand brake.
1702 Failure to secure by hand brake including failure to set hand brakes on sufficient number of cars.
1703 Failure to test properly.
1704 Premature release of hand brake.
1788 Other negligence in connection with hand brakes.

Switches

1801 Wrong switch thrown.
1802 Switch, improperly set.
1803 Switch, thrown under train.
1804 Switch, failure to latch or secure lever.
1805 Switch, failure to see that points fitted up.
1806 Reverse movement before train had cleared spring switch.
1807 Equipment fouling switch.
1808 Switch, running through.
1809 Derail, running off.
1888 Other negligence in connection with switches.

Other Forms of Negligence

1901 Excessive speed or failure to control in yard limits.
1902 Excessive speed in other than yard limits.
1903 Headlight extinguished or improperly used.
1904 Superior train, failure to clear.
1905 Meeting point, or passing point, failure to clear switch or other tracks.
1907 Failure to whistle or otherwise warn.
1908 Failure to sufficiently reduce speed where view was obstructed by weather conditions.
1909 Failure to sufficiently reduce speed where view was obstructed by other than weather conditions.
1910 Failure of engineman to keep proper lookout, not otherwise classified.
1911 Moving locomotives, trains, or cars without orders or signals.
1912 Locomotives, trains or cars improperly secured, unexpected movement of.
1913 Locomotives boiler, low water or other negligence.
1915 Other improper handling of locomotives, rail motor cars or trains by authorized employee.
1916 Running of locomotive or rail motor car by unauthorized employee.
1917 Absence of man on or at leading car being pushed.
1918 Improper use of radio communication except train orders.
1919 Cutting off cars at excessive speed.
1920 Cutting off cars without rider to control.
1921 Cutting off cars, placarded explosives, poison gas, or flammable poison gas while in motion.
1922 Other improper handling of placarded cars, including placarded containers or trailers on cars.
1923 Failure or inability of rider to get on cars to control.
1924 Failure to sufficiently slow down cars in retarder.
1925 Stop or excessively slow down cars in retarder.
1926 Failure to place skate or derail ahead of car.
1927 Failure of maintenance or other employees to put out flag or other protection.
1928 Failure of maintenance or other employees to protect when obstructing track.
1929 Disregard of flag or other protection placed by maintenance or other employees.
1930 Failure to remove skate or derail.
1931 Failure to return skate to skate-placing mechanism.
1932 Attempted or actual coupling at excessive speed.
1933 Coupling not properly made.
1934 Improper shifting of cars on or off floats or vessels.
1935 Other improper handling in switching.
1936 Improper movement of locomotives by hostlers.
1937 Turntable or transfer table, failure to align, latch or secure.
1938 Joint failure to protect and disregard of restricting signal.
1939 Joint failure to protect and excessive speed.
1940 Failure by supervisors (Terminal, Trainmaster, Yardmaster, etc.) to convey correct information.
1941 Improper routing of high or wide car or load.
1942 Failure of conductor or foreman to supervise properly.
1988 Other negligence of employees.

2. DEFECTS IN OR FAILURES OF EQUIPMENT

Steam Locomotives

2001 Boiler explosions.
2002 Boilers or appurtenances, other failures of or defects in.
2003 Rods, main and side, crank pins and collars.
2004 Other machinery.
2088 Other defects in steam locomotives (including tenders).

Locomotives Other Than Steam Including Propulsion Equipment of Rail Motor Cars

2101 Crankcase and air box explosions.
2102 Internal combustion engines and turbines, other failures of, or defects in.
2103 Generators and motor-generator sets.
2104 Traction motor armature bearing failure.
2105 Traction motors, other failures of or defects in.
2106 Current collection systems.
2107 Electrical control and conversion equipment (including batteries).
2108 Hydraulic, mechanical or other non-electrical power transmission to axles.
2110 Fires from short circuits or grounds in wiring.
2111 Fires from fuel or lubricating oil.
2112 Other fires, not otherwise classified.
2113 Fumes from internal combustion engine or appurtenances.
2188 Other defects on locomotives other than steam.

Trucks

2201 Truck side frame, bent or broken.
2202 Equalizer, bent or broken.
2203 Pedestal tie bar, loose or defective.
2204 Journal box, nonintegral type.
2205 Journal bearing assemblies, defects, including fires.
2206 Transom, bent or broken.
2207 Truck bolster, bent or broken.
2208 Truck bolster anchor, loose or defective.
2209 Snubbing device in truck bolster guides, locked, broken or otherwise defective.
2210 Center plate.
2211 Center pin, broken or missing.
2212 Side bearing, improper clearance.
2213 Side bearing, broken, defective or missing.
2214 Spring plank, bent or broken.
2215 Swing hanger broken.
2216 Swing hanger pin, broken or missing.
2217 Spring or snubber, missing or defective.
2218 Spring seat or support bar, missing or defective.
2219 Truck safety hanger, loose or defective.
2220 Truck, insufficient weight on any wheel.
2221 Truck, stiff, improper lateral or improper swiveling.
2288 Other truck defects.

Wheels and Axles

2301 Cast-iron wheel, flange broken.
2302 Cast-iron wheel, tread or rim defective.
2303 Cast-iron wheel, broken, overheating.

2304 Cast-iron wheel, broken, other causes.
2305 Cast-steel wheel, flange broken.
2306 Cast-steel wheel, tread or rim defective.
2307 Cast-steel wheel, broken, overheating.
2308 Cast-steel wheel, broken, other causes.
2309 Wrought-steel wheel, flange broken.
2310 Wrought-steel wheel, tread or rim defective.
2311 Wrought-steel wheel, broken, overheating.
2312 Wrought-steel wheel, broken, other causes.
2313 Wheel, other or unknown composition, broken.
2314 Wheel, flange worn.
2315 Wheel, loose or out of gage.
2316 Wheel, tire loose or broken.
2317 Axle, broken between journals.
2318 Journal broken, cold.
2319 Journal broken, overheating.
2387 Other defects in wheels.
2388 Other defects in axles.

Air Brakes and Appurtenances

2401 Air compressor.
2402 Air reservoir, or fittings, safety valve or check valve.
2403 Air brake control valve.
2404 Brake pipe, or fittings, broken or defective.
2405 Air brake hose, broken or burst.
2406 Air brake parts, falling off.
2407 Air brake, sticking.
2408 Air brake, defective, due to snow and ice.
2409 Air brake failure, excessive piston travel.
2410 Triple valves, lazy, dirty, or otherwise defective.
2488 Other air brake defects.

Hand Brakes, Brake Rigging, and Appurtenances

2501 Brake beam, broken, disconnected, displaced, etc.
2502 Brake chains or bolts, breaking or giving way.
2503 Brake chains, kinking, twisting, overlapping, or too long.
2504 Brake hanger, broken or disconnected.
2505 Brake rod, broken, defective, or disconnected.
2506 Brake shaft, broken or defective.
2507 Brake shoe, worn, broken, or missing.
2508 Brake wheel, loose or defective.
2509 Pawl or rachet, failure or defect.
2510 Brake rigging coming down, other failure or defect.
2511 No brake on car.
2512 Insufficient braking power, not otherwise provided for.
2588 Other defects in hand brakes, brake rigging and appurtenances.

Couplers, Draft Gear, and Related Parts

2601 Coupler, broken, not pulled out.
2602 Coupler, improper height.
2603 Jackknifing of couplers.
2604 Couplers passing in attempting to make coupling.
2605 Knuckle, broken or defective.
2606 Knuckle lock or locklift assembly.
2607 Uncoupling device.
2608 Friction buffer or diaphragm.

Coupler or draft gear pulled out or down, due to failure of:

2609 Coupler.
2610 Coupler rivets or swivel pin.
2611 Coupler yoke.
2612 Coupler key.
2613 Coupler key retainer.
2614 Striking casting or coupler carrier.
2615 Sills or draft lugs.
2616 Draft gear carrier.
2617 Cushion underframe parts.
2618 Other parts causing coupler or draft gear to drop.
2686 Other defects in couplers.
2687 Other defects in draft gear.
2688 Other defects in cushion underframe.

Car Structure

2701 Sills, bent or broken.
2702 Body bolster.
2703 Other underframe parts.
2704 Sides, spreading or buckling beyond equipment clearance line.
2705 Drop end, falling off.
2706 Floor, material falling from or through.
2707 Side door, falling off.
2708 Drop door, open or defective.
2709 Hatch, dome or manhole cover.
2710 Stake pocket or load retainer.
2788 Other defects in car structure.

Other Parts of Equipment

2801 Air dump cars, dumping mechanism.
2802 Crane boom on car or tiedowns for.
2803 Snow plow, flanger, ditcher or spreader defects.
2804 Steam heat connections, dragging or falling off.
2805 Car water tanks.
2806 Axle-driven generator.
2807 Internal combustion power plant for car electrical auxiliaries or refrigeration.
2887 Other defects in car electrical or mechanical equipment for lighting, heating, cooling, radio, etc. (not propulsion).
2888 Other equipment defects.

3. DEFECTS IN OR IMPROPER MAINTENANCE OF WAY AND STRUCTURES

Bridges, Trestles, Culverts, and Tunnels

3001 Structural defect or failure.
3004 Improper or insufficient maintenance.
3088 Other defects in or failures.

Ties and Tie Plates

3102 Ties, decayed, worn or splintered.
3103 Ties, broken, soft or poor quality of timber or other defects.
3104 Ties, insufficient number or size.
3105 Ties plates, broken or otherwise defective.
3106 Steel, concrete or other nonwood tie defective.

Rails and Joints

3201 Broken rail end, with bolted joints.
3202 Broken rail end, with welded joints.
3203 Flow of metal.
3204 Crushed head.
3205 Split head.
3206 Split web.
3207 Broken base.
3208 Other forms of rail failures not due to wear.
3209 Rails, spreading because improperly spiked or braced.
3210 Rails, spreading because joints loosely or improperly bolted.
3211 Rails, spreading, other causes.
3212 Rails, giving way because of worn condition.
3213 Rail joints, angle bars or bolts broken or otherwise defective.
3214 Rail joints, failure at, due to insulation.
3215 Rail joints, improperly maintained.
3216 Compromise joints, defect, or improper maintenance.
3288 Other defects in or failures of rail joints.

Frogs and Switches

3301 Frogs, broken or missing bolts.
3302 Frogs, guard rail or fastenings defective or missing.
3303 Frogs, guard rail improperly placed or secured.
3304 Frogs, springs or spring bolts loose or defective.
3305 Frogs, wing rails broken.
3306 Frogs, point broken or worn.
3307 Other defects in frogs.
3308 Switch-detector bar or connecting rods broken or defective.
3309 Switch, lost motion or out of adjustment.
3310 Switch lug broken.
3311 Switch point, bent or sprung.
3312 Switch point, broken.
3313 Switch point, worn.
3314 Switch stand or head block, loose, broken, or defective.
3315 Switch rod broken or disconnected.
3316 Switch heater, broken or otherwise defective.
3317 Switch rod bent or sprung.
3318 Switch indicator, missing or defective.
3319 Spring switch, defective.
3320 Keeper or latch, broken, defective, or missing.
3321 Electric or interlocking parts or appurtenances, failure or defect.
3322 Switch spiked, working loose.
3388 Other defects in or improper maintenance of switches.

Interlocking and Block Signal System

3401 Signal displaying false indication.
3402 Improper location of signal.
3403 Sand, rust or other deposits on rails.
3488 Other defects in, or improper maintenance of, signal system.

Other Way and Structure Items

3501 Guard rail improperly placed or secured.
3502 Improper superelevation of track.
3503 Improper alignment of track.
3504 Improper surface of track.
3505 Improper gage of track.
3506 Improper curvature for traffic conditions and equipment used.
3507 Dirty ballast or other poor drainage.
3508 Soft track not otherwise provided for
3509 Insufficient side clearance.
3510 Insufficient overhead clearance.
3511 Insufficient clearance between adjacent tracks.
3512 Car retarder, worn, out of adjustment or otherwise defective.
3513 Skates and skate-placing mechanism worn, out of adjustment or otherwise defective.
3514 Mules, car dumping equipment and car shakeout devices worn, out of adjustment or otherwise defective.
3515 Float bridges.
3516 Fueling facilities.
3517 Sanding facilities.
3518 Water columns and other water supply facilities for servicing equipment.
3519 Turntables and transfer tables.
3520 Catenary, third rail or other wayside current distribution apparatus.
3588 Other defects in way and structures

4. MISCELLANEOUS CAUSES

Improper Loading

4001 Load too high for proper clearance.
4002 Load too wide for proper clearance.
4003 Load too heavy or other unbalanced loading.
4004 Car overloaded.

Load shifted, due to improper or defective:

4005 Steel banding.
4006 Steel banding retainer.
4007 Cable, chain, rope or other tie-down device.
4008 Stakes, blocking, bracing or other fastenings.
4009 Load on two or more cars, failure to adjust for curves, failure to properly block coupler or falure to make uncoupling mechanism inoperative.
4088 Other improper loading of cars.

Negligence of Nonemployees

4101 Failure to control movement of locomotive or car.
4102 Failure to secure locomotive or car.
4103 Improper use of hand-operated switch or derail.
4104 Swinging car door left open.
4105 Car drop doors left open.
4106 Tractors, lift trucks, cranes and other portable machines not in clear.
4107 Chutes, ramps, conveyors, pipes and other loading or unloading devices not in clear.
4108 Dirt or other obstructions on track.
4188 Other negligence of nonemployees.

Malicious or Careless Acts of Nonemployees

4201 Switch stand run into by vehicle.
4202 Switch or derail padlock, tampered with.
4203 Other tampering with switch or derail.
4204 Obstruction placed on track.
4205 Track or structure tampered with.
4206 Signal system tampered with.
4207 Brakes or chocks tampered with.
4208 Incendiarism.
4288 Other malicious acts or misbehavior of nonemployees.

Obstructions, Forces of Nature, etc.

4301 Landslides or boulders on, or foul of track.
4302 Snow or ice on track.
4303 Animals on track.
4304 Obstacles in switch, derail or frog.
4305 Roadway machine or track motor car obstructing track.
4306 Accidents caused by other train accidents.
4307 Track or structures damaged or washed out by floods.
4308 Bridge or trestle, timber construction, damaged by accidental fire.
4309 Timber tunnel lining damaged by accidental fire.
4310 Car damaged by accidental fire.
4386 Other accidental fires.
4387 Other track obstructions.
4388 Other forces of nature.

Rail-Highway Grade Crossing Accidents

Struck by locomotive or car:

4401 Passenger automobile.
4402 Bus.
4403 Truck.
4404 Other vehicle.

Ran into side of locomotive or car:

4411 Passenger automobile.
4412 Bus.
4413 Truck.
4414 Other vehicle.
4421 Accident caused by sudden train brake application to avoid highway crossing accident.
4422 Highway vehicle struck by locomotive or car at private crossing.
4423 Highway vehicle ran into side of locomotive or car at private crossing.
4487 Other private crossing accidents.
4488 Other highway grade crossing accidents.

Combination of Two or More Causes

Wheel flange worn and:

4501 Switch point worn.
4502 Switch and adjoining frog too close together.
4503 Improper surface of track.
4504 Tight gage of track.
4505 Improper loading of car.

Truck stiff, close side bearing clearance or improper swivelling and:

4506 Switch point worn.
4507 Improper surface of track.
4508 Tight gage of track.
4509 Improper loading of car.
4510 Wheel flange worn.

Excessive side bearing clearance and:

4511 Improper surface of track.
4512 Improper superelevation of track on curve.
4513 Improper loading of car.

Slack action and:

4514 Improper surface of track.
4515 Tight gage of track.
4516 Improper loading of car.
4517 Heavy impact and weakened condition of car.
4518 High locomotive tractive effort and light cars on sharp curve.
4588 Other combinations of two or more causes.

Other Ascertained Causes

4601 Rocking or swaying of car.
4602 Rail slippery.
4603 Car blown out of siding by wind.
4604 Unable to control locomotive or cars on grade.
4605 Use of helper locomotive, not otherwise provided for.
4606 Emergency or severe application of air brakes.
4607 Slack action, not otherwise classified.
4608 Handling bad order equipment, including use of chains, bars, etc., in place of standard coupler.
4609 Cars parted, not otherwise classified.
4610 Vision obscured because of location of hand brake.
4611 Vision obscured by smoke, steam, fog, smog, ice, snow, rain, etc.

Use of, or operation of:

4612 Crane car.
4613 Snow plow, flanger, ditcher, or spreader.
4614 Air dump car.
4615 Fueling, watering or sanding facilities.
4616 Mules, car dumpers or shakeout devices.
4617 Turntables or transfer tables.
4618 Float bridges.
4619 Car retarder.
4620 Skates or skate-placing mechanism.
4687 Accident investigated—other ascertained cause.
4688 Accident not investigated.

TRAIN-SERVICE ACCIDENTS

5. SPECIFIED GROUPS OF CAUSES

Coupling or Uncoupling Locomotives or Cars, or Manipulating Air or Steam Connections

(a) Coupling and uncoupling locomotives or cars:

5001 Adjusting coupler, unexpected movement of cars due to slack.
5002 Adjusting coupler, unexpected movement of cars due to mistake or misunderstanding in giving or observing hand signals.
5003 Adjusting coupler, unexpected movement of cars due to other causes.
5004 Adjusting coupler, when moving cars were nearing each other.
5005 Adjusting coupler on moving cars, lost footing.
5006 Adjusting coupler with foot, cars moving.
5007 Adjusting coupler with foot, cars not moving.
5008 Adjusting coupler, part of coupler fell striking person.
5009 Uncoupling without using lever.
5010 Uncoupling lever, manipulation of.
5011 Uncoupling, lost footing, or fell from car.
5012 Uncoupling, unexpected movement of cars or locomotives.
5013 Coupling or uncoupling with chains or other emergency appliances.
5014 Coupling or uncoupling damaged or bad order cars, not otherwise provided for.
5015 Foot caught in frog, switch, guard rail, crossing plank, etc.
5016 Coming in contact with objects or material, etc., or striking parts of body against cars or locomotives while coupling or uncoupling, not otherwise provided for.
5017 Hand, arm, foot, or any part of body caught between projecting load and car, not otherwise provided for.
5018 Stumbling, slipping, or falling, not otherwise provided for.
5019 Struck by freight or other objects falling from cars or locomotives.
5020 Stepping in holes or depressions.
5048 Miscellaneous.

(b) Coupling and uncoupling air hose (or turning angle cocks), steam hose, and safety chains:

5051 Air or steam hose, angle cocks or safety chains, cars moved while manipulating.
5052 Air or steam hose, angle cocks or safety chains, going between moving cars to manipulate.
5053 Air hose, uncoupling, struck by hose because of sudden release of air.
5054 Steam hose, burned by hot water or steam from.
5055 Stumbling, slipping, or falling, not otherwise provided for.
5056 Parts defective, or hard to manipulate.
5057 Struck by freight or other objects falling from cars or locomotives, while manipulating.
5088 Miscellaneous.

(c) Operating locomotives and rail motor cars:

5101 Fueling, watering or sanding.
5102 Using hand tools.
5103 Burn from hot oil, steam, or hot water.
5104 Operating steam generating boiler and appurtenances.
5105 Electrical flash, shock or burn.
5106 Fumes from internal combustion engine or appurtenances.
5107 Coming in contact with objects on the locomotive, defective equipment.
5108 Coming in contact with objects on the locomotive, other causes.
5109 Struck by tools or other objects falling.
5110 Stumbling, slipping, or falling on ground.
5111 Stumbling, slipping, or falling, due to oil leaks.
5112 Stumbling, slipping, or falling, other defective equipment.
5113 Stumbling, slipping, or falling, other causes.
5114 Running of locomotive or rail motor car by unauthorized person.
5115 Checking, oiling locomotive, etc.
5116 Unexpected movement of locomotive not otherwise classified.
5117 Doors, injured by.
5188 Other accidents while operating locomotives other than steam including rail motor cars, other causes.

(d) Operating hand brakes:

5201 Brake chains or bolts, breaking or giving way.
5202 Brake chains kinking, twisting, overlapping, or too long.
5203 Brake shaft, broken or defective.
5204 Brake wheel, loose or defective.
5205 Pawl or ratchet, defect in or failure of.
5206 Defective hand brakes not included above.
5207 Pawl slipping or accidentally knocked out of ratchet, no defects.
5208 Brake club slipping in wheel.
5209 Brake club, struck by, because wheel flew around.
5210 Brake club, breaking.
5211 Sudden stopping, starting, lurch, or jerk of train or car.
5212 Slipping or falling because of ice or snow on cars or locomotives.
5213 Losing hold, slipping, or falling, not otherwise classified.
5214 Using or holding hand brakes against air.
5215 Caught between running boards.
5216 Load shifting.
5217 Finger, hand, or other part of body caught between parts of equipment, or lading, not otherwise provided for.
5218 Operating ratchet-handle brake, no defect.
5219 Vision obscured because of location of hand brake.
5288 Other accidents while operating hand brakes.

(e) Operating switches:

5301 Switch lever flying up.
5302 Switch lever or ball falling on or catching hand, foot, or other part of body.
5303 Slipping or falling on ice or snow on tracks or elsewhere.
5304 Tripping, slipping, or falling, not otherwise classified.
5305 Caught between locomotive or car and switch lever or stand.
5306 Struck by locomotives or cars.
5307 Foot, hand, or other part of body caught in or by mechanism of switch.
5388 Other accidents while operating switches.

(f) Persons on locomotives or cars coming in contact with structures, etc.:

5401 Bridges, overhead.
5402 Bridges, side.
5403 Buildings or gates, not otherwise provided for.
5304 Coal chutes, aprons, docks, elevators, etc.
5405 Enginehouse or roundhouse walls, doors, or doorways.
5406 Fences, cattle guards, etc.
5407 Mail cranes (normal or in position for mail delivery).
5408 Overhang at station or other buildings.
5409 Platforms.
5410 Poles (telegraph, telephone, electric light, signal, etc.).
5411 Scale housings.
5412 Signal arms or other parts or appurtenances of signal apparatus.
5413 Snowsheds, roofs.
5414 Snowsheds, walls.
5415 Stock chutes or pens.
5416 Switch stands, lamps, targets, signals, etc.
5417 Tunnels, overhead walls.
5418 Tunnels, side walls.
5419 Warning guards or ticklers.
5420 Water and fuel-oil standpipes and spouts.
5421 Wires or pipes, overhead.
5422 Other temporary obstructions.
5488 Other fixed structures.

(g) Getting on or off cars or locomotives:

5501 Handhold or grab iron, losing hold or missing.
5502 Handhold or grab iron, defective.
5503 Step, stirrup, or footboard, missing footing or slipping on.
5504 Step, stirrup, or footboard, defective.
5505 Ladder, missing foothold, or slipping on or losing hold of rung.
5506 Ladder, defective.
5507 Striking hands, arms, feet, legs, head, or body against cars or locomotives.
5508 Stepping or tripping on coal, boards, stone, rubbish, or other loose or refuse material, or in holes.
5509 Stepping or tripping on ties, rails, ballast, etc. (part of track).
5510 Slipping on ice or snow on ground.
5511 Slipping on ice or snow on locomotives or freight cars.
5512 Slipping or falling on or from coach steps, foot catching.
5513 Slipping or falling on or from coach steps, ice or snow on step.
5514 Slipping or falling on or from coach steps, defective step.
5515 Slipping or falling on or from coach steps, train starting or stopping.
5516 Slipping or falling on or from coach steps, not otherwise classified.
5517 Slipping or falling while boarding or alighting beyond station platform.
5518 Slipping or falling on station platform, ice or snow on platform.
5519 Slipping or falling on station platform, defective platform.
5520 Stepping or falling between car and high platform.
5521 Stepping or falling between car steps and low platform.
5522 Slipping or falling on station platform, not otherwise classified.
5523 Falling, slipping, tripping, or ankle turned or sprained, not otherwise classified.
5524 Missing footing on porter's footstool.
5525 Falling from or through bridge or trestle.
5526 Getting on front end of approaching locomotive.
5527 Getting on or off at excessive speed.
5528 Coming in contact with trucks (baggage, express, mail, etc.).
5529 Coming in contact with or tripping over baggage, express matter, etc.
5530 Coming in contact with nails, splinters, part of lading, etc., on cars, not otherwise provided for.
5531 Struck by loose material, tools, etc., falling on or from locomotives or cars.
5532 Hand or other part of body striking or being struck by loose or swinging car doors, or projections from locomotives or cars.
5533 Trapdoors on coach, injured by.
5534 Otherwise injured by car doors.
5535 Clothing catching.
5536 Sudden stopping, starting, lurch, or jerk of locomotive or car.
5537 Attempting to carry material or tools while getting on or off locomotives or cars.
5538 Jumping from equipment in anticipation of an accident.
5539 Jumping from equipment, while mentally deranged, or to escape from custody, etc.
5540 Jumping from equipment, other causes.
5541 Striking or being struck by cars or locomotives on adjacent tracks.
5542 Coming in contact with fixed structures.
5543 Coming in contact with temporary or movable structures, material, etc., not otherwise provided for.
5588 Getting on or off, not otherwise provided for.

(h) Accidents at public rail-highway crossings:

5601 Pedestrian struck by locomotive or car.
5602 Passenger automobile struck by locomotive or car.
5603 Bus struck by locomotive or car.
5604 Truck struck by locomotive or car.
5605 Motorcycle struck by locomotive or car.
5606 Other vehicle, machine or animal struck by locomotive or car.
5607 Pedestrian ran into, or drawn into locomotive or car.
5608 Passenger automobile ran into side of locomotive or car.
5609 Bus ran into side of locomotive or car.
5610 Truck ran into side of locomotive or car.
5611 Motorcycle ran into side of locomotive or car.
5612 Other vehicle, machine or animal ran into side of locomotive or car.
5613 Vehicle ran into roadway structure to avoid locomotive or car.
5614 Accident caused by sudden train brake application to avoid highway crossing accident.
5615 Pedestrian passing over, through or under cars on crossing.
5688 Highway crossing accidents due to other causes.

(i) Struck by or ran into locomotives or cars at places other than public rail-highway crossings:

5701 Standing, walking, or running on or along track.
5702 Crossing track at private crossing.
5703 Crossing track not at crossing.
5704 While on public thoroughfare (track in street).
5705 On bridges or trestles.
5706 Sitting or lying on track or near track not in clear.
5707 While working on or along track, negligence.
5708 While working on or along track, improper instructions.
5709 While working on or along track, improper protection.
5710 While working on or along track, defective protective devices.
5711 While working on or along track, other causes.
5788 Other accidents to persons by locomotives or cars at places other than public rail-highway crossings.

MISCELLANEOUS CAUSES

(j) Freight, baggage, express or mail:

5801 Handling freight.
5802 Broken or leaking package, container or car of explosive or other dangerous articles.
5803 Lading shifted.
5804 Improper routing of car with high or wide load.
5805 Handling baggage, express or mail.
5806 Locomotive or car striking baggage, express, freight or mail, or striking baggage trucks or similar objects.
5807 Baggage or similar articles falling from luggage rack in passenger car.
5808 Baggage or similar articles in passenger car aisle or vestibule, tripping over.
5809 Other accidents while handling freight, baggage, express or mail.

(j) Windows, doors, etc.:

5810 Closing or opening hopper doors on cars.
5811 Closing or opening sliding box-car doors.
5812 Unexpected closing of doors, no defects.
5813 Closing or opening sliding baggage-car doors.
5814 Unexpected closing of doors, defective keeper or other defects.
5815 Coach trapdoors being operated by trainmen.
5816 Coach trapdoors being operated by passengers.
5817 Defective coach trapdoors, accidentally opening or closing.
5818 Adjusting windows.
5819 Windows otherwise falling and striking persons.
5820 Interior doors, etc.
5821 End gate of car falling or otheriwse involved.

(j) Servicing or maintenance accidents involving train operation:

5822 Fueling, watering or sanding locomotive or rail motor cars.
5823 Lubrication of locomotive or cars.
5824 Icing of refrigerator cars.
5825 Servicing of car mechanical refrigeration equipment.
5826 Installing, removing, or servicing car heaters other than in passenger cars.
5827 Cleaning or washing of locomotive or cars.
5828 Icing or watering of passenger cars.
5829 Servicing of passenger car heating, lighting, or air-conditioning equipment.
5830 Locomotive or car coming against locomotive or car being repaired under flag or signal protection.
5831 Locomotive or car coming against locomotive or car being repaired without flag or signal protection.
5832 Locomotive or car being repaired on the road or in yard, not otherwise provided for.
5833 Rerailing locomotives or cars or handling rerailing devices.
5834 While working around wrecks, not otherwise provided for.
5835 Failure of maintenance or other employees to put out flag or otherwise to protect when obstructing track.
5836 Disregard of flag or other protection placed by maintenace or other employees.
5837 Train striking or being struck by motor car, other causes.
5838 Track motor car, jumping from, in anticipation of being struck by locomotive or car.
5839 Removing obstacles from track.
5840 Other servicing or maintenance accidents.

(j) Stumbling, slipping, falling, caught, etc., not elsewhere classified:

WHILE ON CAR OR LOCOMOTIVE

5841 On snow or ice.
5842 On passenger car buffer foot plate.
5843 Passenger car diaphragm.
5844 In passenger cars, not elsewhere classified.
5845 Stepping or jumping between locomotives or cars in the same train.
5846 Falling from, not otherwise classified.
5847 Stumbling, slipping or falling on, not otherwise classified.

(j) Not on cars or locomotive:

5848 On snow or ice.
5849 Falling off or through bridges, trestles or retaining walls, equipped with handrails.
5850 Falling off or through bridges, trestles or retaining walls, not equpped with
5851 On stairways, ramps, station platforms, etc.
5852 Falling into transfer table, turntable, inspection or other pits.
5853 Stepping or tripping into holes or depressions.
5854 On switch or signal parts in place.
5855 On rails, ties, or other parts of track in place.
5856 Piled material (including snow and ice).
5857 On nails, splinters or other sharp materials or sharp trash.
5858 On coal, boards or other loose material or loose trash.
5859 Between locomotive or car and fixed structure.
5860 Between locomotive or car and other than fixed structures.
5861 Between locomotives and/or cars on adjacent tracks.
5888 Other causes.

(j) Flying or falling objects, burns and similar causes:

5901 Sparks, cinders or other flying objects, in eye.
5902 Stones, or other objects "picked up" by train.
5903 Other injuries by flying objects.
5904 Coal, coke or other material or lading falling from tenders or cars.
5905 Electrical flash, shock or burn from locomotive or car.
5906 Electrical flash, shock or burn from third rail.
5907 Electrical flash, shock or burn from catenary construction.
5908 Electrical flash, shock or burn from other sources.
5909 Fire or explosion of fuses or torpedoes.
5910 Fire or explosion caused by explosives or other dangerous articles.
5911 Other fire or explosion on locomotive.
5912 Other fire or explosion on freight-train car (or work equipment).
5913 Other fire or explosion on passenger-train car or rail motor car.
5914 Other fire or explosion along right-of-way.
5915 Burned by hot, or corrosive substances.
5916 Other burns, not elsewhere classified.
5917 Overcome by fumes or gases, not elsewhere classified.
5918 Other flying or falling objects, burns and similar causes.

(j) Other causes:

5919 Crossing over, under or between locomotives or cars.
5920 Locomotive or car coming against car placed for loading or unloading.
5921 Sudden starting, stopping, lurch or jerk of locomotive or car, not elsewhere classified.
5922 Due to slack action.
5923 Bleeding cars.
5924 Poling or roping cars.
5925 Car sides spreading or buckling.
5926 Blocking or chocking cars.
5927 Projections of material, tools, or equipment on locomotives or cars on adjacent track.
5928 Emergency or severe application of air brakes, burst or parted air hose.
5929 Emergency or severe application of air brakes, other defective equipment.
5930 Emergency or severe application of air brakes, negligence of engineman.
5931 Emergency or severe application of air brakes, negligence of train crew.
5932 Other emergency or severe application of air brakes.
5933 Other accidents in braking or securing equipment.
5934 Other miscellaneous causes.

NONTRAIN ACCIDENTS

7. EQUIPMENT

(a) Locomotives—Construction, servicing, maintenance, and dismantling of locomotives:

7001 Use of portable tools.
7002 Use of scaffolds, ladders, etc.
7003 Use of cranes, hoists, turntables, etc.
7004 Use of shop machinery.
7005 Use of lift trucks and other portable material-handling equipment.
7006 Use of paint spraying or paint removing equipment.
7007 Foreign object in eye.
7008 Flying objects.
7009 Falling objects.
7010 Electrical flash, shock or burn.
7011 Fire or explosion.
7012 Hot or corrosive substances.
7013 Fumes or gases.
7014 Stumbling, slipping or falling.
7015 Moving locomotive for repairs.
7016 Unexpected movement of locomotive.
7088 Other causes.

(b) Construction, servicing, maintenance, and dismantling of cars:

7101 Use of portable tools.
7102 Use of scaffolds, ladders, etc.
7103 Use of cranes, hoists, transfer tables, etc.
7104 Use of shop machinery.
7105 Use of lift trucks and other portable material-handling equipment.
7106 Use of paint spraying or paint removing equipment.
7107 Foreign object in eye.
7108 Flying objects.
7109 Falling objects.
7110 Electrical flash, shock or burn.
7111 Fire or explosion.
7112 Hot or corrosive substances.
7113 Fumes or gases.
7114 Stumbling, slipping or falling.
7115 Moving locomotive for repairs.
7116 Unexpected movement of locomotive.
7188 Other causes.

(b) Construction, maintenance, servicing, and dismantling of floating equipment:

7201 Use of portable tools.
7202 Use of scaffolds, ladders, etc.
7203 Use of cranes, hoists, transfer tables, etc.
7204 Use of shop machinery.
7205 Use of lift trucks and other portable material-handling equipment.
7206 Use of paint spraying or paint removing equipment.
7207 Foreign object in eye.
7208 Flying objects.
7209 Falling objects.
7210 Electrical flash, shock or burn.
7211 Fire or explosion.
7212 Hot or corrosive substances.
7213 Fumes or gases.
7214 Stumbling, slipping or falling.
7215 Moving other equipment for repairs.
7216 Unexpected movement of other equipment.
7288 Other causes.

Miscellaneous Vehicles

(c) A. Operation on public highway of:

7301 Passenger automobiles.
7302 Buses.
7303 Trucks.
7304 Other highway vehicles and machines.

B. Operation on other than public highways of:

7401 Passenger automobiles.
7402 Buses.
7403 Trucks.
7404 Other highway vehicles and machines.

C. Servicing and maintenance of:

7501 Passenger automobiles.
7502 Buses.
7503 Trucks.
7504 Other highway vehicles.
7505 Trailers or containers.
7588 Accidents involving other equipment, not elsewhere classified.

(d) Construction, repair, maintenance, or dismantling of facilities for equipment and vehicles:

7601 Use of portable tools.
7602 Use of scaffolds, ladders, etc.
7603 Use of cranes, hoists, transfer tables, etc.
7604 Use of shop machinery.
7605 Use of lift trucks and other portable material-handling equipment.
7606 Use of paint spraying or paint removing equipment.
7607 Foreign object in eye.
7608 Flying objects.
7609 Falling objects.
7610 Electrical flash, shock or burn.
7611 Fire or explosion.
7612 Hot or corrosive substances.
7613 Fumes or gases.
7614 Stumbling, slipping or falling.
7615 Moving other equipment for repairs.
7616 Unexpected movement of other equipment.
7688 Other causes.

Construction, Maintenance or Dismantling of Way and Structures

(e) Bridges, tunnels, culverts, etc.:

8001 Use of hand tools.
8002 Use of portable power tools.
8003 Use of scaffolds, ladders, etc.
8004 Use of paint spraying or paint removing equipment.
8005 Use of cranes, derricks, piledrivers, etc.
8006 Loading or unloading material on cars or trucks.
8007 Moving cars.
8008 Use of machinery and other equipment.
8009 Foreign objects in eye.
8010 Flying objects.
8011 Falling objects.
8012 Electrical flash, shock or burn.
8013 Fire or explosion.
8014 Fumes or gases.
8015 Stumbling, slipping or falling.
8088 Other causes.

(e) Stations, warehouses, roadway buildings, and grain elevators:

8101 Use of hand tools.
8102 Use of portable power tools.
8103 Use of scaffolds, ladders, etc.
8104 Use of paint spraying or paint removing equipment.
8105 Use of cranes, derricks, piledrivers, etc.
8106 Loading or unloading material on cars or trucks.
8107 Moving cars.
8108 Use of machinery and other equipment.
8109 Foreign objects in eye.
8110 Flying objects.
8111 Falling objects.
8112 Electrical flash, shock or burn.
8113 Fire or explosion.
8114 Fumes or gases.
8115 Stumbling, slipping or falling.
8188 Other causes.

(e) Maintenance of way, bridge and building, and signal shop facilities, etc.:

8201 Use of hand tools.
8202 Use of portable power tools.
8203 Use of scaffolds, ladders, etc.
8204 Use of paint spraying or paint removing equipment.
8205 Use of cranes, derricks, piledrivers, etc.
8206 Loading or unloading material on cars or trucks.
8207 Moving cars.
8208 Use of machinery and other equipment.
8209 Foreign objects in eye.
8210 Flying objects.
8211 Falling objects.
8212 Electrical flash, shock or burn.
8213 Fire or explosion.
8214 Fumes or gases.
8215 Stumbling, slipping or falling.
8288 Other causes.

(e) Wharves, docks, or floatbridges, etc.:

8301 Use of hand tools.
8302 Use of portable power tools.
8303 Use of scaffolds, ladders, etc.
8304 Use of paint spraying or paint removing equipment.
8305 Use of cranes, derricks, piledrivers, etc.
8306 Loading or unloading material on cars, trucks or vessels.
8307 Moving cars.
8308 Use of machinery and other equipment.
8309 Foreign objects in eye.
8310 Flying objects.
8311 Falling objects.
8312 Electrical flash, shock or burn.
8313 Fire or explosion.
8314 Fumes or gases.
8315 Stumbling, slipping or falling.
8388 Other causes.

(e) Other miscellaneous structures:

8401 Use of hand tools.
8402 Use of portable power tools.
8403 Use of scaffolds, ladders, etc.
8404 Use of paint spraying or paint removing equipment.
8405 Use of cranes, derricks, piledrivers, etc.
8406 Loading or unloading material on cars or trucks.
8407 Moving cars.
8408 Use of machinery and other equipment.
8409 Foreign objects in eye.
8410 Flying objects.
8411 Falling objects.
8412 Electrical flash, shock or burn.
8413 Fire or explosion.
8414 Fumes or gases.
8415 Stumbling, slipping or falling.
8488 Other causes.

(f) Cuts, fills, retaining walls, cribbing, fences, and signs:

8501 Use of hand tools.
8502 Use of portable power tools.
8503 Use of scaffolds, ladders, etc.
8504 Use of paint spraying or paint removing equipment.
8505 Use of cranes, derricks, piledrivers, etc.
8506 Loading or unloading material on cars or trucks.
8507 Moving cars.
8508 Use of machinery and other equipment.
8509 Foreign objects in eye.
8510 Flying objects.
8511 Falling objects.
8512 Electrical flash, shock or burn.
8513 Fire or explosion.
8514 Fumes or gases.
8515 Stumbling, slipping or falling.
8588 Other causes.

Track

(g) A. Ties, switch timbers, tie plates, and fastenings:

8601 Inserting or removing by use of hand tools.
8602 Inserting or removing by use of power tools.
8603 Loading or unloading.
8604 Moving cars in tie work.
8605 Machining or other processing at shop.
8606 Foreign object in eye.
8607 Flying objects.
8608 Falling objects.
8609 Electrical flash, shock or burn.
8610 Fire or explosion.
8611 Fumes or gases.
8612 Stumbling, slipping or falling.
8688 Other causes.

B. Rail:

8701 Handling by use of power tools.
8702 Handling by use of hand tools.
8703 Welding, building-up, cutting, hardening or grinding rail at site.
8704 Welding, building-up, cutting, hardening or grinding rail at shop.
8705 Loading or unloading.
8706 Moving cars in rail work.
8707 Foreign object in eye.
8708 Flying objects.
8709 Falling objects.
8710 Electrical flash, shock or burn.
8711 Fire or explosion.
8712 Fumes or gases.
8713 Stumbling, slipping or falling.
8788 Other causes.

C. Other material:

8801 Handling by use of portable tools.
8802 Handling by use of cranes or derricks.
8803 Welding, building-up, cutting, hardening or grinding.
8804 Loading or unloading material or other equipment.
8805 Moving cars or other equipment.
8806 Foreign object in eye.
8807 Flying objects.
8808 Falling objects.
8809 Electrical flash, shock or burn.
8810 Fire or explosion.
8811 Fumes or gases.
8812 Stumbling, slipping or falling.
8888 Other causes.

Signal and Communication System

(h) Block, interlocking and highway crossing signals:

8901 Use of hand tools.
8902 Use of portable power tools.
8903 Use of scaffolds, ladders, etc.
8904 Use of paint spraying or paint removing equipment.
8905 Use of cranes, derricks, piledrivers, etc.
8906 Loading or unloading material on cars or trucks.
8907 Moving cars.
8908 Use of machinery and other equipment.
8909 Foreign objects in eye.
8910 Flying objects.
8911 Falling objects.
8912 Electrical flash, shock or burn.
8913 Fire or explosion.
8914 Fumes or gases.
8915 Stumbling, slipping or falling.
8988 Other causes.

(h) Telephone, telegraph and radio communications:

9001 Use of hand tools.
9002 Use of portable power tools.
9003 Use of scaffolds, ladders, etc.
9004 Use of paint spraying or paint removing equipment.
9005 Use of cranes, derricks, piledrivers, etc.
9006 Loading or unloading material on cars or trucks.

9007 Moving cars.
9008 Use of machinery and other equipment.
9009 Foreign objects in eye.
9010 Flying objects.
9011 Falling objects.
9012 Electrical flash, shock or burn.
9013 Fire or explosion.
9014 Fumes or gases.
9015 Stumbling, slipping or falling.
9088 Other causes.

(i) Operation, servicing, and maintenance of track motor cars and other roadway machines:

9101 Track motor cars striking each other.
9102 Track motor cars striking other roadway machines.
9103 Track motor cars leaving the track while in motion.
9104 Track motor cars, jumping from, in anticipation of nontrain accident.
9105 Highway grade accidents involving track motor cars or other roadway machines.
9106 Other nontrain accidents involving operation of track motor cars.
9107 Other nontrain accidents involving operation of other roadway machines, not elsewhere classified.
9108 Foreign objects in eye.
9109 Flying objects.
9110 Falling objects.
9111 Electrical flash, shock or burn.
9112 Fire or explosion.
9113 Fumes or gases.
9114 Stumbling, slipping or falling.
9188 Other causes.

(j) Operation, servicing, maintenance, or dismantling or power plants, and substations:

9201 Use of hand tools.
9202 Use of portable power tools.
9203 Use of scaffolds, ladders, etc.
9204 Use of paint spraying or paint removing equipment.
9205 Use of cranes, derricks, piledrivers, etc.
9206 Loading or unloading material on cars or trucks.
9207 Moving cars.
9208 Use of machinery and other equipment.
9209 Foreign objects in eye.
9210 Flying objects.
9211 Falling objects.
9212 Electrical flash, shock or burn.
9213 Fire or explosion.
9214 Fumes or gases.
9215 Stumbling, slipping or falling.
9288 Other causes.

(j) Operation, servicing, maintenance, or dismantling of transmissions and distribution systems:

9301 Use of hand tools.
9302 Use of portable power tools.
9303 Use of scaffolds, ladders, etc.
9304 Use of paint spraying or paint removing equipment.
9305 Use of cranes, derricks, piledrivers, etc.
9306 Loading or unloading material on cars or trucks.
9307 Moving cars.
9308 Use of machinery and other equipment.
9309 Foreign objects in eye.
9310 Flying objects.
9311 Falling objects.
9312 Electrical flash, shock or burn.
9313 Fire or explosion.
9314 Fumes or gases.
9315 Stumbling, slipping or falling.
9388 Other causes.

(k) 9. Miscellaneous causes; all classes of persons:

9401 Operating freight stations, and the freight portion of combination stations.
9402 Handling freight other than explosives or other dangerous articles by hand.
9403 Handling freight other than explosive or other dangerous articles by power.
9404 Handling explosives, other dangerous articles and empty containers.
9405 Operating passenger stations, and the passenger portion of combination stations.
9406 Handling baggage, express and mail by hand.
9407 Handling baggage, express and mail by power.
9408 Other accidents within stations, not elsewhere classified.
9409 Other accidents outside stations, not elsewhere classified.
9410 Other accidents within general office buildings.
9411 Operating storehouse buildings and equipment and storage yards.
9412 Operating car dumpers, gantry cranes, mules, skip hoists, shakeout devices, etc.
9413 Accidents to yard office employees and others within yard offices.
9414 Accidents to yard office employees and others outside yard offices.
9415 Accidents to crossing and bridge flagmen and gatemen.
9416 Accidents to patrolmen and watchmen.
9417 Accidents to commissary and laundry employees.
9418 Accidents due to use of escalators, stairways, etc.
9419 Foreign objects in eye.
9420 Flying objects.
9421 Falling objects.
9422 Electrical flash, shock or burn.
9423 Fire or explosion.
9424 Hot or corrosive substances.
9425 Fumes or gases.
9426 Other stumbling, slipping or falling.
9427 Accident investigated—other ascertained cause.

PART 228—HOURS OF SERVICE OF RAILROAD EMPLOYEES

Sec.
228.1 Method and form of monthly reports.
228.100 Method and form of records to be kept by railroads.
228.101 List of forms.

AUTHORITY: The provisions of this Part 228 issued under secs. 12, 20, 24 Stat. 383, as amended, secs. 1–4, 34 Stat. 1415, as amended, sec. 6, 80 Stat. 937; 49 U.S.C. 12, 20, 1655, 45 U.S.C. 61–64.

CROSS REFERENCE: For statutory exemptions from regulations of the Division of Public Contracts, Department of Labor, in cases where contract is with a common carrier for carriage or freight or personnel, and published tariff rates are in effect, see Public Contracts, 41 CFR 50–201.2(e).

§ 228.1 Method and form of monthly reports.

(a) *Form and instructions prescribed.* The accompanying form[1] entitled "Federal Railroad Administration (FRA) Hours of Service Report-Railroads" and designated as "Employees on duty in excess of that permitted by the Hours of Service Law" and the method embodied in the instructions therein set forth, be, and the same are hereby, adopted and prescribed, and all common carriers subject to said act are hereby notified to use and follow the said prescribed form and method in making monthly report of hours of service of employees on duty for a longer period than that named in said Act and/or, returned to duty without having the statutory period off duty.

(b) *Instructions to be followed in filling out the blanks.*

1. A report, in accordance with the method and form prescribed, must be sent to the Federal Railroad Administration for each month, showing all employees who were on duty in excess of the period allowed by the Hours of Service Act of March 4, 1907, or who were on duty without the period off duty prescribed by that Act, such report to be filed with the FRA within 30 days after the end of the month for which the report is made.

2. The monthly report should be made up as follows:

a. One sheet for each case where any member or members of a train or engine crew or any other employee subject to the Act remained on duty more than 16 consecutive, or aggregate hours, and/or returned to duty after 16 hours continuous, or aggregate service, without having had 10 or 8 consecutive hours off duty, respectively.

b. Each case where an employee who transmits, receives, or delivers orders affecting train movements at continuously operated day-and-night office was on duty longer than nine hours in any 24-hour period, and each case where an employee who, at offices regularly operated not exceeding 13 hours in a 24-hour period, was on duty for a longer period than 13 hours in any 24-hour period. More than one case of this type may be reported on one sheet.

c. Instructions for filling out form. In the space provided for "Cause", detailed information relative to events or occurrences leading to cause of excess service must be noted. The reasons why employees were allowed to perform excess service or were returned to duty with less than the required time off duty must be shown. A check mark should be entered in the space provided to indicate either a 9 or 13 hour office when applicable. If the excess service reported was caused by the absence of an operator or a dispatcher the reason for such absence should be shown. Abbreviations may be used to show all occupations.

§ 228.100 Method and form of records to be kept by railroads.

The forms entitled—

Time Return and Delay Report of Engine and Train Employees

Daily Time Report of Employees who by the use of the telegraph or telephone dispatch, report, transmit, receive, or deliver orders pertaining to or affecting train movements.

Dispatcher's Record of Movement of Trains

Station Record of Train Movements are hereby prescribed for the use of all common carriers engaged in interstate or foreign commerce by railroad in keeping records of time on duty of their employees in train and engine service; records of delays to trains; records of time on duty of employees who by the use of the telegraph or telephone dispatch, report, transmit, receive, or deliver orders pertaining to or affecting

[1] Form filed as part of original document.

train movements; of Dispatcher's Record of Train Movements; and of Records of Train Movements at stations, offices and places reporting train movements; and each and every such carrier, and each and every receiver or operating trustee of any such carrier, is required to make and keep records in conformity therewith.

Such forms and accompanying instructions are, and by virtue of this order become, the lawful manner according to which such records are to be made and kept: *Provided, however,* That each such carrier may at its option, and with the approval of the FRA, add to such records appropriate blanks for any additional information desired.

§ 228.101 List of forms.[1]

Time return and delay report.
Daily time report.
Dispatcher's record of train movements.
Station record of train movements.

PART 230—LOCOMOTIVE INSPECTION

Sec.
230.0 Definition of locomotive.

Subpart A—Boilers and Appurtenances

230.1 Responsibility for the general construction and safe working pressure.

FACTOR OF SAFETY

230.2 Lowest factor.
230.3 Maximum allowable stress on stays and braces.

STRENGTH OF MATERIAL

230.4 Tensile strength of shell plates.
230.5 Maximum shearing strength of rivets.
230.6 Higher shearing strength of rivets.

INSPECTION

230.7 Responsibility for inspection and repair.
230.8 Term "inspector."

INSPECTION OF INTERIOR OF BOILER

230.9 Time of inspection.
230.10 Flues to be removed.
230.11 Method of inspection.
230.12 Repairs.
230.13 Lap-joint seams.
230.14 Fusible plugs.

INSPECTION OF EXTERIOR OF BOILER

230.15 Time of inspection.
230.16 Lagging to be removed.

TESTING BOILERS

230.17 Time of testing.
230.18 Removal of dome cap.
230.19 Witness of test.
230.20 Repairs and steam test.

STAYBOLT TESTING

230.21 Time of testing rigid bolts.
230.22 Method of testing rigid bolts.
230.23 Method of testing flexible staybolts with caps.
230.24 Method of testing flexible staybolts without caps.
230.25 Broken staybolts.
230.26 Telltale holes.
230.27 Drilling.

STEAM GAUGES

Sec.
230.28 Location of gauges.
230.29 Siphon.
230.30 Time of testing.
230.31 Method of testing.
230.32 Badge plates.
230.33 Boiler number.

SAFETY VALVES

230.34 Number and capacity.
230.35 Setting of safety valves.
230.36 Time of testing.

WATER GLASS AND GAUGE COCKS

230.37 Number and location.
230.38 Water glass valves.
230.39 Time of cleaning.
230.40 Tests required before each trip.
230.41 Water and lubricator glass shields.
230.42 Water glass lamps.

INJECTORS AND FLUE PLUGS

230.43 Injectors.
230.44 Flue plugs.

WASHING BOILERS

230.45 Time of washing.
230.46 Plugs to be removed.
230.47 Water tubes.
230.48 Office record.

STEAM LEAKS

230.49 Leaks under lagging.
230.50 Leaks in front of enginemen.

FILING REPORTS

230.51 Report of inspection.
230.52 Posting of copy.
230.53 Reports of tests.
230.54 Specification card.
230.55 Accident report.

Subpart B—Steam Locomotives and Tenders

230.101 Design, construction, and maintenance.
230.102 Responsibility for inspection and repairs.
230.103 Term "inspector."
230.104 Inspection after each trip or day's work.

ASH PANS

230.105 Ash pans.

BRAKE AND SIGNAL EQUIPMENT

230.106 Safe condition.
230.107 Compressors.
230.108 Testing main reservoirs.
230.109 Air gauges.
230.110 Time of cleaning.
230.111 Stenciling dates of tests and cleaning.
230.112 Piston travel.
230.113 Foundation brake gear.
230.114 Leakage.
230.115 Train signal system.

CABS, WARNING SIGNALS, AND SANDERS

230.116 Cabs.
230.117 Cab aprons.
230.118 Fire doors and mechanical stokers.
230.119 Cylinder cocks.
230.120 Sanders.
230.121 Whistle.

DRAW GEAR AND DRAFT GEAR

230.122 Draw gear between locomotive and tender.
230.123 Chafing irons.
230.124 Draft gear.

DRIVING GEAR

230.125 Crossheads.
230.126 Guides.
230.127 Pistons and piston rods.
230.128 Rods, main and side.

LIGHTS

Sec.
230.129 Locomotives used in road service.
230.130 Classification lamps.
230.131 Locomotive used in yard service.
230.132 Cab lights.

RUNNING GEAR

230.133 Driving, trailing, and engine truck axles.
230.134 Tender truck axles.
230.135 Defects in tender truck axles.
230.136 Crank pins.
230.137 Driving boxes.
230.138 Driving box shoes and wedges.
230.139 Frames.
230.140 Lateral motion.
230.141 Pilots.
230.142 Spring rigging.
230.143 Trucks; leading and trailing.
230.144 Wheels.
230.145 Defects in cast-iron or cast-steel wheels.
230.146 Defects in forged steel or steel tired wheels.
230.147 Driving and trailing wheels.
230.148 Driving wheel counterbalance.
230.149 Defects.
230.150 Driving and trailing wheel tires.
230.151 Minimum thickness for driving wheel and trailer tires on standard and narrow gauge locomotives.

TENDERS

230.152 Tender frames.
230.153 Feed water tanks.
230.154 Oil tanks.
230.155 Tender trucks.

THROTTLE AND REVERSING GEAR

230.156 Throttles.
230.157 Reverse gear.
230.158 Modification of rules.

FILING REPORTS

230.159 Report of inspection.
230.160 Posting of copy.
230.161 Annual report.
230.162 Accident reports.

Subpart C—Other Than Steam Locomotives and Appurtenances

230.200 Applicability of subpart.
230.200a Responsibility for design, construction, inspection, and repair.
230.201 Locomotive unit.
230.202 Term "inspector."
230.203 Trip or daily inspection.

BRAKE EQUIPMENT; AIR BRAKES

230.204 General precautions.
230.205 Main reservoir system.
230.206 Main reservoir tests.
230.207 Air gauges.
230.208 Cleaning.
230.209 Piston travel.
230.210 Foundation brake gear.
230.211 Leakage.

DRAWGEAR BETWEEN LOCOMOTIVE UNITS, CONNECTIONS BETWEEN TRUCKS AND DRAFT GEAR

230.212 General provisions.

RUNNING GEAR

230.213 Axles.
230.214 Crank pins.
230.215 Rods.
230.216 Jack shafts.
230.217 Quill drive.
230.218 Gears and pinions.
230.219 Driving boxes, shoes, and wedges.
230.220 Lateral motion.
230.221 Frames and parts.
230.222 Spring rigging.
230.223 Trucks.
230.224 Side bearings.
230.225 Clearance above top of rail.

[1] Filed as part of original document.

WHEELS

Sec.
230.226 Wheels.
230.227 Defects.
230.228 Driving wheel tires.

CABS, CAB APRONS, PILOTS

230.229 Cabs and aprons.
230.230 Pilots.

LIGHTS

230.231 Headlights.
230.232 Classification or marker lights.
230.233 Cab lights.

WHISTE, BELLS, SANDERS, TRAIN SIGNAL

230.234 Whistle.
230.235 Sanders.
230.236 Location of headlights, sand boxes, bells, whistles.
230.237 Train-signal system.

ELECTRICAL EQUIPMENT

230.238 Pantographs.
230.239 Trolley appurtenances.
230.240 Deenergizing third rail shoes; defective shoe beams.
230.241 Emergency pole; shoe insulation.
230.242 Lightning arrester.
230.243 Grounding of metal parts.
230.244 Guard current-carrying parts.
230.245 Doors and cover plates marked "Danger."
230.246 Hand-operated switches; circuit breakers, contactors, fuses.
230.247 Jumpers; cable connections.
230.248 Wires and cables.
230.249 Motors and generators.
230.250 Transformers.
230.251 Rheostats and grid resistors.
230.252 Voltmeters and ammeters.
230.253 Insulation dielectric test; voltage to be applied.
230.254 Insulation inspection.

INTERNAL COMBUSTION EQUIPMENT

230.255 Fuel tanks and piping; safety cut-out valve.
230.256 Filling and venting; gauge.
230.257 Grounding fuel tanks.
230.258 Guards; set screws and keys.
230.259 Exhaust gases.
230.260 Starting device.
230.261 Safety hangers.
230.262 Engines and accessories.

BOILERS USED WITH LOCOMOTIVES OTHER THAN STEAM

230.300 Safe working pressure; factor of safety.
230.301 Stresses, staybolts, braces.
230.302 Strength of materials.
230.303 Boiler number; badge plate, location.
230.304 Interior inspection.
230.305 Method of inspection.
230.306 Cracks.
230.307 Fuse plugs; low water alarm.
230.308 Exterior boilers.
230.309 Hydrostatic and steam tests.
230.310 Test of rigid staybolts.
230.311 Staybolts with caps; examination.
230.312 Flexible staybolts without caps.
230.313 Broken staybolts.
230.314 Telltale holes.
230.315 Pressure gauge.
230.316 Safety valves.
230.317 Water glass and gauge cocks.
230.318 Feed-water appliances.
230.319 Water tubes; flared or beaded; defects.
230.320 Boiler washing.
230.321 Leaks.
230.322 Feed-water tanks and strainers.
230.323 Fuel tanks and piping.
230.324 Feed-water and fuel-oil reservoir testing.
230.325 Boiler and reservoir fastenings.
230.326 Steam headers.
230.327 Oil-burning fire boxes.

SPECIFICATIONS

Sec.
230.328 Locomotive units.
230.329 Boiler.

PERIODICAL REPORTS

230.330 Locomotive assignment lists.
230.331 Monthly locomotive unit inspection and report.
230.332 Quarterly boiler inspection and report.
230.333 Final report.
230.334 Extensions.

ACCIDENTS

230.335 Accident reports.
230.336 Modification of rules.
230.337 Changes to meet requirements.

Subpart D—Multiple Operated Electric Units

230.400 Definitions.
230.401 Responsibility of carrier.
230.402 Inspector.
230.403 Daily inspection.
230.404 Air brake system.
230.405 Main reservoir system and compressors.
230.406 Testing of main reservoir.
230.407 Air gauges.
230.408 Testing and cleaning of air brake equipment.
230.409 Brake piston travel.
230.410 Foundation brake gear.
230.411 Leakage.
230.412 Draw gear.
230.413 Axles; defects.
230.414 Gears and pinions.
230.415 Spring rigging.
230.416 Lateral motion between wheels and boxes.
230.417 Trucks.
230.418 Side bearings.
230.419 Clearance above top of rail.
230.420 Specifications for wheels.
230.421 Wrought-steel or steel-tired wheels.
230.422 Cast iron or cast steel wheels.
230.423 Windows and operating compartments.
230.424 Pilots.
230.425 Headlights.
230.426 Classification and marker lights.
230.427 Instrument lights.
230.428 Whistle.
230.429 Location of headlights and whistle.
230.430 Sanding apparatus.
230.431 Testing of train signal system.
230.432 Current collectors.
230.433 Pantographs.
230.434 Trolley poles.
230.435 Units with third rail and overhead collectors.
230.436 Emergency pole for operating pantograph and insulation of current collecting apparatus.
230.437 Lightning arresters.
230.438 Grounding of noncurrent-carrying parts.
230.439 Guarding of current-carrying parts.
230.440 Protection against current-carrying equipment.
230.441 Hand operated switches.
230.442 Jumpers or cable connections.
230.443 Cables and wires.
230.444 Motors and generators.
230.445 Transformers.
230.446 Rheostats and grid resistors.
230.447 Insulation dielectric test.
230.448 Insulation and electrical connections inspection.
230.449 Filing of specification.
230.450 Transfer between inspection districts.
230.451 Filing of inspection reports.
230.452 Retirement or change of unit numbers.
230.453 Extension of time for inspections and tests.
230.454 Reporting of accidents.
230.455 Changes in construction.
230.456 Safety appliances.

Sec.
230.457 Body structure.
230.458 Report forms.

AUTHORITY: The provisions of this Part 230 issued under secs. 2, 5, 36 Stat. 913, 914; 45 U.S.C. 23, 28, sec. 6(e) and (f), 80 Stat. 939, 940; 49 U.S.C. 1655.

§ 230.0 Definition of locomotive.

A locomotive is a self-propelled unit of equipment designed for moving other equipment and includes a self-propelled unit designed to carry freight and/or passenger traffic.

Subpart A—Boilers and Appurtenances

§ 230.1 Responsibility for the general construction and safe working pressure.

The railroad company will be held responsible for the general design and construction of the locomotive boilers under its control. The safe working pressure for each locomotive boiler shall be fixed by the chief mechanical officer of the company or by a competent mechanical engineer under his supervision, after full consideration has been given to the general design, workmanship, age, and condition of the boiler, and shall be determined from the minimum thickness of the shell plates, the lowest tensile strength of the plates, the efficiency of the longitudinal joint, the inside diameter of the course, and the lowest factor of safety allowed.

FACTOR OF SAFETY

§ 230.2 Lowest factor.

The lowest factor of safety for locomotive boilers shall be 4.

§ 230.3 Maximum allowable stress on stays and braces.

(a) For locomotives constructed after January 1, 1915, the maximum allowable stress per square inch of net cross sectional area on fire box and combustion chamber stays shall be 7,500 pounds. The maximum allowable stress per square inch of net cross sectional area on round, rectangular, or gusset braces shall be 9,000 pounds.

(b) For locomotives constructed prior to January 1, 1915, the maximum allowable stress on stays and braces shall meet the requirements of § 230.2 except that when a new fire box and wrapper sheet are applied to such locomotives they shall be made to meet the requirements of this section.

STRENGTH OF MATERIAL

§ 230.4 Tensile strength of shell plates.

When the tensile strength of steel or wrought-iron shell plates is not known, it shall be taken at 50,000 pounds for steel and 45,000 pounds for wrought iron.

§ 230.5 Maximum shearing strength of rivets.

The maximum shearing strength of rivets per square inch of cross sectional area shall be taken as follows:

	Pounds
Iron rivets in single shear	38,000
Iron rivets in double shear	76,000
Steel rivets in single shear	44,000
Steel rivets in double shear	88,000

§ 230.6 Higher shearing strength of rivets.

A higher shearing strength may be used for rivets when it can be shown by test that the rivet material used is of such quality as to justify a higher allowable shearing strength.

INSPECTION

§ 230.7 Responsibility for inspection and repair.

The mechanical officer in charge at each point where boiler work is done will be held responsible for the inspection and repair of all locomotive boilers and their appurtenances under his jurisdiction. He must know that all defects disclosed by any inspection are properly repaired before the locomotive is returned to service.

§ 230.8 Term "inspector."

The term "inspector" as used in the rules and instructions in this subpart, unless otherwise specified, will be held to mean the railroad company's inspector.

INSPECTION OF INTERIOR OF BOILER

§ 230.9 Time of inspection.

The interior of every boiler shall be thoroughly inspected before the boiler is put into service and whenever a sufficient number of flues are removed to allow examination.

§ 230.10 Flues to be removed.

All flues of locomotive boilers in service, except as otherwise provided, shall be removed at least once every 4 years for the purpose of making a thorough examination of the entire interior of the boiler and its bracing. After the flues are taken out, the inside of the boiler must have the scale removed and be thoroughly cleaned and inspected. The removal of flues will be due after 48 calendar months' service, provided such service is performed within 5 consecutive years. Portions of calendar months out of service will not be counted. Time of service must be properly accounted for by out of service reports and notations of months claimed out of service made on the back of each subsequent inspection report and cab card. The period for removal of flues, upon formal application to the Director, Bureau of Railroad Safety may be extended, if investigation shows that conditions warrant it.

§ 230.11 Method of inspection.

The entire interior of the boiler must then be examined for cracks, pitting, grooving, or indications of overheating and for damage where mud has collected, or heavy scale formed. The edges of plates, all laps, seams, and points where cracks and defects are likely to develop or which an exterior examination may have indicated, must be given an especially minute examination. It must be seen that braces and stays are taut, that pins are properly secured in place, and that each is in condition to support its proportion of the load.

§ 230.12 Repairs.

Any boiler developing cracks in the barrel shall be taken out of service at once, thoroughly repaired, and reported to be in satisfactory condition before it is returned to service.

§ 230.13 Lap-joint seams.

Every boiler having lap-joint longitudinal seams without reinforcing plates shall be examined with special care to detect grooving or cracks at the edges of the seams.

§ 230.14 Fusible plugs.

If boilers are equipped with fusible plugs they shall be removed and cleaned of scale at least once every month. Their removal must be noted on the report of inspection.

INSPECTION OF EXTERIOR OF BOILER

§ 230.15 Time of inspection.

The exterior of every boiler shall be thoroughly inspected before the boiler is put into service and whenever the jacket and the lagging are removed.

§ 230.16 Lagging to be removed.

The jacket and lagging shall be removed at least once every 5 years and a thorough inspection made of the entire exterior of the boiler while under hydrostatic pressure. The jacket and lagging shall also be removed whenever on account of indications of leaks the United States inspector or the railroad company's inspector considers it desirable or necessary.

TESTING BOILERS

§ 230.17 Time of testing.

Every boiler, before being put into service and at least once every 12 months thereafter, shall be subjected to hydrostatic pressure 25 percent above the working steam pressure.

§ 230.18 Removal of dome cap.

The dome cap and throttle standpipe must be removed at the time of making the hydrostatic test and the interior surface and connections of the boiler examined as thoroughly as conditions will permit. In case the boiler can be entered and thoroughly inspected without removing the throttle standpipe the inspector may make the inspection by removing the dome cap only, but the variation from the rule must be noted in the report of inspection.

§ 230.19 Witness of test.

When the test is being made by the railroad company's inspector, an authorized representative of the company, thoroughly familiar with boiler construction, must personally witness the test and thoroughly examine the boiler while under hydrostatic pressure.

§ 230.20 Repairs and steam test.

When all necessary repairs have been completed, the boiler shall be fired up and the steam presure raised to not less than the allowed working pressure, and the boiler and appurtenances carefully examined. All cocks, valves, seams, bolts, and rivets must be tight under this pressure and all defects disclosed must be repaired.

STAYBOLT TESTING

§ 230.21 Time of testing rigid bolts.

All staybolts shall be tested at least once each month. Staybolts shall also be tested immediately after every hydrostatic test.

§ 230.22 Method of testing rigid bolts.

The inspector must tap each bolt and determine the broken bolts from the sound or the vibration of the sheet. If staybolt tests are made when the boiler is filled with water, there must be not less than 50 pounds pressure on the boiler. Should the boiler not be under pressure, the test may be made after draining all water from the boiler, in which case the vibration of the sheet will indicate any unsoundness. The latter test is preferable.

§ 230.23 Method of testing flexible staybolts wtih caps.

(a) Except as provided in paragraph (b) of this section, all staybolts having caps over the outer ends shall have the caps removed at least once every 2 years and the bolts and sleeves examined for breakage. Each time the hydrostatic test is applied the hammer test required by §§ 230.21 and 230.22 shall be made while the boiler is under hydrostatic pressure not less than the allowed working pressure.

(b) When flexible staybolts are provided with a telltale hole not less than three-sixteenths inch nor more than seven thirty-seconds inch in diameter, extending the entire length of the bolt and into the head not less than one-third of its diameter, and are opened and tested each time the hydrostatic test is applied, with an electrical or other instrument approved by the Bureau of Railroad Safety, that will positively indicate when the telltale holes are open their entire length, the caps will not be required to be removed. When this test is completed, the hydrostatic test must be applied and all staybolts removed which show leakage through the telltale hole.

The inner ends of the telltale holes must be kept closed with a fireproof porous material that will exclude foreign matter and permit leakage of steam or water, if the bolt is broken or fractured, into the telltale hole. When this test is completed the ends of the telltale holes shall be closed with material of different color than that removed and a record kept of colors used.

(c) The removal of flexible staybolt caps and other tests shall be reported on the report of inspection Form No. 3, and a proper record kept in the office of the railroad company of the inspections and tests made.

(d) Fire-box sheets must be carefully examined at least once every month for mud burn, bulging, and indication of broken staybolts.

(e) Staybolt caps shall be removed or any of the above tests made whenever

the United States inspector or the railroad company's inspector considers it desirable in order to thoroughly determine the condition of staybolts or staybolt sleeves.

§ 230.24 Method of testing flexible staybolts without caps.

Flexible staybolts which do not have caps shall be tested once each month, the same as rigid bolts.

Each time a hydrostatic test is applied such staybolt test shall be made while the boiler is under hydrostatic pressure not less than the allowed working pressure and proper notation of such test made on Form No. 3.

§ 230.25 Broken staybolts.

No boiler shall be allowed to remain in service when there are two adjacent staybolts broken or plugged in any part of the fire box or combustion chamber, nor when three or more are broken or plugged in a circle 4 feet in diameter, nor when five or more are broken or plugged in the entire boiler.

§ 230.26 Telltale holes.

All staybolts shorter than 8 inches applied after July 1, 1911, except flexible bolts, shall have telltale holes three-sixteenths inch in diameter and not less than 1¼ inches deep in the outer end. These holes must be kept open at all times.

§ 230.27 Drilling.

All staybolts shorter than 8 inches, except flexible bolts and rigid bolts which are behind frames and braces, shall be drilled when the locomotive is in the shop for heavy repairs, and this work must be completed prior to July 1, 1914.

STEAM GAUGES

§ 230.28 Location of gauges.

Every boiler shall have at least one steam gauge which will correctly indicate the working pressure. Care must be taken to locate the gauge so that it will be kept reasonably cool and can be conveniently read by the enginemen.

§ 230.29 Siphon.

Every gauge shall have a siphon of ample capacity to prevent steam entering the gauge. The pipe connection shall enter the boiler direct and shall be maintained steamtight between boiler and gauge. The siphon pipe and its connections to the boiler must be cleaned each time the gauge is tested.

§ 230.30 Time of testing.

Steam gauges shall be tested at least once every 3 months and also when any irregularity is reported.

§ 230.31 Method of testing.

Steam gauges shall be compared with an accurate test gauge or dead-weight tester and gauges found inaccurate shall be corrected before being put into service.

§ 230.32 Badge plates.

A metal badge plate showing the allowed steam pressure shall be attached to the boiler head in the cab. If boiler head is lagged, the lagging and jacket shall be cut away so that the plate can be seen.

§ 230.33 Boiler number.

The builder's number of the boiler, if known, shall be stamped on the dome. If the builder's number of the boiler cannot be obtained, an assigned number which shall be used in making out specification cards shall be stamped on dome.

SAFETY VALVES

§ 230.34 Number and capacity.

Every boiler shall be equipped with at least two safety valves, the capacity of which shall be sufficient to prevent, under any conditions of service, an accumulation of pressure more than 5 percent above the allowed steam pressure.

§ 230.35 Setting of safety valves.

Safety valves shall be set to pop at pressures not exceeding 6 pounds above the working steam pressure. When setting safety valves, two steam gauges shall be used, one of which must be so located that it will be in full view of the persons engaged in setting such valves; and if the pressure indicated by the gauges varies more than 3 pounds they shall be removed from the boiler, tested, and corrected before the safety valves are set. Gauges shall in all cases be tested immediately before the safety valves are set or any change made in the setting. When setting safety valves the water level in the boiler shall not be above the highest gauge cock.

§ 230.36 Time of testing.

Safety valves shall be tested under steam at least once every 3 months, and also when any irregularity is reported.

WATER GLASS AND GAUGE COCKS

§ 230.37 Number and location.

Every boiler shall be equipped with at least one water glass and three gauge cocks. The lowest gauge cock and the lowest reading of the water glass shall be not less than 3 inches above the highest part of the crown sheet. Locomotives which are not now equipped with water glasses shall have them applied on or before July 1, 1912.

§ 230.38 Water glass valves.

All water glasses shall be supplied with two valves or shutoff cocks, one at the upper and one at the lower connection to the boiler, and also drain cock, so constructed and located that they can be easily opened and closed by hand.

§ 230.39 Time of cleaning.

The spindles of all gauge cocks and water glass cocks shall be removed and cocks thoroughly cleaned of scale and sediment at least once each month.

§ 230.40 Tests required before each trip.

All water glasses must be blown out and gauge cocks tested before each trip and gauge cocks must be maintained in such condition that they can be easily opened and closed by hand without the aid of a wrench or other tool.

§ 230.41 Water and lubricator glass shields.

All tubular water glasses and lubricator glasses must be equipped with a safe and suitable shield which will prevent the glass from flying in case of breakage, and such shield shall be properly maintained.

§ 230.42 Water glass lamps.

All water glasses must be supplied with a suitable lamp properly located to enable the engineer to easily see the water in the glass.

INJECTORS AND FLUE PLUGS

§ 230.43 Injectors.

Injectors must be kept in good condition, free from scale, and must be tested before each trip. Boiler checks, delivery pipes, feed water pipes, tank hose and tank valves must be kept in good condition, free from leaks and from foreign substances that would obstruct the flow of water.

§ 230.44 Flue plugs.

Flue plugs must be provided with a hole through the center not less than three-fourths inch in diameter. When one or more tubes are plugged at both ends the plugs must be tied together by means of a rod not less than five-eighths inch in diameter. Flue plugs must be removed and flues repaired at the first point where such repairs can properly be made.

WASHING BOILERS

§ 230.45 Time of washing.

All boilers shall be thoroughly washed as often as the water conditions require, but not less frequently than once each month. All boilers shall be considered as having been in continuous service between washouts unless the dates of the days that the boiler was out of service are properly certified on washout reports and the report of inspection.

§230.46 Plugs to be removed.

When boilers are washed, all washout, arch, and water bar plugs must be removed.

§ 230.47 Water tubes.

Special attention must be given the arch and water bar tubes to see that they are free from scale and sediment.

§ 230.48 Office record.

An accurate record of all locomotive boiler washouts shall be kept in the office of the railroad company. The following information must be entered on the day that the boiler is washed:

(a) Number of locomotive.

(b) Date of washout.

(c) Signature of boiler washer or inspector.

(d) Statement that spindles of gauge cocks and water-glass cocks were removed and cocks cleaned.

(e) Signature of the boiler inspector or the employee who removed the spindles and cleaned the cocks.

STEAM LEAKS

§ 230.49 Leaks under lagging.

If a serious leak develops under the lagging, an examination must be made and the leak located. If the leak is found to be due to a crack in the shell or to any other defect which may reduce safety, the boiler must be taken out of service at once, thoroughly repaired, and reported to be in satisfactory condition before it is returned to service.

§ 230.50 Leaks in front of enginemen.

All steam valves, cocks, and joints, studs, bolts, and seams shall be kept in such repair that they will not emit steam in front of the enginemen, so as to obscure their vision.

FILING REPORTS

§ 230.51 Report of inspection.

Not less than once each month and within 10 days after each inspection a report of inspection, Form No. 1, size 6 by 9 inches, shall be filed with the district inspector of locomotive boilers for each locomotive used by a railroad company, and a copy shall be filed in the office of the chief mechanical officer having charge of the locomotive.

MONTHLY LOCOMOTIVE INSPECTION AND REPAIR REPORT

Form No. 1.

----------, 19 __.
---------- Company.

Locomotive { Number ----------
Initial ----------

In accordance with the act of Congress approved February 17, 1911, as amended March 4, 1915, and the rules and instructions issued in pursuance thereof and approved by the Federal Railroad Administration, all parts of locomotive No. ----------, including the boiler and appurtenances, were inspected on ----------, 19__, at ----------, and all defects disclosed by said inspection have been repaired, except as noted on the back of this report.

1. Steam gauges tested and left in good condition on---------- 19__.
2. Safety valves set to pop at---------- pounds, ---------- pounds, ---------- pounds on ---------- 19__.
3. Were both injectors tested and left in good conditions? ----------
4. Were steam leaks repaired? ----------
5. Condition of brake and signal equipment, ----------
6. Condition of draft gear and draw gear, ----------
7. Condition of driving gear, ----------
8. Condition of running gear, ----------
9. Condition of tender, ----------

I certify that the above report is correct,
----------,
Inspector.

10. Was boiler washed and gauge cocks and water glass cock spindle removed and cocks cleaned? ----------
11. Were steam leaks repaired? ----------
12. Condition of staybolts and crown stays, ----------
13. Number of staybolts and crown stays renewed, ----------
14. Condition of flues and firebox sheets, ----------
15. Condition of arch and water bar tubes, if used, ----------
16. Were fusible plugs removed and cleaned? ----------
17. Date of previous hydrostatic test, ---------- ----------, 19__.
18. Date of removal of caps from flexible staybolts, ----------, 19__.

I certify that the above report is correct,
----------,
Inspector.

State of ----------
County of ----------} ss:

Subscribed and sworn to before me this ---------- day of ----------, 19__, by ---------- inspectors of the ---------- Company.

----------,
Notary Public.

The above work has been performed and the report is approved.

----------,
Officer in Charge.

§ 230.52 Posting of copy.

A copy of the monthly inspection report, Form No. 1, § 230.51, or annual inspection report, Form No. 3,[1] properly filled out, shall be placed under glass in a conspicuous place in the cab of the locomotive before the boiler inspected is put into service.

§ 230.53 Reports of tests.

Not less than once each year and within 10 days after hydrostatic and other required tests have been completed a report of such tests showing general condition of the boiler and repairs made shall be submitted on Form No. 3,[1] size 6 by 9 inches, and filed with the United States inspector, and a copy shall be filed in the office of the chief mechanical officer having charge of the locomotive. The monthly report will not be required for the month in which this report is filed.

Form No. 3

ANNUAL LOCOMOTIVE INSPECTION AND REPAIR REPORT

----------, 19__.
---------- Company.

Locomotive { Initial----------
Number----------

In accordance with the act of Congress approved February 17, 1911, as amended March 4, 1915, and the rules and instructions issued in pursuance thereof and approved by the Federal Railroad Administration, all parts of locomotive No. ----------, including the boiler and its appurtenances, were inspected on ----------, 19__, at ----------, and all defects disclosed by said inspection have been repaired, except as noted on the back of this report.

1. Date of previous hydrostatic test, ---------- ----------, 19__.
2. Date of previous removal of caps from flexible staybolts ---------- 19__.
3. Date of previous removal of flues, ---------- ----------, 19__.
4. Date of previous removal of all lagging, ----------, 19__.
5. Hydrostatic test pressure of ---------- pounds was applied.
6. Were caps removed from all flexible staybolts? ----------
7. Were all flues removed? ---------- Number ----------
8. Condition of interior of barrel, ---------- ----------
9. Was all lagging removed? ----------
10. Condition of exterior of barrel, ---------- ----------
11. Was boiler entered and inspected? ---------- ----------
12. Was boiler washed? Water glass cocks and gauge cocks cleaned? ---------- ----------
13. Condition of crown stays and staybolts, ----------
14. Condition of sling stays and crown bars, ----------
15. Condition of firebox sheets and flues, ----------
16. Condition of arch tubes, ---------- ----------
Water bar tubes, ----------
17. Condition of throat braces, ---------- ----------
18. Condition of back head braces, ---------- ----------
19. Condition of front flue sheet braces, ----------
20. Were fusible plugs removed and cleaned? ----------
21. Were steam leaks repaired? ---------- ----------

I certify that the above report is correct.
----------, Inspector.

22. Were steam gauges tested and left in good condition? ----------
23. Safety valves set to pop at ---------- pounds, ---------- pounds, ---------- pounds.
24. Were both injectors tested and left in good condition? ----------
25. Were steam leaks repaired? ----------
26. Hydrostatic test of ---------- pounds applied to main reservoirs.
27. Condition of brake and signal equipment, ----------
28. Were drawbar and drawbar pins removed and inspected? ----------
29. Condition of draft gear and draw gear, ----------
30. Condition of driving gear, ----------
31. Condition of running gear, ----------
32. Condition of tender, ----------

I certify that the above report is correct.
----------, Inspector.

State of ----------
County of ----------} ss:

Subscribed and sworn to before me this ---------- day of ----------, 19__, by ----------, inspectors of the ---------- Company.

The above work has been performed and the report is approved.

----------, Notary Public.
----------, Officer in Charge.

§ 230.54 Specification card.

(a) A specification card, size 8 by 10½ inches, Form No. 4, containing the results of the calculations made in determining the working pressure and other necessary data shall be filed in the office of the Director, Bureau of Railroad Safety, for each locomotive broiler. A copy shall be filed in the office of the chief mechanical officer having charge of the locomotive. Every specification card shall be verified by the oath of the engineer making the calculations, and shall be approved by the chief mechanical officer. These specification cards shall be filed as promptly as thorough examination and accurate calculation will permit. Where accurate drawings of boilers are available, the data for specification card, Form No. 4, may be taken from the drawings,

[1] Form No. 3 should be printed on yellow paper.

and such specification cards must be completed and forwarded prior to July 1, 1912. Where accurate drawings are not available, the required data must be obtained at the first opportunity when general repairs are made, or when flues are removed. Specification cards must be forwarded within 1 month after examination has been made, and all examinations must be completed and specification cards filed prior to July 1, 1913, flues being removed if necessary to enable the examination to be made before this date.

(b) When any repairs or changes are made which affect the data shown on the specification card a corrected card or an alteration report on an approved form, size 8 by 10½ inches, properly certified to, giving details of such changes, shall be filed within 30 days from the date of their completion. This report should cover:

(1) Application of new barrel sheets or domes.

(2) Application of patches to barrels or domes of boilers or to portion of wrapper sheet of crown bar boilers which is not supported by staybolts.

(3) Longitudinal seam reinforcements.

(4) Changes in size or number of braces, giving maximum stress.

(5) Initial application of superheaters, arch or waterbar tubes, giving number and dimensions of tubes.

(6) Changes in number or capacity of safety valves.

Report of patches should be accompanied by a drawing or blueprint of the patch, showing its location in regard to the center line of boiler, giving all necessary dimensions, and showing the nature and location of the defect. Patches previously applied should be reported the first time the boiler is stripped to permit an examination.

Form No. 4

SPECIFICATION CARD FOR LOCOMOTIVE NO. _____

Owned by _____ Railroad Company
Operated by _____ Railroad Company
Builder _____
Builder's No. of Boiler _____
When built _____
Where built _____
Type of boiler _____
Material of boiler shell sheets _____
Material of rivets _____
Dome, where located _____
Grate area in sq. ft. _____
Height of lowest reading of gauge glass above crown sheet _____
Height of lowest gauge cock above crown sheet _____
Water bar tubes, O. diam _____ thickness _____
Arch tubes, O. diam _____ thickness _____
Fire tubes, number _____
" " O. diam _____ length _____
Safety valves:

No.	Size.	Make.	Style.

Firebox stay bolts, O. diam _____ spaced _____ x _____
Combustion chamber stay bolts, O. diam _____ spaced _____ x _____
Crown stays, O. diam., top _____ bottom _____
Crown stays, spaced _____ x _____
Crown bar rivets, O. diam., top _____ bottom _____
Crown bar rivets, spaced _____ x _____
Water space at firebox ring, sides _____ back _____ front _____
Width of water space at sides of firebox measured at center line of boiler, front _____ back _____
Shell sheets:
Front tube _____ thick.
1st course _____ " _____ I. diam.
2d " _____ " _____ "
3d " _____ " _____ "

Mem.: When courses are not cylindrical give inside diameter at each end.

Firebox:
Thickness of sheets—
Tube _____ Crown _____ Side _____
Door _____ Combustion chamber _____
Inside throat (if tube sheet is in two pieces) _____

External firebox:
Thickness of sheets—throat _____ back head _____
Roof _____ sides _____
Dome inside diam _____
Thickness of sheet _____ base _____ liner _____
Were you furnished with authentic records of the tests of materials used in boiler? _____
Records on file in the office of the _____ of the _____ Company show that the lowest tensile strength of the sheets in the shell of this boiler is:
1st course _____ pounds per sq. in.
2d " _____ " " " "
3d " _____ " " " "
Is boiler shell circular at all points? _____
If shell is flattened, state location and amount _____
Are all parts thoroughly stayed? _____
Are dome and other openings sufficiently reinforced? _____
Is boiler equipped with fusible plugs? _____

Make working sketch here or attach drawing of longitudinal and circumferential seams used in shell of boiler, indicating on which courses used, and give calculated efficiency of weakest longitudinal seam.

The maximum stresses at the allowed working pressure were found by calculation to be as follows:

Stay bolts at root of thread _____ lbs. per sq. in.
Stay bolts at reduced section _____ lbs. per sq. in.
Crown stays or crown bar rivets at root of thread or smallest section, top _____ lbs. per sq. in.
Crown stays or crown bar rivets at root of thread or smalest section, bottom _____ lbs. per sq. in.
Round and rectangular braces _____ lbs. per sq. in.
Gusset braces _____ lbs. per sq. in.
Shearing stress on rivets _____ lbs. per sq. in.
Tension on net section of plate in longitudinal seam of lowest efficiency, pounds per sq. in. _____
Dimensions and data taken from locomotive were furnished by _____

Data upon which above calculations were made were obtained from drawing No. ____, dated _____ furnished by _____ Company.

_____
Mechanical Engineer.

State of _____ }
County of _____ } ss.

_____ being duly sworn says that he is the officer who signed the foregoing specification, that he has satisfied himself of the correctness of the drawings and data used, has verified all of the calculations, and has examined the record of present condition of boiler dated _____ and sworn to by inspector _____ and believes that the design, construction, and condition of boiler No. _____ renders it safe for a working pressure of _____ pounds per square inch.

_____
(Name of affiant)

Subscribed and sworn to before me this _____ day of _____, 19___.

_____
Notary Public.

Approved:

_____

Form No. 19

ALTERATION REPORT FOR LOCOMOTIVE BOILERS

The following alterations were made on the boiler of locomotive No. _____ owned by _____ Company and operated by _____ Company, on _____ 19___, at _____.
The builder's or assigned number stamped on the dome of this boiler is _____.

NOTE: Describe below what alterations were made. When blue prints or drawings accompany report, paste same below or on back of report.

State of _____ }
County of _____ } ss:

_____ being duly sworn says that he inspected the above-mentioned alterations and certifies that the above report is correct.

_____
(Name of affiant)

Subscribed and sworn to before me this _____ day of _____, 19___.

_____
Notary Public.

The above alterations have caused the following changes in calculated maximum stresses for this boiler:

NOTE: If stresses are not affected by the alterations, insert the words, "Stresses not changed."

_____
Mechanical Engineer.

Extract from § 230.54 of the Rules and Instructions for Inspection and Testing of Locomotive Boilers and their Appurtenances:

When any repairs or changes are made which affect the data shown on the specification card a corrected card or an alteration report on an approved form, size 8 by 10½ inches, properly certified to, giving details of such changes shall be filed within 30 days from the date of their completion. This report should cover—

A. Application of new barrel sheets or domes.

B. Application of patches to barrels or domes of boilers or to portion of wrapper sheet of crown-bar boilers which is not supported by staybolts.

C. Longitudinal seam reinforcements.

D. Changes in size or number of braces, giving maximum stress.

E. Initial application of superheaters, arch or water-bar tubes, giving number and dimensions of tubes.

F. Changes in number or capacity of safety valves.

Report of patches should be accompanied by a drawing or blue print of the patch, showing its location in regard to the center line of the boiler, giving all necessary dimensions, and showing the nature and location of the defect. Patches previously applied should be reported the first time the boiler is stripped to permit an examination.

INSTRUCTIONS FOR PREPARING FORM

Describe accurately what alterations were made.

The location and extent of cracks, pitting, corrosion, and grooving must be shown and dimensioned unless the defective plate is removed.

Drawing must show whether the plate underneath patch was removed.

Report must state whether iron or steel rivets were used.

The size of rivet holes must be given as well as the size of the rivets.

If authentic records of the tests of material used in making repairs can be obtained, the lowest tensile strength as shown by the test must be given; otherwise 50,000 pounds for steel and 45,000 pounds for wrought iron will be allowed as provided by rule 4.

In case of patches applied prior to July 9, 1914, if there is no authentic record of the date when or the shop where the alteration was made, insert the word "Unknown" in the proper blank spaces.

It is not necessary to report patches on surfaces supported by staybolts.

§ 230.55 Accident reports.

In the case of an accident resulting from failure, from any cause, of a locomotive boiler or any of its appurtenances, resulting in serious injury or death to one or more persons, the carrier owning or operating such locomotive shall immediately transmit by wire to the Director, Bureau of Railroad Safety, Federal Railroad Administration, at his office in Washington, D.C. 20591, a report of such accident, stating the nature of the accident, the place at which it occurred, as well as where the locomotive may be inspected, which wire shall be immediately confirmed by mail, giving a full detailed report of such accident, stating, so far as may be known, the causes and giving a complete list of the killed or injured.

Subpart B—Steam Locomotives and Tenders

§ 230.101 Design, construction, and maintenance.

The railroad company will be held responsible for the general design, construction, and maintenance of locomotives and tenders under its control.

§ 230.102 Responsibility for inspection and repairs.

The mechanical officer in charge, at each point where repairs are made, will be held responsible for the inspection and repair of all parts of locomotives and tenders under his jurisdiction. He must know that inspections are made as required and that the defects are properly repaired before the locomotive is returned to service.

§ 230.103 Term "inspector."

The term "inspector" as used in the rules and instructions in this subpart means, unless otherwise specified, the railroad company's inspector.

§ 230.104 Inspection after each trip or day's work.

Each locomotive and tender shall be inspected after each trip, or day's work, and the defects found reported on an approved form to the proper representative of the company. This form shall show the name of the railroad, the initials and number of the locomotive, the place, date, and time of the inspection, the defects found, and the signature of the employee making the inspection. The report shall be approved by the foreman, with proper written explanation made thereon for defects reported which were not repaired before the locomotive is returned to service. The report shall then be filed in the office of the railroad company at the place where the inspection is made.

Form No. 2

_____Railroad.

Locomotive Number_____
Initials_____

LOCOMOTIVE INSPECTION REPORT

INSTRUCTIONS.—Each locomotive and tender must be inspected after each trip or day's work and report made on this form, whether needing repairs or not. Proper explanation must be made hereon for failure to repair any defects reported, and the form approved by foreman, before the locomotive is returned to service.

Inspected at _____, time _____ m.
Date _____, 19__

Repairs needed:

_____
_____
_____
_____
_____
_____

Condition of injectors_____ Water glass_____
Condition of gauge cocks__ Brakes_____
Condition of piston rod and valve stem packing _____
Safety valve lifts at_____ pounds. Seats at _____ pounds.
Main reservoir pressure, _____ pounds.
Brake pipe pressure, _____ pounds.
(Signature)_____,
(Occupation)_____

The above work has been performed, except as noted, and the report is approved.

_____,
Foreman.

NOTE: Additional items may be added to this form if desired.

ASH PANS

§ 230.105 Ash pans.

(a) Ash pans shall be securely supported and maintained in safe and suitable condition for service.

(b) Locomotives built after January 1, 1916, shall have ash pans supported from mud rings or frames. Locomotives built prior to January 1, 1916, which do not have the ash pans supported from mud rings or frames shall be changed when the locomotive receives new fire box.

(c) The operating mechanism of all ash pans shall be so arranged that it may be safely operated and maintained in safe and suitable condition for service.

(d) No part of ash pan shall be less than 2½ inches above the rail.

BRAKE AND SIGNAL EQUIPMENT

§ 230.106 Safe condition.

(a) It must be known before each trip that the brakes on locomotive and tender are in safe and suitable condition for service; that the air compressor or compressors are in condition to provide an ample supply of air for the service in which the locomotive is put; that the devices for regulating all pressures are properly performing their functions; that the brake valves work properly in all positions; and that the water has been drained from the air-brake system.

(b) Each steam road locomotive built on or after March 1, 1946, shall be equipped with a brake pipe valve attached to the front of the tender or on the rear of the back cab wall to enable the brakes to be applied in the event the occupants of the cab are, from any cause, prevented from applying the brakes in the usual manner. On locomotives having vestibule cabs the brake pipe valve shall be located adjacent to an exit. The words "Emergency brake valve" shall be legibly stenciled on the cab near the brake pipe valve or shall be shown on a badge plate adjacent thereto. That each steam road locomotive built before March 1, 1946, shall be so equipped the first time said locomotive receives class 3 [1] or heavier repairs after June 1, 1946.

§ 230.107 Compressors.

(a) The compressor or compressors shall be tested for capacity by orifice test as often as conditions may require, but not less frequently than once each 3 months.

(b) The diameter of orifice, speed of compressor, and the air pressure to be maintained for compressors in common use are given in the following table:

Make	Size compressor	Single strokes per minute	Diameter of orifice	Air pressure maintained
			Inches	*Pounds*
Westinghouse	9½	120	1 1/64	60
Do	11	100	3/16	60
Do	8½ c. c.	100	9/32	60
New York	2a	120	5/32	60
Do	6a	100	13/64	60
Do	5b	100	15/64	60

For diagram of orifice see Figure 14.

This table shall be used for altitudes to and including 1,000 feet. For altitudes over 1,000 feet the speed of compressor may be increased 5 single strokes per minute for each 1,000 feet increase in altitude.

[1] Flues all new or reset. (Superheater flues may be excepted.) Necessary repairs to firebox and boiler. Tires turned or new. General repairs to machinery and tender.

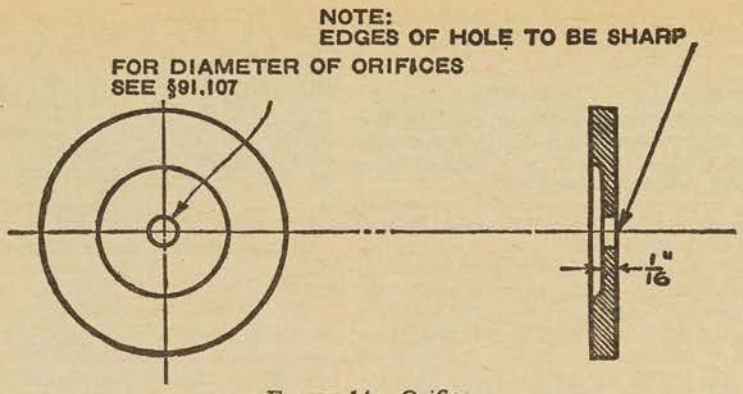


FIGURE 14.—Orifice.

§ 230.108 Testing main reservoirs.

(a) Every main reservoir before being put into service, and at least once each 12 months thereafter, shall be subjected to hydrostatic pressure not less than 25 percent above the maximum allowed air pressure.

(b) The entire surface of the reservoir shall be hammer tested each time the locomotive is shopped for general repairs, but not less frequently than once each 18 months.

§230.109 Air gauges.

(a) Air gauges shall be so located that they may be conveniently read by the engineer from his usual position in the cab. Air gauges shall be tested at least once each 3 months, and also when any irregularity is reported.

(b) Air gauges shall be compared with an accurate test gauge or dead weight tester, and gauges found incorrect shall be repaired before they are returned to service.

§ 230.110 Time of cleaning.

Distributing or control valves, reducing valves, triple valves, straight-air double-check valves, and dirt collectors shall be cleaned as often as conditions require to maintain them in a safe and suitable condition for service, but not less frequently than once every 6 months.

§ 230.111 Stenciling dates of tests and cleaning.

(a) The date of testing or cleaning, and the initials of the shop or station at which the work is done, shall be legibly stenciled in a conspicuous place on the parts, or placed on a card displayed under glass in the cab of the locomotive, or stamped on metal tags. When metal tags are used, the height of letters and figures shall be not less than three-eighths inch, and the tags located as follows:

(b) One securely attached to brake pipe near automatic brake valve, which will show the date on which the distributing valve, control valve or triple valves, reducing valves, straight-air double-check valves, dirt collectors, and brake cylinders were cleaned and cylinders lubricated.

(c) One securely attached to air compressor steam pipe, which will show the date on which the compressor was tested by orifice test.

(d) One securely attached to the return pipe near main reservoir, which will show the date on which the hydrostatic test was applied to main reservoirs.

§ 230.112 Piston travel.

(a) The minimum piston travel shall be sufficient to provide proper brake shoe clearance when the brakes are released.

(b) The maximum piston travel when locomotive is standing shall be as follows:

	Inches
Cam type of driving wheel brake	3½
Other forms of driving wheel brake	6
Engine truck brake	8
Tender brake	9

§ 230.113 Foundation brake gear.

(a) Foundation brake gear shall be maintained in a safe and suitable condition for service. Levers, rods, brake beams, hangers, and pins shall be of ample strength, and shall not be fouled in any way which will affect the proper operation of the brake. All pins shall be properly secured in place with cotters, split keys, or nuts. Brake shoes must be properly applied and kept approximately in line with the tread of the wheel.

(b) No part of the foundation brake gear of the locomotive or tender shall be less than 2½ inches above the rails.

§ 230.114 Leakage.

(a) Main reservoir leakage; leakage from main reservoir and related piping shall not exceed an average of 3 pounds per minute in a test of 3 minutes' duration, made after the pressure has been reduced 40 percent below maximum pressure.

(b) Brake pipe leakage shall not exceed 5 pounds per minute.

(c) With a full service application from maximum brake pipe pressure, and with communication to the brake cylinders closed, the brakes on the locomotive and tender shall remain applied not less than 5 minutes.

§ 230.115 Train signal system.

The train signal system, when used, shall be tested and known to be in safe and suitable condition for service before each trip.

CABS, WARNING SIGNALS, AND SANDERS

§ 230.116 Cabs.

(a) *General provisions.* Cabs shall be securely attached or braced and maintained in a safe and suitable condition for service. Cab windows shall be so located and maintained that the enginemen may have a clear view of track and signals from their usual and proper positions in the cab.

(b) *Clear vision windows.* The front cab doors or windows of road locomotives used in regions where snowstorms are generally encountered shall be provided with what is known as a "clear vision" window, or an appliance that will clean the outside of such doors or windows over sufficient area to provide a clear view of track and signals ahead. If a "clear vision" window is used it shall be not less than 5 inches high located as nearly as possible in line of the engineman's vision and so constructed and fitted that it may be easily opened, closed and fastened in desired position.

(c) *Steam pipes.* Steam pipes shall not be fastened to the cab. On new construction or when renewals are made of iron or steel pipe subject to boiler pressure in cabs, it shall be what is commercially known as double strength pipe, with extra heavy valves and fittings.

(d) *Cab back curtains.* Each locomotive used within the States of Colorado, Connecticut, Delaware, District of Columbia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, Nevada, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and within that part of California north of an imaginary line drawn from Carson City, Nev., through Placerville, Oroville, and Gerber, Calif., to Trinidad, Calif., except deckless locomotives and locomotives equipped with a vestibule cab, shall have suitable doors, or a suitable roll or slide-back curtain of sufficient length and width to cover the opening in rear wall of cab. On locomotives not equipped with hood curtain the drop-back curtain if used in lieu of slide curtain shall be of sufficient width to cover the space between the side curtains.

(e) *Cab side curtains.* During the period from November 1 to April 1 each locomotive used within the territory specified in paragraph (d) of this section, and not equipped with a vestibule cab, shall have suitable side curtains at the gangway in addition to the curtain required by paragraph (d) of this section. Side curtains shall be of ample length and width, and be properly fitted and attached. Side curtains may be of the wide or narrow type. If wide side curtains extending from rear of cab back alongside of tender are used they shall extend at least 18 inches back of front of tender water legs and the tender handholds at gangway shall be offset at the rear so as to permit the side curtains to extend alongside of tender inside of handholds and not interfere with free and unobstructed use of the handholds. Side curtains shall have a suitable

stiffening rod or member at rear of curtain. If narrow side curtains extending from rear of cab to tender are used, they shall be so arranged that a closely fitting joint can readily be formed at the tender when desired. Side curtains shall be so arranged and maintained that they can readily be opened, and shall be so arranged as not to interfere with free and unobstructed use of the handholds. Where apron or floor of tender at gangway does not extend full width of tender, side curtains shall be hung as nearly in line with the ends of the apron as is practicable and shall extend not less than 12 inches below apron or tender floor and have attached thereto a flap suitable for placing on apron or tender floor and adequate for closing opening between side curtains and apron or tender floor. Side curtains shall extend to as near cab roof as practicable.

(f) *Cab hood curtains.* (1) Each locomotive, except locomotives burning oil as fuel and locomotives equipped with a vestibule cab, used during the period from November 1 to April 1 within the territory specified in paragraph (d) of this section, excepting the States of Maryland, Virginia, Delaware, Kentucky, West Virginia, California, and the District of Columbia, shall have, in addition to the curtains required by paragraphs (d) and (e) of this section, a suitable hood curtain extending around cab overhang so arranged as to close the opening that would otherwise exist between cab overhang and top of tender and between top of side curtains and cab overhang.

(2) Deckless locomotives may have in lieu of the hood curtain a suitable roll curtain attached at or near rear of cab overhang and of sufficient width to cover the space between the side curtains. On coal-burning locomotives the roll curtain shall be so located and of sufficient length that it may be unrolled down in front of coal gates to within 15 inches of floor of tender. The roll curtain shall be so arranged that it may be rolled up to top of tender water legs or to its supporting member and fastened in either position when desired.

(3) The requirements of this paragraph shall not apply on locomotives used on lines operating south of the territory outlined therein and extending into the territory for a distance of not more than 15 miles.

(g) *Unnecessary openings in cab.* Unnecessary or excessive openings in locomotive cabs around reverse levers, grate-shaker levers, pipes, rods, running boards, doors, windows, between cab and boiler, around wind sheets, or at any other place in cab or deck where rain, snow, or wind may enter shall not exist on any locomotive used during the period from November 1 to April 1 within the territory specified in paragraph (d) of this section.

(h) *Oil-burning locomotives.* (1) Oil-burning locomotives taking air for combustion through fire-door opening, used during the period from November 1 to April 1 within the territory specified in paragraph (d) of this section, shall have a suitable conduit extending from fire-door intake to outside of cab which will prevent air being drawn into fire box from the interior of cab. This requirement is not intended to prohibit the peephole or the opening used for sanding provided the latter is provided with a suitable cover.

(2) The requirements of this paragraph shall be effective November 1, 1929, except on new locomotives or those out of service 15 or more consecutive days for repairs before November 1, 1929, in which instances the requirements shall be effective on the date the locomotives are put in service.

(i) *Cab storm windows.* (1) Each locomotive used in road service within the territory specified in paragraph (d) of this section shall have attached to the window on right and left sides of cab, or to the right and left sides of cab, a suitable storm window. Storm windows shall be hinged and arranged so that they can be folded back and fastened when desired.

(2) Upon application to the Director, Bureau of Railroad Safety, exemptions from the requirements of this paragraph may be granted if upon investigation it is found that clearances will not permit safe operation of such locomotives when equipped with storm windows.

§ 230.117 Cab aprons.

Cab aprons shall be of proper length and width to insure safety. Aprons must be securely hinged, maintained in a safe and suitable condition for service, and roughened, or other provision made, to afford secure footing.

§ 230.118 Fire doors and mechanical stokers.

(a) Each locomotive shall have a mechanically operated fire door (or fire doors if more than one is used) so constructed and maintained that it may be operated by pressure of the foot on a pedal, or other suitable appliance, located on the floor of the cab or tender at a suitable distance from the fire door, so that it may be conveniently operated by the person firing the locomotive: *Provided*, That locomotives burning oil fuel may have in lieu of the mechanically operated fire door a hand-operated fire door of suitable construction and so arranged that it may be securely bolted in closed position while the locomotive is being used.

(b) Free doors shall be maintained in a safe and suitable condition for service.

(c) All coal-burning steam locomotives which weigh on driving wheels 160,000 pounds or more to be used in fast or heavy passenger service, built on or after April 15, 1939, shall be equipped with a suitable type of mechanical stoker, and all coal-burning steam locomotives which weigh on driving wheels 175,000 pounds or more to be used in fast or heavy freight service, built on or after April 15, 1939, shall be equipped with a suitable type of mechanical stoker and such stokers shall be properly maintained. Each railroad which operates coal-burning locomotives of the above weights shall file with the director as of April 15, 1939, a list of all hand-fired coal-burning locomotives of the above weights built prior to April 15, 1939, which will in the future be used in fast or heavy service on its line, and mechanical stokers will be applied each 12-month period to not less than 20 percent of the total number so listed, and all locomotives included in said list shall be so equipped before April 15, 1944, and such stokers shall be properly maintained. For the present this order shall not apply to deckless locomotives equipped with two cabs, which are generally known as the "Mother Hubbard type," built prior to April 15, 1939.

§ 230.119 Cylinder cocks.

Necessary cylinder cocks, operative from cab of locomotive, shall be provided and maintained in a safe and suitable condition for service.

§ 230.120 Sanders.

Locomotives shall be equipped with proper sanding apparatus, which shall be maintained in safe and suitable condition for service, and tested before each trip. Sand pipes must be securely fastened in line with the rails.

§ 230.121 Whistle.

Each locomotive must be provided with a suitable steam whistle, so arranged that it may be conveniently operated by the engineer.

Draw Gear and Draft Gear

§ 230.122 Draw gear between locomotive and tender.

(a) The draw gear between the locomotive and tender, together with the pins and fastenings, shall be maintained in safe and suitable condition for service. The pins and drawbar shall be removed and carefully examined for defects not less frequently than once each 3 months. Suitable means for securing the drawbar pins in place shall be provided. Inverted drawbar pins shall be held in place by plate or stirrup.

(b) Two or more safety bars or safety chains of ample strength shall be provided between locomotive and tender, maintained in safe and suitable condition for service, and inspected at the same time draw gear is inspected.

(c) Safety chains or safety bars shall be of the minimum length consistent with the curvature of the railroad on which the locomotive is operated.

(d) Lost motion between locomotives and tenders not equipped with spring buffers shall be kept to a minimum, and shall not exceed one-half inch.

(e) When spring buffers are used between locomotives and tender the spring shall be applied with not less than ¾-inch compression, and shall at all times be under sufficient compression to keep the chafing faces in contact.

§ 230.123 Chafing irons.

Chafing irons of such radius as will permit proper curving shall be securely attached to locomotive and tender, and shall be maintained in condition to permit free movement laterally and vertically.

§ 230.124 Draft gear.

Draft gear and attachments on locomotives and tenders shall be securely fastened, and maintained in safe and suitable condition for service.

DRIVING GEAR

§ 230.125 Crossheads.

Crossheads shall be maintained in a safe and suitable condition for service, with not more than ¼-inch vertical or 5/16-inch lateral play between crossheads and guides.

§ 230.126 Guides.

Guides must be securely fastened and maintained in a safe and suitable condition for service.

§ 230.127 Pistons and piston rods.

(a) Pistons and piston rods shall be maintained in safe and suitable condition for service. Piston rods shall be carefully examined for cracks each time they are removed, and shall be renewed if found defective.

(b) All piston rods applied after January 1, 1916, shall have the date of application, original diameter, and kind of material legibly stamped on or near the end of rod.

§ 230.128 Rods, main and side.

(a) Cracked or defective main or side rods shall not be continued in service.

(b) Autogenous welding of broken or cracked main and side rods not permitted.

(c) Bearings and bushings shall so fit the rods as to be in a safe and suitable condition for service, and means be provided to prevent bushings turning in rod. Straps shall fit and be securely bolted to rods.

(d) The total amount of side motion of rods on crank pins shall not exceed one-fourth inch.

(e) Oil and grease cups shall be securely attached to rods, and grease cup plugs shall be equipped with suitable fastenings.

(f) Locomotives used in road service: The bore of main rod bearings shall not exceed pin diameters more than three thirty-seconds inch at front or back end. The total lost motion at both ends shall not exceed five thirty-seconds inch.

(g) The bore of side rod bearings shall not exceed pin diameters more than five thirty-seconds inch on main pin nor more than three-sixteenths inch on other pins.

(h) Locomotives used in yard service: The bore of main rod bearings shall not exceed pin diameters more than one-eighth inch at front end or five thirty-seconds inch at back end.

(i) The bore of side rod bearings shall not exceed pin diameter more than three-sixteenths inch.

LIGHTS

§ 230.129 Locomotives used in road service.

(a) Each locomotive used in road service between sunset and sunrise shall have a headlight which shall afford sufficient illumination to enable a person in the cab of such locomotive who possesses the usual visual capacity required of locomotive enginemen, to see in a clear atmosphere, a dark object as large as a man of average size standing at a distance of at least 800 feet ahead and in front of such headlight; and such headlight must be maintained in good condition.

(b) Each locomotive used in road service, which is regularly required to run backward for any portion of its trip, except to pick up a detached portion of its train, or in making terminal movements, shall have on its rear a headlight which shall meet the foregoing requirements.

(c) Such headlights shall be provided with a device whereby the light from same may be diminished in yards and at stations or when meeting trains.

(d) When two or more locomotives are used in the same train, the leading locomotive only will be required to display a headlight.

§ 230.130 Classification lamps.

Each locomotive used in road service shall be provided with such classification lamps as may be required by the rules of the railroad company operating the locomotive. When such classification lamps are provided they shall be kept clean and maintained in safe and suitable condition for service.

§ 230.131 Locomotives used in yard service.

Each locomotive used in yard service between sunset and sunrise shall have two lights, one located on the front of the locomotive and one on the rear, each of which shall enable a person in the cab of the locomotive under the conditions, including visual capacity, set forth in § 230.129, to see a dark object such as there described for a distance of at least 300 feet ahead and in front of such headlight; and such headlights must be maintained in good condition.

§ 230.132 Cab lights.

Each locomotive used between sunset and sunrise shall have cab lamps which will provide sufficient illumination for the steam, air, and water gauges to enable the enginemen to make necessary and accurate readings from their usual and proper positions in the cab. These lights shall be so located and constructed that the light will shine only on those parts requiring illumination. Locomotives used in road service shall have an additional lamp conveniently located to enable the persons operating the locomotive to easily and accurately read train orders and time tables, and so constructed that it may be readily darkened or extinguished.

RUNNING GEAR

§ 230.133 Driving, trailing, and engine truck axles.

(a) Driving, trailing, and engine truck axles with any of the following defects shall not be continued in service:

(b) Bent axle; cut journals that cannot be made to run cool without turning; seamy journals in steel axles; transverse seams in iron axles, or any seams in iron axles causing journals to run hot, or unsafe on account of usage, accident, or derailment; driving, trailing, or engine truck axles more than one-half inch under original diameter, except for locomotives having all driving axles of the same diameter, when other than main driving axles, may be worn three-fourths inch below the original diameter.

(c) The date applied, the original diameter of the journal, and the kind of material shall be legibly stamped on one end of each driving axle, trailing truck axle, and engine truck axle applied after January 1, 1916.

§ 230.134 Tender truck axles.

The minimum diameters of axles for various axle loads shall be as follows:

Axle load	Minimum diameter of journal	Minimum diameter of wheel seat	Minimum diameter of center
	Inches	*Inches*	*Inches*
50,000 pounds	5½	7⅜	6 7/16
38,000 pounds	5	6¾	5⅞
31,000 pounds	4½	6¼	5 5/16
22,000 pounds	3¾	5	4⅜
15,000 pounds	3¼	4⅝	3⅞

§ 230.135 Defects in tender truck axles.

(a) Tender truck axles with any of the following defects shall not be continued in service:

(b) Bent axle; cut journals that cannot be made to run cool without turning; seamy journals in steel axles, or transverse seams in journals of iron axles, or unsafe on account of usage, accident, or derailment; collars broken or worn to one-fourth inch or less in thickness, fillet in back shoulder worn out.

§ 230.136 Crank pins.

(a) Crank pins shall be securely applied. Shimming or prick punching crank pins will not be allowed. All crank pins applied after January 1, 1916, shall have the date applied and kind of material used legibly stamped on end of pin.

(b) Crank pin collars and collar bolts shall be maintained in a safe and suitable condition for service.

§ 230.137 Driving boxes.

Driving boxes shall be maintained in a safe and suitable condition for service. Broken and loose bearings shall be renewed. Not more than one shim may be used between box and bearing.

§ 230.138 Driving box shoes and wedges.

Driving box shoes and wedges shall be maintained in a safe and suitable condition for service.

§ 230.139 Frames.

Frames, deck plates, tailpieces, pedestals, and braces shall be maintained in a safe and suitable condition for service, and shall be cleaned and thoroughly inspected each time the locomotive is in shop for heavy repairs.

§ 230.140 Lateral motion.

(a) The total lateral motion or play between the hubs of the wheels and the boxes on any pair of wheels shall not exceed the following limits:

	Inch
For engine truck wheels (trucks with swing centers)	1
For engine truck wheels (trucks with rigid centers)	1½
For trailing truck wheels	1
For driving wheels (more than one pair)	¾

(b) These limits may be increased on locomotives operating on track where the curvature exceeds 20 degrees when it can be shown that conditions require additional lateral motion.

(c) The lateral motion shall in all cases be kept within such limits that the driving wheels, rods, or crank pins will not interfere with other parts of the locomotive.

§ 230.141 Pilots.

(a) Pilots shall be securely attached, properly braced, and maintained in a safe and suitable condition for service.

(b) The minimum clearance of pilot above the rail shall be 3 inches, and the maximum clearance 6 inches.

§ 230.142 Spring rigging.

(a) Springs and equalizers shall be arranged to insure the proper distribution of weight to the various wheels of the locomotive, maintained approximately level and in a safe and suitable condition for service.

(b) Springs or spring rigging with any of the following defects shall be renewed or properly repaired:

(c) Top leaf broken or two leaves in top half of any three leaves in spring broken. (The long side of spring to be considered the top.)

(d) Springs with leaves working in band.

(e) Broken coil springs.

(f) Broken driving box saddle, equalizers, hanger, bolt, or pin.

§ 230.143 Trucks; leading and trailing.

(a) Trucks shall be maintained in safe and suitable condition for service. Center plates shall fit properly, and the male center plate shall extend into the female center plate not less than three-fourths inch. All centering devices shall be properly maintained.

(b) A suitable safety chain shall be provided at each front corner of all four wheel engine trucks.

(c) All parts of trucks shall have sufficient clearance to prevent them from seriously interfering with any other part of the locomotive.

§ 230.144 Wheels.

(a) Wheels shall be securely pressed on axles. Prick punching or shimming the wheel fit will not be permitted. The diameter of wheels on the same axle shall not vary more than three thirty-seconds inch.

(b) Wheels used on standard gauge track will be out of gauge if the inside gauge of flanges, measured on base line, is less than 53 inches or more than 53⅜ inches.

(c) The distance back to back of flanges of wheels mounted on the same axle shall not vary more than one-fourth inch.

§ 230.145 Defects in cast-iron or cast-steel wheels.

Cast-iron or cast-steel wheels with any of the following defects shall not be continued in service:

(a) *Slid flat.* When the flat spot is 2½ inches or over in length, or if there are two or more adjoining spots each 2 inches or over in length.

(b) *Broken or chipped flange.* If the chip exceeds 1½ inches in length and one-half inch in width.

(c) *Broken rim.* If the tread, measured from the flange at a point five-eighths inch above the tread, is less than 3¾ inches in width.

(d) *Shelled out.* Wheels with defective treads on account of cracks or shelled-out spots 2½ inches or over, or so numerous as to endanger the safety of the wheel.

(e) *Brake burn.* Wheels having defective tread on account of cracks or shelling out due to heating.

(f) *Seams.* Seams ½-inch long or over, at a distance of one-half inch or less from the throat of the flange, or seams 3 inches or more in length, if such seams are within the limits of 3¾ inches from the flange, measured at a point five-eighths inch from the tread.

(g) *Worn flanges.* Wheels on axles with journals 5 inches by 9 inches or over with flanges having flat vertical surfaces extending seven-eighths inch or more from the tread, or flanges 1 inch thick or less gauged at a point three-eighths inch above tread. Wheels on axles with journals less than 5 inches by 9 inches with flanges having flat vertical surfaces extending 1 inch or more from the tread, or flanges 15/16-inch thick or less, gauged at a point three-eighths inch above the tread.

(h) *Tread worn hollow.* If the tread is worn sufficiently hollow to render the flange or rim liable to breakage.

(i) *Burst.* If the wheel is cracked from the wheel fit outward.

(j) *Cracks.* Cracked tread, cracked plate, or one or more cracked brackets.

(k) *Gauge.* Wheels out of gauge.

(l) *Loose.* Wheels loose on axle.

NOTE: The determination of flat spots, flanges, and broken rims shall be made by a gauge as shown in figure 8, and its application to defective wheels as shown in figures 9, 10, 11, 12, and 13.

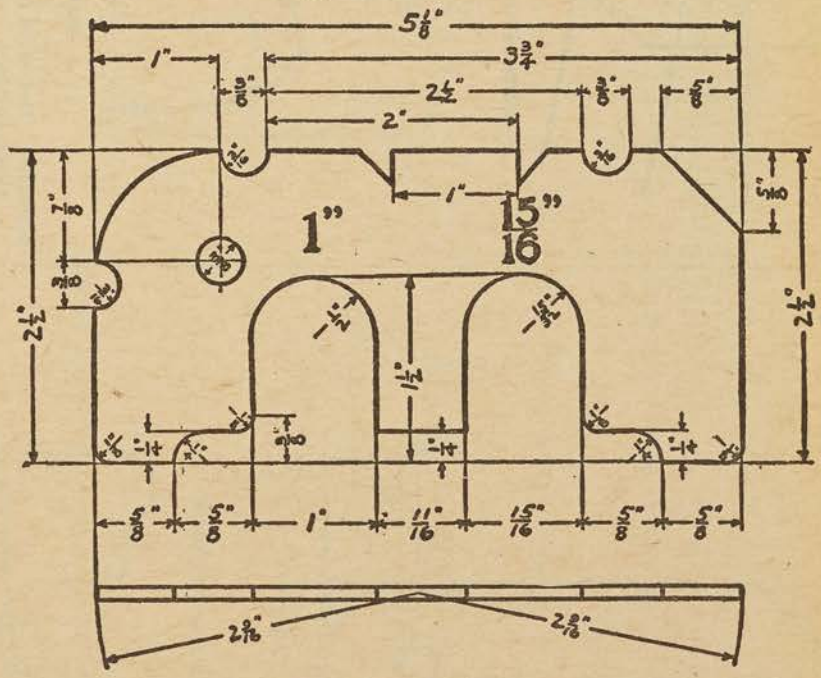


FIGURE 8.—Wheel defect gauge.

This gauge to be used in determining flat spots, worn flanges, and broken rims. (See §§ 230.145, 230.146, 230.150.)

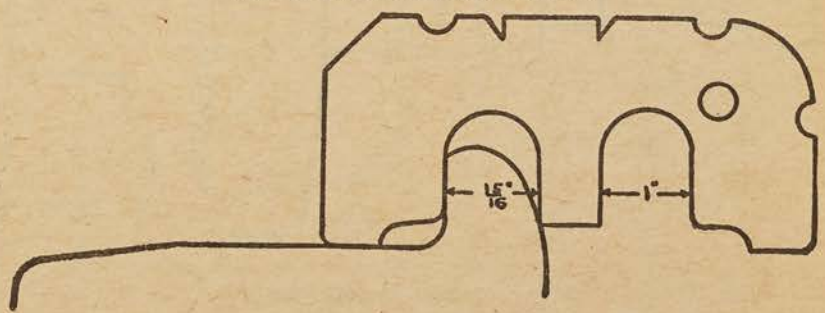


FIGURE 9.—Method of gauging worn flanges.

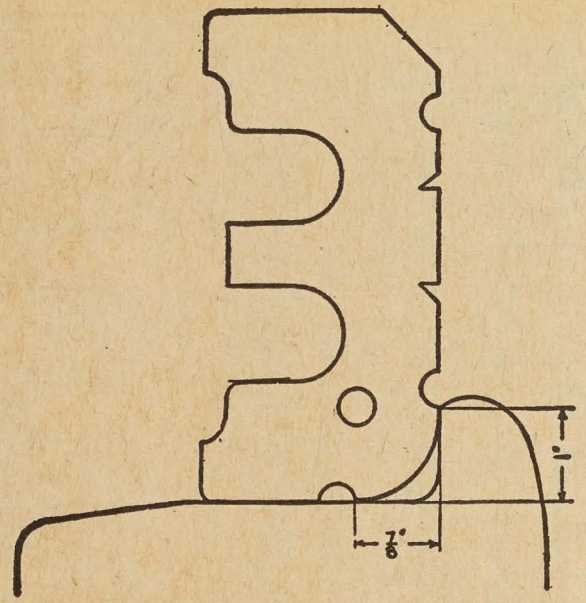


FIGURE 10.—Method of gauging worn flanges.

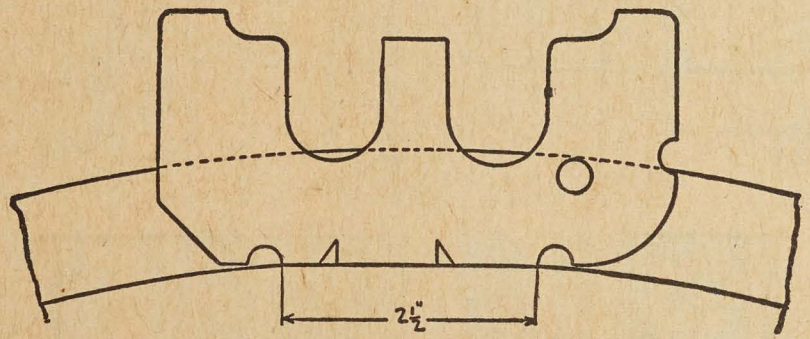


FIGURE 11.—Method of gauging shelled and flat spots.

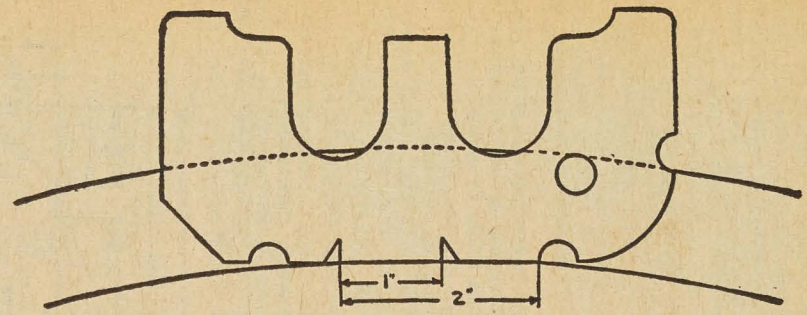


FIGURE 12.—Method of measuring flat spots of 1 and 2 inches.

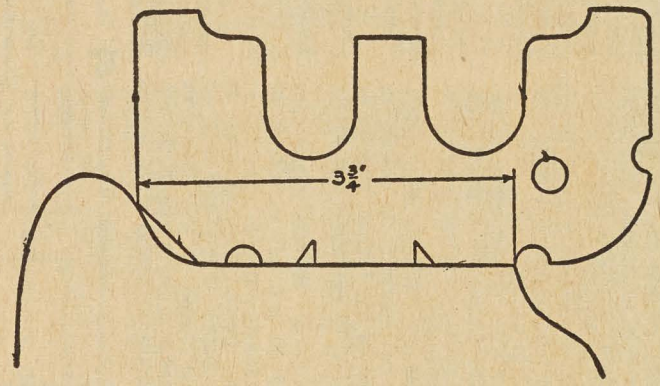


FIGURE 13.—Method of gauging broken rims.

§ 230.146 Defects in forged steel or steel tired wheels.

Forged steel or steel tired wheels with any of the following defects shall not be continued in service:

(a) Loose wheels; loose, broken, or defective retaining rings or tires; broken or cracked hubs, plates, spokes, or bolts.

(b) Slid flat spot 2½ inches or longer; or, if there are two or more adjoining spots, each 2 inches or longer.

(c) Defective tread on account of cracks or shelled out spots 2½ inches or longer, or so numerous as to endanger the safety of the wheel.

(d) Broken flange.

(e) Flange worn to fifteen-sixteenths inch or less in thickness, gauged at a point three-eighths inch above the tread, or having flat vertical surface, 1 inch or more from tread; tread worn five-sixteenths inch; flange more than 1½ inches from tread to top of flange, or thickness of tires or rims less than shown in figures 4, 5, 6, and 7.

(f) Wheels out of gauge.

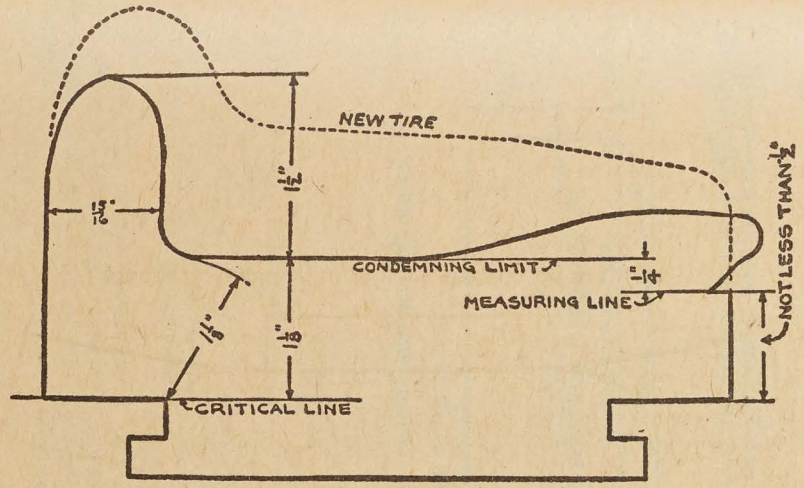


FIGURE 4.—Steel tire.

Retaining ring fastening. Minimum thickness for steel tires. Engine and tender truck wheels. (See § 230.146.)

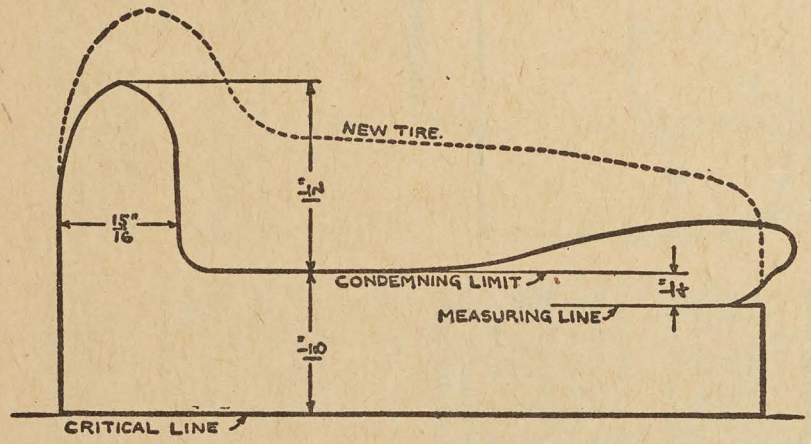


FIGURE 5.—Steel tire.

Shrinkage fastening only. Minimum thickness for steel tires. Engine and tender truck wheels. (See § 230.146.)

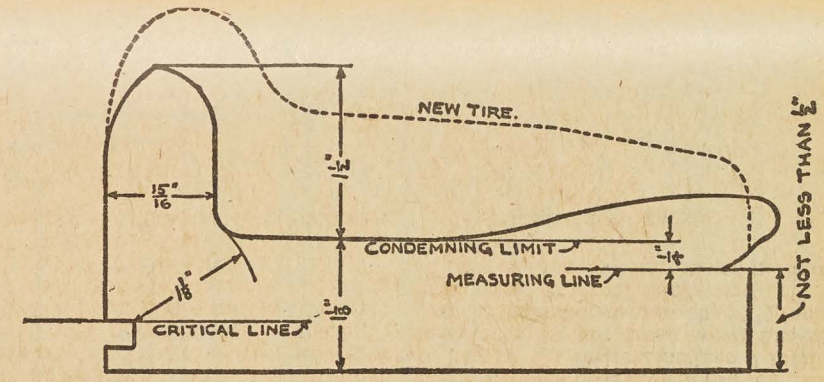


FIGURE 6.—Steel tire.

Retaining ring fastening. Minimum thickness for steel tires. Engine and tender truck wheels. (See § 230.146.)

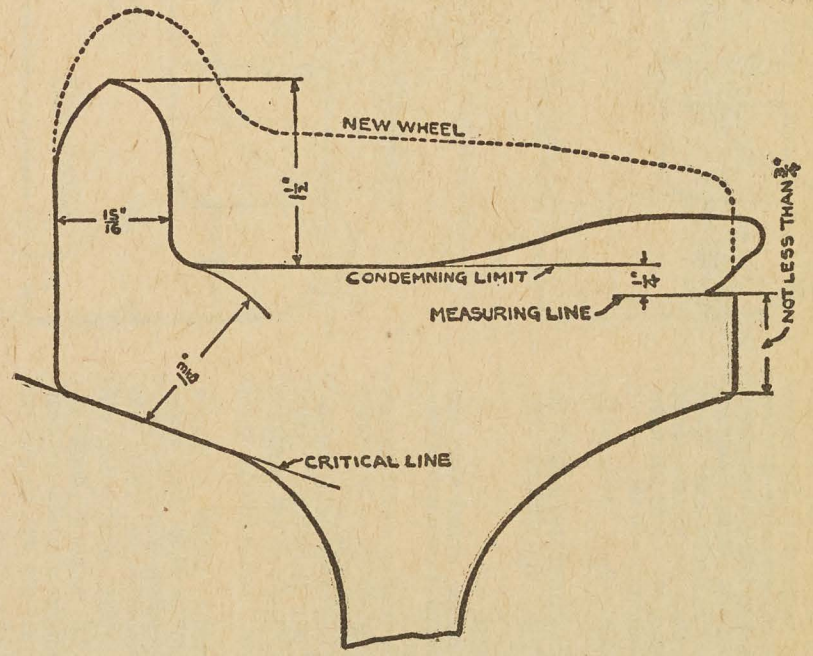


FIGURE 7.—Steel wheel.

Minimum thickness of rim. Engine and tender truck wheels. (See § 230.146.)

§ 230.147 Driving and trailing wheels.

Driving and trailing wheel centers with divided rims shall be properly fitted with iron or steel filling blocks before the tires are applied, and such filling blocks shall be properly maintained. When shims are inserted between the tire and the wheel center, not more than two thicknesses of shims may be used, one of which must extend entirely around the wheel.

§ 230.148 Driving wheel counterbalance.

Driving wheel counterbalance shall be maintained in a safe and suitable condition for service.

§ 230.149 Defects.

Driving and trailing wheels with any of the following defects shall not be continued in service:

(a) Driving or trailing wheel centers with three adjacent spokes or 25 percent of the spokes in wheel broken.

(b) Loose wheels; loose, broken, or defective tires or tire fastenings; broken or cracked hubs, or wheels out of gauge.

§ 230.150 Driving and trailing wheel tires.

(a) The minimum height of flange for driving or trailing wheel tires, measured from tread, shall be 1 inch for locomotives used in road service, except that on locomotives where construction will not permit the full height of flange on all drivers the minimum height of flange on one pair of driving wheels may be five-eights inch.

(b) The minimum height of flange for driving wheel tires, measured from tread, shall be seven-eighths inch for locomotives used in switching service.

(c) The maximum taper for tread of tire from throat of flange to outside of tire, for driving and trailing wheels for locomotives used in road service, shall be one-fourth inch, and for locomotives used in switching service five-sixteenths inch.

(d) The minimum width of tires for driving and trailing wheels of standard-gauge locomotives shall be 5½ inches for flanged tires, and 6 inches for plain tires.

(e) The minimum width of tires for driving and trailing wheels of narrow-gauge locomotives shall be 5 inches for flanged tires and 5½ inches for plain tires.

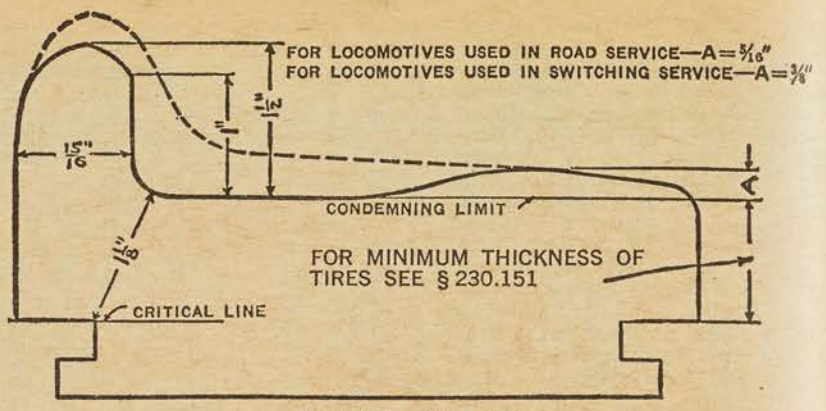


FIGURE 1.—Steel tire.

Retaining ring fastening. Driving and trailing wheels.

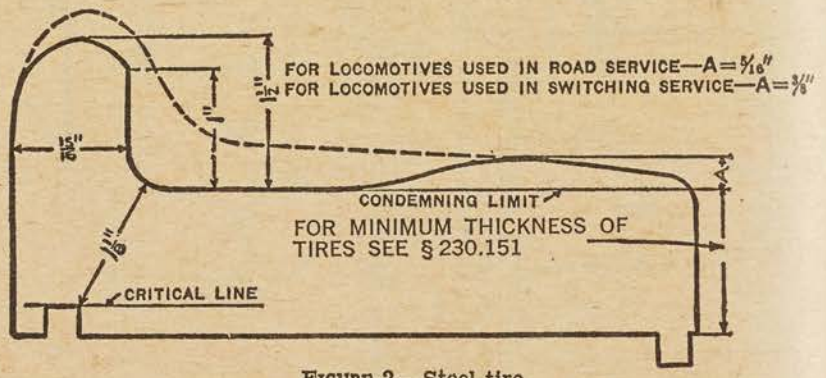


FIGURE 2.—Steel tire.

Shrinkage fastening with shoulder and retaining segments. Driving and trailing wheels.

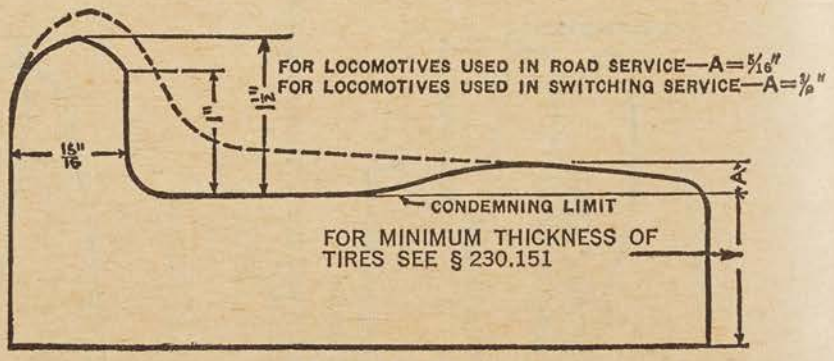


FIGURE 3.—Steel tire.

Shrinkage fastening. Driving and trailing wheels.

(f) When all tires are turned or new tires applied to driving and trailing wheels, the diameter of the wheels on the same axle, or in the same driving wheel base, shall not vary more than three-thirty-seconds inch. When a single tire is applied the diameter must not vary more than three thirty-seconds inch from that of the opposite wheel on the same axle. When a single pair of tires is applied the diameter must be within three thirty-seconds inch of the average diameter of the wheels in the driving wheel base to which they are applied.

(g) Driving and trailing wheel tires with any of the following defects shall not be continued in service:

(h) Slid flat spot 2½ inches or more in length; flange fifteen-sixteenths inch or less in thickness, gauged at a point three-eighths inch above the tread; or having flat vertical surface 1 inch or more from tread; tread worn hollow five-sixteenths inch on locomotives used in road service, or three-eighths inch on locomotives used in switching service; flange more than 1½ inches from tread to top of flange. (See figures 1, 2, and 3.)

NOTE: The determination of flat spots and worn flanges shall be made by a gauge as shown in figure 8, and its application to defective tires as shown in figures 9, 10, and 11.

§ 230.151 Minimum thickness for driving wheel and trailer tires on standard and narrow gauge locomotives.

When retaining rings are used, measurements of tires to be taken from the outside circumference of the ring, and the minimum thickness of tires may be as much below the limits specified above as the tires extend between the retaining rings, provided it does not reduce the thickness of the tire to less than 1⅛ inches from the throat of flange to the counterbore for the retaining ring.

The minimum thickness for driving wheel tires shall be 1 inch for locomotives operated on track of 2-foot gauge.

Weight per axle (weight on drivers divided by number of pairs of diving wheels)	Diameter of wheel center	Minimum thickness, service limits	
		Road service	Switching service
	Inches	*Inches*	*Inches*
30,000 pounds and under	44 and under	1¼	1⅛
	Over 44 to 50	1 5/16	1 5/16
	Over 50 to 56	1⅜	1¼
	Over 56 to 62	1 5/16	1 5/16
	Over 62 to 68	1½	----
	Over 68 to 74	1 9/16	----
	Over 74	1⅝	----
Over 30,000 to 35,000 pounds	44 and under	1 5/16	1 5/16
	Over 44 to 50	1⅜	1¼
	Over 50 to 56	1 5/16	1 5/16
	Over 56 to 62	1½	1⅜
	Over 62 to 68	1 9/16	----
	Over 68 to 74	1⅝	----
	Over 74	1 11/16	----
Over 35,000 to 40,000 pounds	44 and under	1⅜	1¼
	Over 44 to 50	1 5/16	1 5/16
	Over 50 to 56	1½	1⅜
	Over 56 to 62	1 9/16	1 5/16
	Over 62 to 68	1⅝	----
	Over 68 to 74	1 11/16	----
	Over 74	1¾	----
Over 40,000 to 45,000 pounds	44 and under	1 5/16	1 5/16
	Over 44 to 50	1½	1⅜
	Over 50 to 56	1 9/16	1 5/16
	Over 56 to 62	1⅝	1½
	Over 62 to 68	1 11/16	----
	Over 68 to 74	1¾	----
	Over 74	1 13/16	----
Over 45,000 to 50,000 pounds	44 and under	1½	1⅜
	Over 44 to 50	1 9/16	1 5/16
	Over 50 to 56	1⅝	1½
	Over 56 to 62	1 11/16	1 9/16
	Over 62 to 68	1¾	----
	Over 68 to 74	1 13/16	----
	Over 74	1⅞	----
Over 50,000 to 55,000 pounds	44 and under	1 9/16	1 5/16
	Over 44 to 50	1⅝	1½
	Over 50 to 56	1 11/16	1 9/16
	Over 56 to 62	1¾	1⅝
	Over 62 to 68	1 13/16	----
	Over 68 to 74	1⅞	----
	Over 74	1 15/16	----
Over 55,000 pounds	44 and under	1⅝	1½
	Over 44 to 50	1 11/16	1 9/16
	Over 50 to 56	1¾	1⅝
	Over 56 to 62	1 13/16	1 11/16
	Over 62 to 68	1⅞	----
	Over 68 to 74	1 15/16	----
	Over 74	2	----

TENDERS

§ 230.152 Tender frames.

(a) Tender frames shall be maintained in a safe and suitable condition for service.

(b) The difference in height between the deck on the tender and the cab floor or deck on the locomotive shall not exceed 1½ inches.

(c) The minimum width of the gangway between locomotive and tender, while standing on straight track, shall be 16 inches.

§ 230.153 Feed water tanks.

(a) Tanks shall be maintained free from leaks, and in safe and suitable condition for service. Suitable screens must be provided for tank wells or tank hose. Feed water tanks on road locomotives that take water en route, built on or after March 1, 1946, shall be equipped with a device whereby the height or quantity of water in the tender feed water tank may be ascertained from the cab or tender deck of the locomotive, which shall be properly maintained. That each steam road locomotive that takes water en route, built before March 1, 1946, shall be so equipped the first time said locomotive receives class 3[1] or heavier repairs after June 1, 1946.

(b) Not less frequently than once each month the interior of the tank shall be inspected, and cleaned if necessary.

(c) Top of tender behind fuel space shall be kept clean, and means provided to carry off waste water. Suitable covers shall be provided for filling holes.

§ 230.154 Oil tanks.

The oil tanks on oil burning locomotives shall be maintained free from leaks. An automatic safety cut-out valve, which may be operated by hand from inside and outside of cab, shall be provided for the oil-supply pipe.

§ 230.155 Tender trucks.

(a) Tender truck center plates shall be securely fastened, maintained in a safe and suitable condition for service, and provided with a center pin properly secured. When shims are used between truck center plates, the male center plate must extend into the female center plate not less than three-fourths inch.

(b) Truck bolsters shall be maintained approximately level.

(c) When tender trucks are equipped with safety chains, they shall be maintained in a safe and suitable condition for service.

(d) Side bearings shall be maintained in a safe and suitable condition for service.

(e) Friction side bearings shall not be run in contact.

(f) The maximum clearance of side bearings on rear truck shall be three-eighths inch, and if used on front truck three-fourths inch, when the spread of side bearings is 50 inches. When the spread of the side bearings is increased, the maximum clearance may be increased in proportion.

THROTTLE AND REVERSING GEAR

§ 230.156 Throttles.

Throttles shall be maintained in safe and suitable condition for service, and efficient means provided to hold the throttle lever in any desired position.

§ 230.157 Reverse gear.

Reverse gear, reverse levers, and quadrants shall be maintained in a safe and suitable condition for service. Reverse lever latch shall be so arranged that it can be easily disengaged, and provided with a spring which will keep it firmly seated in quadrant. Proper counterbalance shall be provided for the valve gear.

[1] Flues all new or reset. (Superheater flues may be excepted.) Necessary repairs to firebox and boiler. Tires turned or new. General repairs to machinery and tender.

(a) All steam locomotives built on or after September 1, 1937, shall be equipped with a suitable type of power-operated reverse gear.

(b) All steam locomotives used in road service built prior to September 1, 1937, which weigh [2] on driving wheels 150,000 pounds or more, and all steam locomotives used in switching service, built prior to September 1, 1937, which weigh on driving wheels 130,000 pounds or more, which are equipped with manually operated reverse gear, shall have a suitable type of power-operated reverse gear substituted therefor the first time that said locomotives are given repairs defined by the United States Railroad Administration as class 1 [3] or 2,[4] and all such steam locomotives shall be so equipped before September 1, 1942.

(c) Each steam locomotive used in road service, built on or after March 1, 1946, that has an air operated power reverse gear shall be equipped with a connection whereby such gear may be operated by steam or by an auxiliary supply of air in case of failure of the main reservoir air pressure. Each steam locomotive used in road service, built on or before March 1, 1946, that has an air operated power reverse gear shall be so equipped the first time said locomotive receives a class 3 [3] or heavier repairs after June 1, 1946. If an independent air reservoir is used as the source of auxiliary supply for the reverse gear, it shall be provided with means to automatically prevent loss of pressure in event of failure of the main reservoir air pressure.

(d) When steam connections to air operated power reverse gear are used, the operating valve handle shall be conveniently located in the cab of the locomotive and so arranged and maintained that in case of air failure steam may be quickly used to operate the reverse gear. The operating rod or lever shall be plainly marked and equipped with a handle or wheel of a distinctive design.

§ 230.158 Modification of rules.

Upon application to the Director, Bureau of Railroad Safety, modification of the rules in this subpart not inconsistent with their purpose, may be made for roads operating less than five locomotives, if an investigation shows that conditions warrant it.

Filing Reports

§ 230.159 Report of inspection.

Not less than once each month and within 10 days after inspection a report of inspection, Form No. 1 (§ 230.51), size 6 by 9 inches, shall be filed with the United States inspector in charge for each locomotive used by a railroad company, and a copy shall be filed in the office of the chief mechanical officer having charge of the locomotive.

§ 230.160 Posting of copy.

A copy of the monthly inspection report, Form No. 1 (§ 230.51), or annual inspection report, Form No. 3 (§ 230.53)[5] properly filled out, shall be placed under glass in a conspicuous place in the cab before the locomotive inspected is put into service.

§ 230.161 Annual report.

Not less than once each year, and within 10 days after required tests have been completed, a report of such tests, showing general condition of the locomotive, shall be submitted on Form No. 3 (§ 230.53),[5] size 6 by 9 inches, and filed with the United States inspector in charge, and a copy shall be filed in the office of the chief mechanical officer having charge of the locomotive. The monthly report will not be required for the month in which this report is filed.

Note: Samples of Forms Nos. 1 and 3, indicating exact size, color, weight, and grade of paper, will be furnished on application.

§ 230.162 Accident reports.

In the case of an accident resulting from failure, from any cause, of a locomotive or tender, or any appurtenances thereof, resulting in serious injury or death to one or more persons, the carrier owning or operating such locomotive shall immediately transmit by wire to the Director, Bureau of Railroad Safety, Federal Railroad Administration, at his office in Washington, D.C., a report of such accident, stating the nature of the accident, the place at which it occurred, as well as where the locomotive may be inspected, which wire shall be immediately confirmed by mail giving a full detailed report of such accident, stating, so far as may be known, the causes and giving a complete list of the killed or injured.

Subpart C—Other Than Steam Locomotives and Appurtenances

§ 230.200 Applicability of subpart.

This subpart contains rules and instructions for the inspection and testing of locomotives propelled by other than steam power except electrically operated units designed to carry freight and/or passenger traffic operated by a single set of controls. For multiple operated electric units see Subpart D of this part.

§ 230.200a Responsibility for design, construction, inspection, and repair.

The railroad company is held responsible for the general design construction, inspection, and repair of all locomotives used or permitted to be used on its line. It must know that all inspections, tests, and repairs are made and reports made and filed as required, and that all parts and appurtenances of every locomotive used are maintained in condition to meet the requirements of the law and the rules and instructions in this subpart. Nothing contained in the rules and instructions in this subpart, however, shall be construed as prohibiting any carrier from enforcing additional rules and instructions not inconsistent with those in this subpart contained, tending to a greater degree of precaution against accidents.

§ 230.201 Locomotive unit.

(a) *Definition.* A locomotive may consist of one or more units. The term "unit" as used in the rules and instructions in this subpart means the least number of wheel bases together with superstructures capable of independent propulsion, but not necessarily equipped with an independent control.

(b) *Marking front.* The letter "F" shall be legibly shown on each side of every locomotive unit near the end which, for identification purposes, will be known as the front end. The unit number shall be legibly shown on each side of every locomotive unit and shall be shown on the specification card, Form No. 4–A.

Form No. 4–A.

SPECIFICATION FOR LOCOMOTIVE UNIT NO. ...

Operated by _____ Company
Built by _____
at _____ date _____, 19...
Builder's number _____
Propelled by _____
Gauge of wheels _____
Kind and number of current collectors _____
_____
Trolley wire or third rail voltage _____
Number, make and type of motors _____
_____
_____ Voltage _____
Make and type of control equipment _____
_____
_____ Control circuit voltage _____
Make and type of internal combustion engine
_____
_____
Kind of brakes _____
_____
(Give make, type and schedule number)
Number, make and type of air compressors _____
_____
Main air reservoir pressure _____
Train line pressure _____
Make and type of lightning arrester _____
_____
Does unit carry steam boiler? _____
Total weight, working order _____ pounds.
weight on driving wheels _____ pounds.
weight on trucks _____ pounds.
Maximum tractive effort _____

Attach to or make hereon diagram showing general outline of unit and principal dimensions.

Approved _____
Title _____

(c) *Control of units.* When locomotive units are coupled in multiple control all parts and components of each unit capable of providing power for propulsion or supplying the retarding effect which will enable the enginemen to control the speed or stop the locomotive or train, shall respond to control from the enginemen's compartment of the controlling unit.

Interpretation: On locomotive units coupled in multiple control, the parts and components capable of producing power to propel the locomotive or train, the air brakes capable of retarding or stopping the locomotive or train, and the sanders, shall respond to control from the operating compartment.

[2] Weight on driving wheels means the weight of a locomotive in working order that is supported by the coupled driving wheels when it rests on a straight and level track, as defined in the Locomotive Cyclopedia.

[3] New broiler or new back end. Flues new or reset. Tires turned or new. General repairs to machinery and tender.

[4] New firebox, or one or more shell courses, or roof sheet. Flues new or reset. Tires turned or new. General repairs to machinery and tender.

[5] Form No. 3 should be printed on yellow paper.

(d) *Slipping or sliding wheel alarms.* Means shall be provided whereby alarms and indications of either slipping or sliding driving wheels on any unit in a locomotive used in road service will be shown in the enginemen's compartment of the controlling unit.

Interpretation: This rule does not require both an audible alarm, and a visible indication, but does require that either the one, or the other, must be provided.

The requirements of the rule are satisfied by a device which shows when either slipping or sliding occurs, even though not distinguishing between the one and the other.

§ 230.202 Term "inspector."

The term "inspector" as used in the rules and instructions in this subpart means, unless otherwise specified, the railroad company's inspector.

§ 230.203 Trip or daily inspection.

(a) Each locomotive unit when used in road service (including belt-line, transfer or work-train service) shall be inspected at least once every 24 hours, except locomotive units operated on through runs exceeding 24 hours, may be inspected at the next crew change point immediately beyond the point at which the 24-hour period expires. Each locomotive unit when used exclusively in yard service shall be inspected at least once during each calendar day. A report of the above inspections shall be made on an approved form to the proper representative of the railroad whether such locomotive units need repairs or not. This form shall show the name of the railroad; the initials and number of the unit; the place, date and time of the inspection; the defects disclosed by such inspection; and the signature of the employee making the inspection. If any defects exist which constitute a violation of the Locomotive Inspection Act, or any Federal Railroad Administration rules and regulations thereunder, such defects shall be repaired before the unit is again used and proper notation made on the report to indicate that such repairs have been made. This report shall be approved by the designated representative of the railroad and shall then be filed in the office of the railroad at the terminal at which the unit is cared for.

(b) A record shall be maintained on each locomotive, or on each unit comprising the locomotive, showing the place, date and time of the last previous inspection for each unit.

(c) Any competent employee may be designated by the railroad to make the inspections required by this rule.

(d) Any official or responsible employee designated by the railroad may approve the inspection report. The unit may be used in further service without waiting for such approval, provided defects reported have been repaired as required by this rule.

(e) This rule prescribes the minimum number of inspections that are required to be made and is not intended to prevent the railroad from making additional inspections.

(f) The instructions on the approved form should not be varied from, nor should the form itself be materially altered. Additional items may be added to this form to cover anything the railroad may desire to have inspected.

ICC Form No. 2–A

Locomotive No. _____
Unit No. _____
Initials _____
_____ Railroad.

LOCOMOTIVE INSPECTION REPORT

INSTRUCTIONS: Each locomotive unit shall be inspected in accordance with Rule 203 of the Laws, Rules and Instructions for Inspection and Testing of Locomotives Other Than Steam.

Inspected at _____ time _____ m.
Date _____ 19 __
Repairs needed:
_____
_____
_____
_____
_____
_____
Main reservoir pressure _____ lbs.
Brake pipe pressure _____ lbs.
Condition of brakes and brake rigging _____
_____
Signature of employee making inspection
_____
Occupation _____
The above work has been performed, except as noted, and the report is approved.
_____
(Signature)
_____
(Occupation)

BRAKE EQUIPMENT; AIR BRAKES

§ 230.204 General precautions.

(a) It must be known before each trip that the brakes are in safe and suitable condition for service; that the air compressor or compressors are in condition to provide an ample supply of air for the service in which the locomotive is put; that the devices for regulating all pressures are properly performing their functions; that the brake valves work properly in all positions; and that the water has been drained from the air-brake system.

(b) Each road locomotive unit propelled by power other than steam built on or after January 1, 1957, shall be equipped with a brake pipe valve which is accessible to the fireman when stationed in his usual position in the enginemen's compartment. On car body type units a brake pipe valve shall be attached to the wall adjacent to each end exit door. The words "Emergency Brake Valve" shall be legibly stenciled near each brake pipe valve or shall be shown on a badge plate adjacent thereto.

Interpretation: The requirement for "a brake-pipe valve accessible to the fireman when stationed in his usual position" is complied with by installing at or adjacent to the fireman's position any type of valve which will bring about an emergency brake application.

The emergency valve at the hostler control station near the end of a unit meets the requirement of this rule if it can be operated from a position adjacent to the exit door at that end.

§ 230.205 Main reservoir system.

(a) *Safety valve.* (1) The main reservoir system of each unit shall be equipped with at least one safety valve, which shall prevent an accumulation of pressure of more than 15 pounds per square inch above the maximum working air pressure fixed by the chief mechanical officer of the carrier operating the locomotive.

(2) Each unit that has a pneumatically actuated system of power controls shall be equipped with a separate reservoir of air under pressure to be used for operating such controls, other than brake controls, which reservoir shall be provided with means to automatically prevent loss of pressure in event of failure of main reservoir air pressure, shall have storage capacity to permit not less than 3 complete operating cycles of control equipment and shall be so located that it will not be readily susceptible to damage.

(b) *Compressor governor.* A suitable governor shall be provided that will stop and start or unload and load the air compressor within 5 pounds above or below the pressures fixed.

(c) *Governor adjustment.* Compressor governor when used in connection with the automatic air-brake system shall be so adjusted that the compressor will start when the main reservoir pressure is not less than 15 pounds above the maximum brake-pipe pressure fixed by the rules of the carrier and will not stop the compressor until the reservoir pressure has increased not less than 10 pounds.

(d) *Orifice test.* The compressor or compressors shall be tested for capacity by orifice test as often as conditions may require, but not less frequently than once every 3 months. This time limit may be increased if upon application to the Director, Bureau of Railroad Safety, Federal Railroad Administration, his investigation shows that conditions warrant.

(e) *Capacity.* The minimum capacity of any compressor permitted in service shall be approximately 80 percent of the capacity of the compressor when new. (For diagram of orifice see Figure 14.)

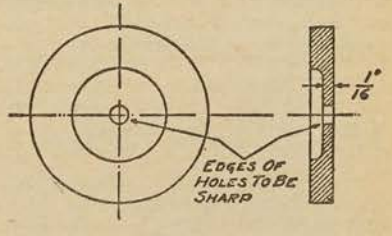


FIGURE 14.

(f) *Prevention of oil passage.* Each air brake system shall by June 1, 1959, be provided with a device in the air compressor discharge line which will effectively restrict passage of oil throughout the system. Such device shall be kept clean and drained before each trip or day's work.

Interpretation: If the devices presently installed effectively restrict the passage of oil throughout the air brake system, additional devices will not be required.

§ 230.206 Main reservoir tests.

(a) *Hydrostatic tests.* Every main reservoir before being put in service, and at least once every 18 months thereafter, shall be subjected to hydrostatic pressure

not less than 25 percent above the maximum working pressure fixed by the chief mechanical officer, and report made on Form No. 1–A.

(b) *Hammer test.* The entire surface of each main reservoir shall be hammer tested each time the locomotive is shopped for general repairs, but not less frequently than once every 18 months, and report made on Form No. 1–A. This test shall be made while reservoir is empty.

Form No. 1–A

MONTHLY LOCOMOTIVE UNIT INSPECTION AND REPAIR REPORT

Locomotive unit { Number_____ Initials_____

_____, 19____.

Operated by_____ Company

In accordance with the act of Congress approved February 17, 1911, amended March 4, 1915, and June 7, 1924, and the rules and instructions issued in pursuance thereof, the parts and appurtenances of locomotive unit No. _____ were inspected on _____, 19____, at _____. All defects disclosed by said inspection were properly repaired, except as noted on the reverse side of this report and the parts and appurtenances were left in the condition reported below.

1. This locomotive unit is propelled by_____
2. Hydrostatic test of _____ pounds was applied to main air reservoirs.
   Date of previous test as shown by reports on file was _____
3. Were main air reservoirs hammer tested? _____
   Date of previous test as shown by reports on file was _____
4. Where drawbars and pins removed and inspected? _____
   Date of previous removal as shown by stamping on the parts_____
5. Were articulated connection pins removed and inspected? _____
   Date of previous removal as shown by stamping on the pins _____
6. Condition of draft gear and draw gear is _____
7. Condition of brake and signal equipment is _____
8. Condition of running gear is _____
9. Condition of fuel storage and supply system is _____

I certify that I made the inspections and tests above reported in items No. _____ and that statements therein are true and correct.

_____

I certify that I made the inspections and tests above reported in items No. _____ and that statements therein are true and correct.

_____

10. Date of previous insulation tests as shown by reports on file was _____, 19__.
    Were insulation tests applied at this inspection? _____

Name of circuit	Normal voltage	Test voltage
_____	_____	_____
_____	_____	_____

11. Condition of current collectors is _____ _____
12. Condition of control equipment is _____ _____
13. Condition of control circuits and terminals is _____
14. Condition of power equipment is _____ _____
15. Condition of power circuits and terminals is _____
16. Condition of lightning arresters is _____ _____
17. Were meters tested? _____. Date meters were previously tested as shown by reports on file was _____, 19__.

I certify that I made the inspections and tests above reported in items No. _____ and that statements therein are true and correct.

_____

I certify that I made the inspections and tests above reported in items No. _____ and that statements therein are true and correct.

_____

The above work has been performed under my general supervision and I believe the report is true and correct.

_____, Officer in Charge

Note defects not properly repaired:

Unit No. _____ was out of service the entire calendar months of:

State of_____ } ss:
County of_____ }

On this _____ day of _____, 19__, personally appeared before me _____ and signed the reverse side of this report, each of whom deposes and says that he personally made the inspections and tests reported in items the numbers of which precede his signature and that the statements therein are true and correct.

Subscribed and sworn to before me according to law this _____ day of _____, 19___.

My commission expires _____, Notary Public.

State of _____ } ss:
County of _____ }

On this _____ day of _____, 19___, personally appeared before me _____ and signed the reverse side of this report as officer in charge, who deposes and says that the inspections and tests reported were made under his general supervision, and that he believes the report is true and correct.

Subscribed and sworn to before me according to law this _____ day of _____, 19___.

_____, Notary Public.

My commission expires _____

(c) *Telltale holes.* Each main reservoir of the type described in the note below, hereafter put into service may be drilled over its entire surface with telltale holes, made by a standard three-sixteenths inch drill, which holes shall be spaced not more than twelve inches apart, measured both longitudinally and circumferentially, and drilled from the outer surface to an extreme depth determined by the formula

$$D=\frac{.6PR}{S-0.6P}$$

where D=extreme depth of telltale holes in inches but in no case less than one-sixteenth inch; P=certified working pressure in pounds per square inch; S=one-fifth of the minimum specified tensile strength of the material in pounds per square inch; and R=inside radius of the reservoir in inches. One row of holes shall be drilled lengthwise of the reservoir on a line intersecting the drain opening. No reservoir so drilled needs to be subjected to the requirement of paragraph (a) or (b), except the requirement for a hydrostatic test before being put in service. Whenever any such telltale hole shall have penetrated the interior of any such reservoir, the reservoir shall be permanently withdrawn from service. At the option of the carrier, such drilling may be applied to any reservoir now in service, in lieu of the tests provided for by paragraphs (a) and (b) of this section, but not without the said hydrostatic test after first being drilled.

NOTE: Paragraph (c) applies only to welded reservoirs originally constructed to withstand at least five times the maximum working pressure fixed by the chief mechanical officer of the railroad desiring to come within the terms of such paragraph.

§ 230.207 Air gauges.

(a) *Location.* Air gauges shall be so located that they may be conveniently read by the engineer or motorman from his usual position in the cab.

(b) *Test.* Air gauges shall be tested at least once every 3 months, and whenever any irregularity is reported. They shall be compared with an accurate deadweight tester, or test gauge constructed for the purpose of testing gauges, and gauges found incorrect shall be repaired before they are returned to service.

§ 230.208 Cleaning.

(a) The filtering devices or dirt collectors located in the main reservoir supply line to the air brake system must be cleaned, repaired, or replaced as often as conditions require to maintain them properly in a safe and suitable condition for service, and not less frequently than once each 6-month period.

(b) Brake cylinder relay valve portions, main reservoir safety valves, brake pipe vent valve portions, and feed and reducing valve portions in the air brake system (including related dirt collectors and filters) must be cleaned, repaired, and tested as often as conditions require to maintain them properly in a safe and suitable condition for service, and not less frequently than once each 12-month period.

(c) All other valves and valve portions in the air brake system (including related dirt collectors and filters) must be cleaned, repaired, and tested as often as conditions require to maintain them properly in a safe and suitable condition for service, and not less frequently than once each 24-month period.

(d) The date of testing or cleaning, and the initials of the shop or station at which the work is done, shall be legibly stenciled in a conspicuous place on the parts, or placed on a card displayed under transparent cover in the cab of each locomotive unit.

§ 230.209 Piston travel.

(a) Minimum brake cylinder piston travel shall be sufficient to provide proper brake shoe clearance when the brakes are released.

(b) When locomotive is standing the maximum brake piston travel shall not exceed the following:

	Inches
Driving wheel brake_____	6
Swivel type truck brake with brakes on more than one truck operated by one brake cylinder_____	7
Swivel type truck brake equipped with one brake cylinder_____	8
Swivel type truck brake equipped with 2 or more brake cylinders_____	8

Slack adjusters, when used, shall be properly maintained.

§ 230.210 Foundation brake gear.

Foundation brake gear shall be maintained to the standard for the locomotive. Levers, rods, brake beams, hangers, and pins shall be of ample strength, and shall not be fouled in any way which will affect the proper operation of the brake. All pins shall be properly secured in place with cotters, split keys, or nuts. Brake shoes must be properly fastened in place, and kept approximately in line with the tread of the wheel.

§ 230.211 Leakage.

(a) *Main reservoir.* Leakage from main air reservoir and related piping shall not exceed an average of 3 pounds per minute in a test of 3 minutes' duration, made after the pressure has been reduced 40 percent below maximum pressure.

(b) *Brake pipe.* Brake-pipe leakage shall not exceed 5 pounds per minute.

(c) *Brakes to remain applied.* With a full service application from maximum brake pipe pressure, and with communication to the brake cylinders closed, the brakes shall remain applied not less than 5 minutes.

(d) *Control reservoir.* Leakage from control air reservoir, related piping, and pneumatically operated controls shall not exceed an average of 3 pounds per minute in a test of 3 minutes duration.

Interpretation: While no specific procedure is prescribed in order to determine compliance with this rule, the following is recommended: (1) The control-air system should be fully charged; (2) the pressure in the main reservoir should be reduced below the standard control-air pressure, unless a side-vented cock venting to the atmosphere the line between the cock and the check valve is used; (3) the throttle should be placed in number one position, the reverser in either forward or reverse position, and on units so equipped the transition lever placed in number one position, and these should be kept in such positions throughout the test; and (b) the leakage as read on the control air gauge should be checked for 3 minutes.

DRAWGEAR BETWEEN LOCOMOTIVE UNITS, CONNECTIONS BETWEEN TRUCKS AND DRAFT GEAR

§ 230.212 General provisions.

(a) *Drawgear.* Draft and drawgear, and connections between trucks, and all attachments shall be of ample strength and shall be maintained in a safe and suitable condition for service.

(b) *Drawbar and articulated connection pins.* Provisions shall be made for securing drawbar pins and pins of articulated connections in place, and a plate or stirrup shall be provided under the lower end of all drawbar pins and articulated connection pins which will prevent the pin from falling out of place in case of breakage.

(c) *Removal of drawbars and pins.* Lost motion in drawbars and pins when used between units or trucks shall not exceed one-half inch at each pin, and shall be checked by tramming.

(d) *Removal of drawbars and pins.* Lost motion in articulated connections when used between units or trucks shall not exceed one-half inch at each pin, and shall be checked by tramming.

(e) *Chafing irons and spring buffers.* When drawbars are used between units of any locomotive, chafing irons or spring buffers that will permit proper curving shall be provided and be properly attached to each unit and be maintained in condition to permit free movement laterally and vertically. Lost motion between chafing irons shall be kept to a minimum but must not exceed one-half inch. Buffer springs shall be applied with not less than three-fourths inch compression and shall at all times be under sufficient compression to keep the chafing faces in proper alignment and contact, except for drawbars when designed and constructed for the purpose of taking buffing stresses, chafing irons or spring buffers will not be required. When such drawbars are used the lost motion shall be kept to a minimum, but shall not exceed one-fourth inch at either end.

(f) *Drawgear consisting of automatic couplers and friction of spring draft gear.* Automatic couplers used between units with friction or spring draft gear shall be maintained in such condition that the lost motion in each draft gear assemblage, not absorbed by the springs or friction devices, will not exceed ½ inch.

(g) *Drawgear consisting of automatic couplers and friction or spring draft gear.* Automatic couplers used between units without friction or spring draft gear or rubber draft gear shall have lost motion kept to a minimum and lost motion between coupler and coupler pocket shall not exceed ¼ inch in each assemblage. If the couplers are attached by means of pivot pins, the pins shall be removed and inspected not less frequently than once every 12 months and date of last removal and inspection of pins shall be legibly marked on the heads of pins and all prior dates obliterated.

(h) *Draft gear.* M. C. B. contour (1904) couplers measuring 5⅛ inches or more between point of knuckle and guard arm shall not be continued in service. Types D and E couplers meausring 5$\frac{5}{16}$ inches or more between point of knuckle and guard arm shall not be continued in service.

RUNNING GEAR

§ 230.213 Axles.

(a) *Defects.* Driving and truck axles with any of the following defects shall not be continued in service: Cracked or bent axles; cut journals that cannot be made to run cool without turning; seamy journals in steel axles; transverse seams in iron axles; or any seams in iron axles causing journals to run hot; unsafe on account of usage, accident, or derailment; nor driving or truck axles more than one-half inch under original diameter, except for locomotives having all driving axles of the same diameter, when other than main driving axles, may be worn three-fourths inch below the original diameter.

(b) *Stamping.* The date applied, the original diameter of the journal, and the kind of material, shall be legibly stamped on each driving axle and truck axle applied after January 1, 1926.

(c) *Abbreviations.* The following abbreviations shall be used in stamping "kind of material" on driving axles, truck axles, and crank pins: I.—iron; S.—steel; H. T. S.—heat-treated steel; Chr.—chrome; Van.—vanadium; Nkl.—nickle; Nik.—nikrome; Cof. Proc.—Coffin process; Cam. Spec.—Cambria special; Tay. I.—Taylor iron.

§ 230.214 Crank pins.

(a) Crank pins shall be securely applied. Shimming or prick punching crank pins will not be allowed. Cracked or loose crank pins shall not be continued in use. All crank pins applied after January 1, 1926, shall have legibly stamped on outer end of pin, the date applied, and kind of material used.

(b) Crank-pin collars and collar bolts shall be kept tight. Diameter of crankpin collars shall be greater than the bore of the rod on the pin to which it is applied, except where a collar is made integral with the outer end of the bushings.

§ 230.215 Rods.

(a) *Motor, main and side rods.* Cracked or defective motor, main, or side rods shall not be continued in service.

(b) *Motor, main and side rod bearings; floating bushings.* Bearings and bushings shall properly fit the rods and means provided to prevent bushings, other than floating bushings designed to turn, from turning in rods. Straps shall fit and be securely bolted to rods.

(c) *Side motion of rods on crank pins.* The total amount of side motion of rods on crank pins shall not exceed one-fourth inch.

(d) *Oil and grease cups and plugs.* Oil and grease cups shall be securely attached to rods, and grease-cup plugs shall be equipped with suitable fastenings.

(e) *Road locomotives.* The bore of motor rod or main rod bearings on locomotives used in road service shall not exceed pin diameters more than three thirty-seconds inch at front or back end. The total lost motion at both ends shall not exceed five thirty-seconds inch.

(f) *Bore of rod bushings.* The bore of side rod bearings on locomotives used in road service shall not exced pin diameters more than five thirty-seconds inch on main pin nor more than three-sixteenths inch on other pins.

(g) *Switching locomotives.* The bore of motor rod or main rod bearings on locomotive used in switching service shall not exceed pin diameters more than one-eighth inch at front end nor more than five thirty-seconds inch at back end.

(h) *Bore of rod bushings.* The bore of side rod bearings on locomotives used in switching service shall not exceed pin diameters more than three-sixteenths inch.

§ 230.216 Jack shafts.

(a) Jack shafts shall be properly counter-balanced; crank arms and discs shall properly fit and be securely fastened on shaft.

(b) When motor rods are direct connected to jack shaft crank arms or discs, the bore of shaft bearings shall not exceed journal diameter more than one-sixteenth inch. When the motor drive is geared, the bore of shaft bearings shall not exceed journal diameter more than one-eighth inch.

§ 230.217 Quill drive.

(a) Quills shall have sufficient clearance for relative motion of axle and wheel. Drive pins shall be securely applied.

(b) Quills with any of the following defects shall not be continued in service: Cracked or loose drive pin; broken or defective quill coil springs; broken or defective quill gear spring seat, saddle or fastenings.

§ 230.218 Gears and pinions.

(a) Exposed gears shall be provided with safe and suitable guards.

(b) Gears or pinions with any of the following defects shall not be continued in service: Gear or pinion loose on shaft; broken, cracked, or with badly worn teeth; broken or defective rim fastenings; out of alignment or improperly meshed; split gears with loose or missing bolts.

§ 230.219 Driving boxes, shoes, and wedges.

Driving and other journal boxes, shoes, and wedges shall be maintained in safe and suitable condition for service. Broken and loose bearings shall be renewed. Not more than one shim may be used between box and bearing if bearing is pressed in box. Where shoes and wedges are not provided, total longitudinal clearance between journal box and pedestals shall not exceed ½ inch.

§ 230.220 Lateral motion.

The total uncontrolled lateral motion between the hubs of the wheels and boxes, between boxes and pedestals or both, on any pair of wheels shall not exceed the following limits: Truck wheels, 1 inch; driving wheels, more than one pair of wheels, ¾ inch. These limits may be increased if upon application to the Director, Bureau of Railroad Safety, his investigation shows that conditions require additional lateral motion. The lateral motion shall in all cases be kept within such limits that the driving wheels, rods, crank pins, or armatures will not interfere with other parts of the locomotive.

Interpretation: The "total uncontrolled lateral motion" referred to in this rule means the lateral motion provided for in the design of the parts, plus any additional lateral motion due to wear.

§ 230.221 Frames and parts.

(a) *Maintenance.* Frames, deck plates, tailpieces, pedestals, braces, body bolsters, transom plates, body center plates and locking devices shall be maintained in safe and suitable condition for service and shall be cleaned and thoroughly inspected each time a unit is in shop for general or heavy repairs.

(b) *Cleaning underframe.* Underframe, trucks, fuel tanks and brake rigging shall be kept free of accumulations of oil, grease and debris that would constitute a fire hazard.

§ 230.222 Spring rigging.

(a) Springs and equalizers shall be arranged to insure the proper distribution of weight, cushion the shocks to the various wheels, and be maintained approximately level.

(b) Springs or spring rigging with any of the following defects shall be renewed or properly repaired: Top leaf broken or two leaves in top half or any three leaves in spring broken (the long side of spring to be considered the top); springs with leaves working in band; broken coil springs; broken, cracked, or badly worn driving-box saddle, equalizer, hanger, bolt, gib, or pin.

(c) In absence of protective construction, safety hangers shall be provided which will prevent spring planks, spring seats or bolsters from dropping to track structure in event of hanger or spring failure.

§ 230.223 Trucks.

(a) *Center plates.* Truck center plates shall fit properly and be securely fastened. The male center plate shall extend into the female center plate not less than ¾ inch. On trucks constructed to transmit tractive effort through center plate or center pin, the male center plate shall extend into the female center plate not less than 1½ inches. Center plates shall be securely fastened, and ones of the type requiring lubrication, shall be properly lubricated and maintained. Maximum lost motion in a center plate assemblage shall not exceed ½ inch. These limits may be adjusted if upon application to the Director, Bureau of Railroad Safety, his investigation shows that conditions so require.

(b) *Centering devices.* Center pins with a substantial head, key, or nut at each end, or other suitable means, shall be provided that will hold the carrying bolster on the truck. All centering devices shall be properly maintained.

(c) *Safety chains.* A suitable safety chain of minimum consistent strength shall be provided at each corner of all four-wheel trucks except where construction prevents truck sluing in case of derailment.

(d) *Clearances.* All parts of trucks shall have sufficient clearance to prevent them from seriously interfering with any other part of the locomotive.

(e) *Bolsters.* Truck bolsters shall be maintained approximately level.

(f) *Radius bar pins.* Suitable means for securing radius bar pins in place shall be provided. Inverted radius bar pins shall be held in place by plate or stirrup.

(g) *Defects.* Trucks with any of the following defects shall not be continued in service: Cracked arch bar; loose column, pedestal, or journal-box bolt; cracked or broken frame, unless properly repaired; loose tie bar; broken or defective motor suspension lug, spring, bar, or bolt; broken or cracked center casting; cracked or broken equalizer, hanger, gib, or pin.

(h) *Motor suspension.* Motor suspension lugs or bars shall be of ample strength and provision made that will prevent nose-supported motors from falling in case of failure of motor supports.

§ 230.224 Side bearings.

(a) Side bearings shall be securely fastened in place. Friction side bearings with springs designed to carry weight shall not be continued in service with more than 25 percent of the springs broken in any one nest.

(b) Friction side bearings unless designed to carry weight shall not be run in contact. Maximum clearance of side bearings shall not exceed one-fourth inch on each side, or a total of one-half inch on both sides, except where more than two side bearings are used under the same rigid superstructure, the clearance on one pair of side bearings under the same rigid superstructure shall not exceed one-fourth inch on each side or a total of one-half inch on both sides. The other side bearings under the same rigid superstructure may be one-half-inch clearance on each side or a total of 1 inch on both sides. These clearances apply where the spread of the side bearings is 50 inches or less. Where the spread is greater, the side bearing clearance may be increased in proportion. Side bearing clearances may be modified if upon investigation by the Director, Bureau of Railroad Safety, his investigation shows that operating conditions and construction warrant such modification.

§ 230.225 Clearance above top of rail.

No part or appliance of locomotive, except the wheels and flexible non-metallic sand pipe extension tips, shall be less than 2½ inches above the top of rail.

WHEELS

§ 230.226 Wheels.

(a) *Tight on axle.* (1) Wheels shall be securely pressed on axles except wheels and axles of special design and construction where other proper and safe means are provided for holding the wheels on the axles. Prick punching, shimming wheel fit, or pins driven in ends of axles will not be permitted.

(2) Mill scale shall be removed from plate and entire wheel then inspected before application to axle. Wheels shall be kept free from accumulations of oil, grease, or other material that could conceal cracks or other defects.

Interpretation: The first sentence of the second paragraph of this rule requires that wheels mounted on axles on and after the effective date of the rule shall have mill scale removed before application.

The second sentence of the second paragraph is not intended to impose unreasonable requirements, but is construed to mean that wheels shall be kept reasonably clean, so as to permit detection of cracks and other defects in the course of normal inspection.

(b) *Diameter.* When wheels or tires are applied, or wheels or tires are turned,

the diameter of the wheels on the same axle shall not vary more than three thirty-seconds inch. When all tires are turned or new tires applied to driving wheels in rod-connected driving wheel bases the diameter of such tires shall not vary more than three thirty-seconds inch. When a single pair of tires is applied in a rod-connected driving-wheel base the diameter of such tires shall be within three thirty-seconds inch of the average diameter of the other tires in the same driving-wheel base.

(c) *Gauge.* Wheels used on standard-gauge track will be out of gauge if the inside gauge of flanges, measured on base line, is less than 53 inches or more than 53½ inches.

(d) *Variance back to back.* The distance back to back of flanges of wheels mounted on the same axle shall not vary more than one-fourth inch.

(e) *Divided rims.* Wheel centers with divided rims shall be properly fitted with iron or steel filling blocks or autogenously welded before the tires are applied, and be properly maintained.

(f) *Tire shims.* When shims are inserted between the tire and the wheel center, not more than two thicknesses of shim may be used, one of which must extend entirely around the wheel. Shims which extend entirely around the wheel may be in one or more pieces, provided they do not overlap. Under no circumstances shall there be more than two thicknesses of shim at any point.

(g) *Counterbalance.* Counterbalance shall be maintained in safe and suitable condition for service.

(h) *Flange height.* On locomotives used in road service the minimum height of flange measured from tread shall be 1 inch and on switching locomotives shall be seven-eighths inch, except where construction will not permit the full height of flange on all driving wheels in any rigid wheel base the height of flange on at least two pairs of drivers shall be not less than 1 inch for road locomotives and not less than seven-eighths inch for switching locomotives; the others may have flanges with minimum height of five-eighths inch. Where plain tires or five eighths-inch flanges are used on front or rear drivers, trucks shall be provided for safely guiding the locomotive.

(i) *Tread taper.* The maximum taper for tread of driving wheels from throat of flange to outside of wheel for locomotives used in road service shall be one-fourth inch, and for locomotives used in switching service five-sixteenths inch. The maximum taper for tread of truck wheels from throat of flange to outside of wheel shall be five-sixteenths inch.

(j) *Tire width.* The minimum width of tires for driving and truck wheels of standard-gauge locomotives shall be 5½ inches for flanged tires, and 6 inches for plain tires. The minimum width of tires for driving and truck wheels of narrow-gauge locomotives shall be 5 inches for flanged tires, and 5½ inches for plain tires.

(k) *Modification.* The limits prescribed in paragraphs (c), (h), and (j) of this section may be modified if, upon application to the Director, Bureau of Railroad Safety, his investigation shows that conditions warrant such modification.

§ 230.227 Defects.

Wheels with any of the following defects shall not be continued in service:

(a) *Slid flat.* Slid flat, when the flat spot is 2½ inches or over in length, or if there are two or more adjoining spots each 2 inches or over in length.

(b) *Broken flange.* Broken or chipped flange, if the chip exceeds 1½ inches in length and one-half inch in width.

(c) *Broken rim.* Broken rim, if the tread, measured from the flange at a point five-eighths inch above the tread, is less than 3¾ inches in width.

(d) *Shelled out.* Wheels with defective treads on account of cracks or shelled-out spots 2½ inches or over, or so numerous as to endanger the safety of the wheel.

(e) *Seams.* Any seam running lengthwise and within the limit of 3¾ inches from flange, as shown in figure 13.

(f) *Worn flanges.* Wheels with flanges having flat vertical surface extending 1 inch or more from the tread, or flanges fifteen-sixteenths inch thick or less, gauged at a point three-eighths inch above the tread, except cast-iron or cast-steel wheels on axles with journals 5 by 9 inches or over which shall not be continued in service with flanges having flat vertical surface extending seven-eighths inch or more from the tread, or flange 1 inch thick or less gauged at a point three-eighths inch above tread.

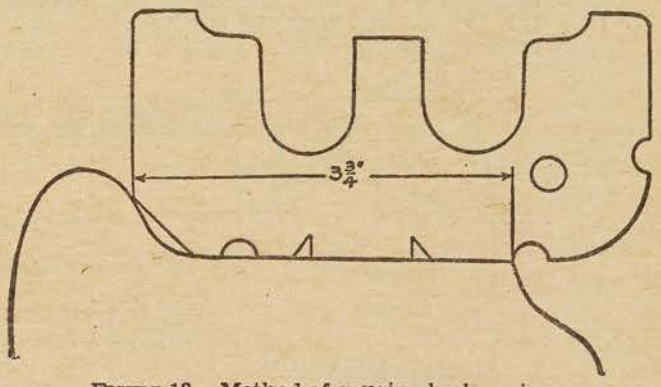


FIGURE 13.—Method of gauging broken rims.

(g) *Tread worn.* Wheels with tread worn hollow five-sixteenths inch on locomotives used in road service or three-eighths inch on locomotives used in switching service. For method of gauging see figures 15 and 16.

(h) *Burst or cracked.* Wheel cracked from the wheel fit outward; cracked tread; cracked flange; cracked plate; one or more cracked brackets; wheel loose on axle.

(i) *Loose tires or retaining rings.* Loose, broken, or defective retaining rings, tires, or bolts.

(j) *Broken spokes.* Three adjacent spokes or 25 percent of the spokes in wheel broken.

(k) *High flanges; thin rims.* Flanges more than 1½ inches from tread to top of flange, or thickness of tires or rims less than shown in figures 1, 2, 3, 4, 5, 6, and 7.

(l) *Out of gauge.* Wheels or tires out of gauge.

(m) *Flanges and rims, rolled steel wheels.* Rolled steel wheels 1⅜ inches or less in thickness through throat of flange, or 1 inch or less in thickness at rim, when used in road service; or 1⅛ inches or less in thickness through throat of flange or three-fourths inch or less in thickness at rim, when used in switching service.

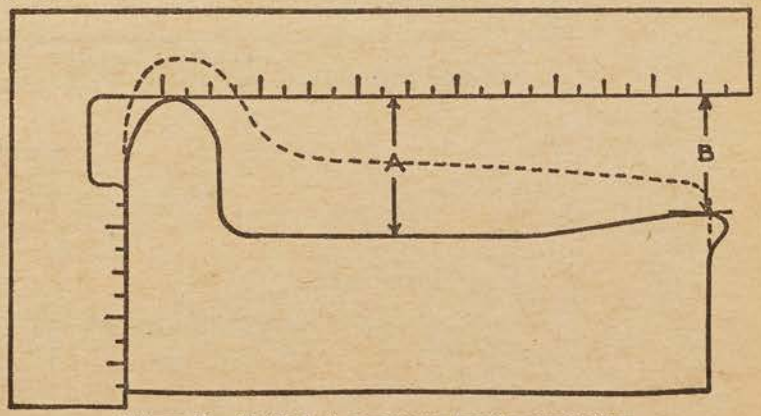


FIGURE 15.—Method of measuring tread worn hollow.

Tread worn hollow=A minus B. Limit, five-sixteenths inch road service; three-eighths inch in switching service. See § 230.227(g).

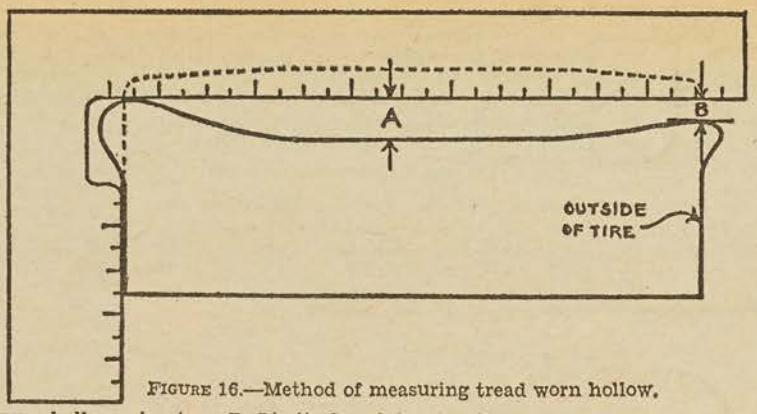


FIGURE 16.—Method of measuring tread worn hollow.

Tread worn hollow=A minus B. Limit, five-sixteenths inch in road service; three-eighths inch in switching service. See § 230.227(g).

(n) *Modification.* The limits shown in paragraphs (k) and (m) and figures 1, 2, 3, 4, 5, 6, and 7, may be modified if, upon application to the director, his investigation shows that conditions warrant such modifications.

NOTE: See figures 8, 9, 10, 11, 12, 13, 15, and 16 for gauge and methods of gauging.

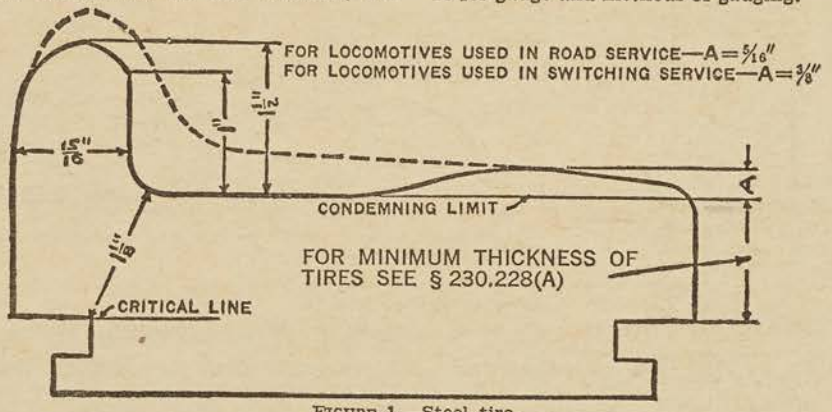


FIGURE 1.—Steel tire.

Retaining ring fastening. Driving wheels.

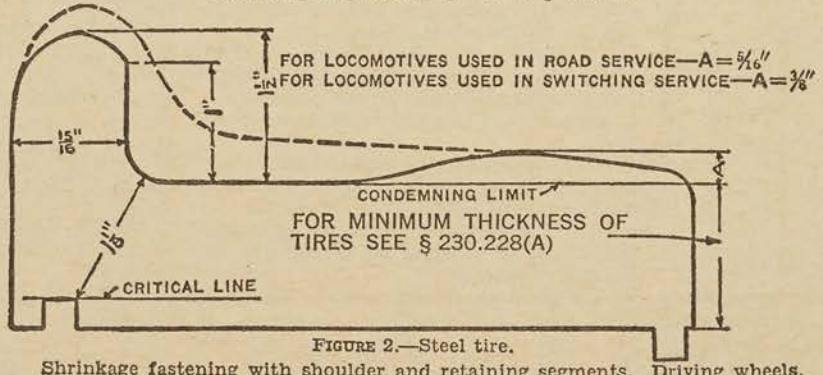


FIGURE 2.—Steel tire.

Shrinkage fastening with shoulder and retaining segments. Driving wheels.

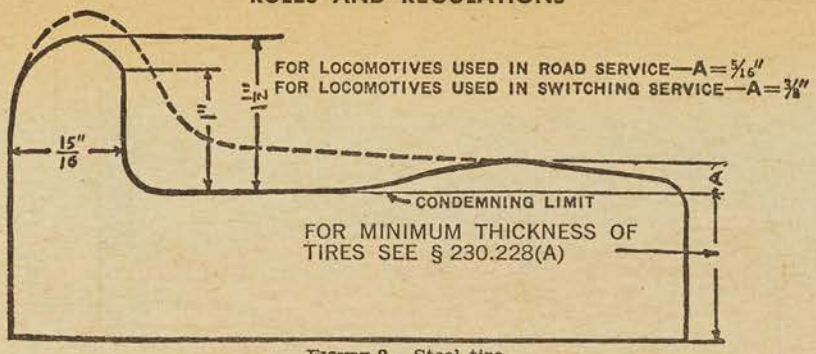


FIGURE 3.—Steel tire.
Shrinkage fastening. Driving wheels.

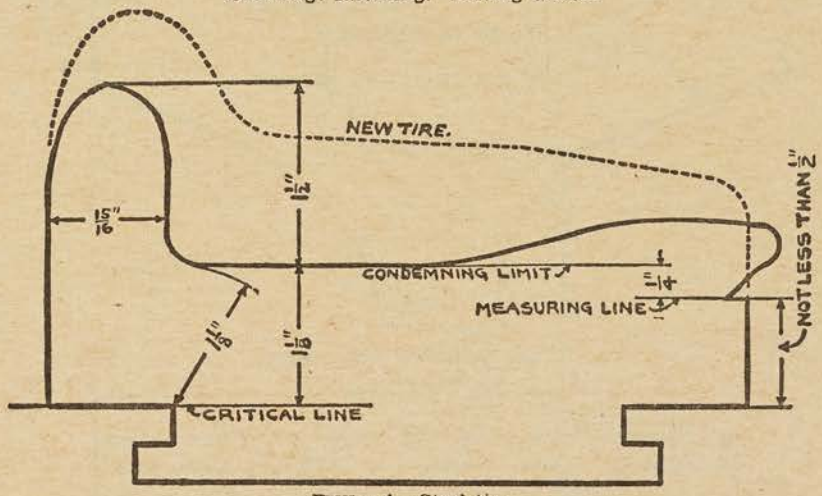


FIGURE 4.—Steel tire.
Retaining ring fastening. Minimum thickness for steel tires. Truck wheels.

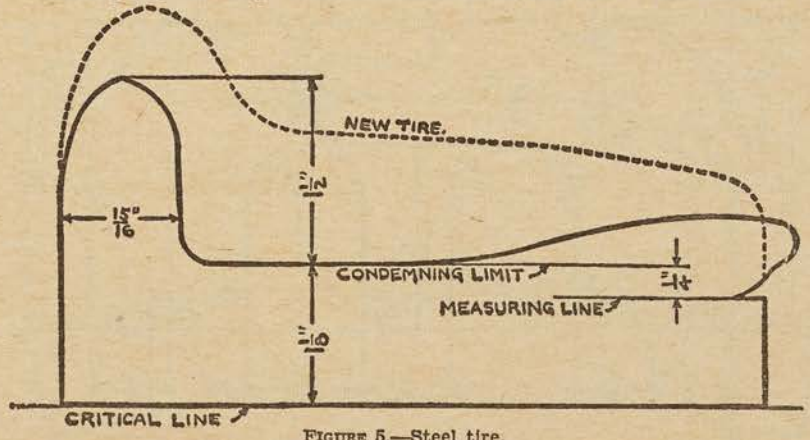


FIGURE 5.—Steel tire.
Shrinkage fastening only. Minimum thickness for steel tires. Truck wheels.

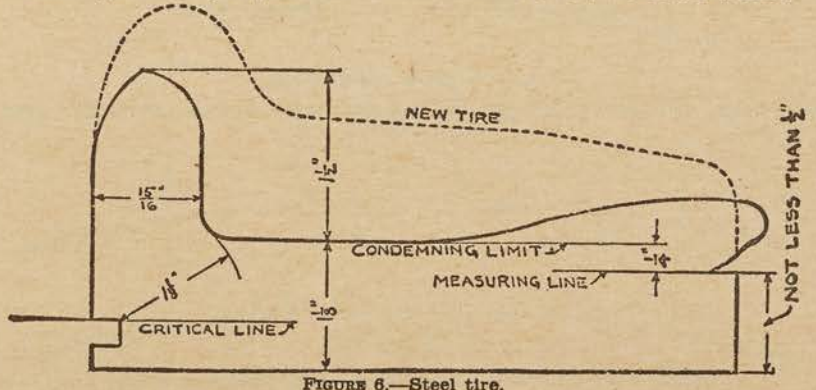


FIGURE 6.—Steel tire.
Retaining ring fastening. Minimum thickness for steel tires. Truck wheels.

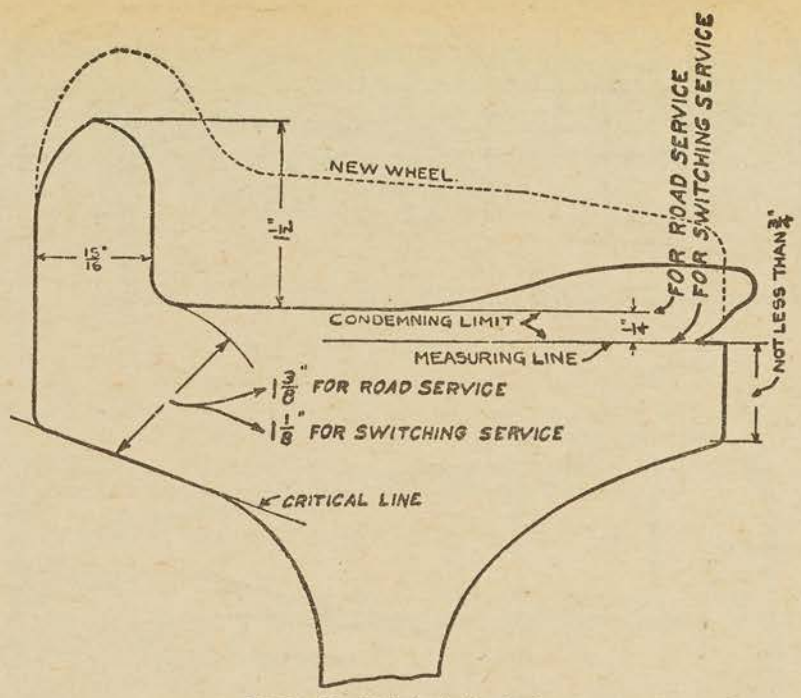


FIGURE 7.—Rolled steel wheels.

(See § 230.277(m).)

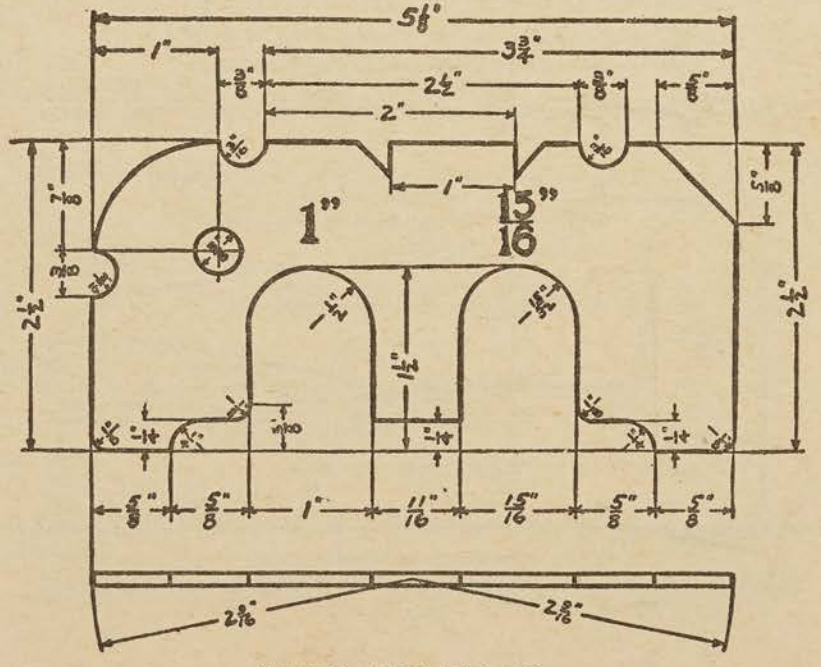


FIGURE 8.—Wheel defect gauge.

This gauge to be used in determining flat spots, worn flanges, and broken rims.

(See § 230.227.)

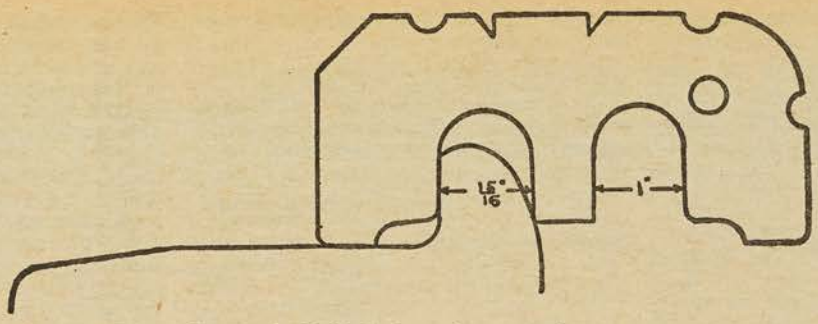


FIGURE 9.—Method of gauging worn flanges.

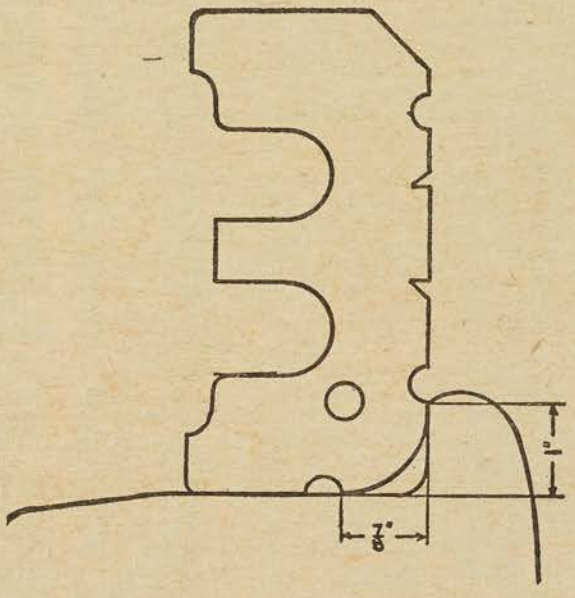


FIGURE 10.—Method of gauging worn flanges.

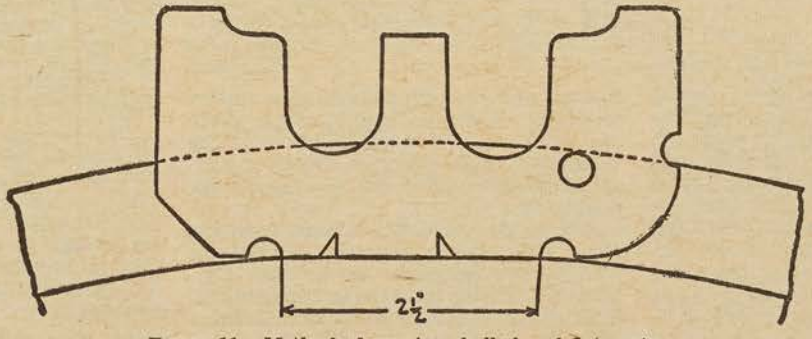


FIGURE 11.—Method of gauging shelled and flat spots.

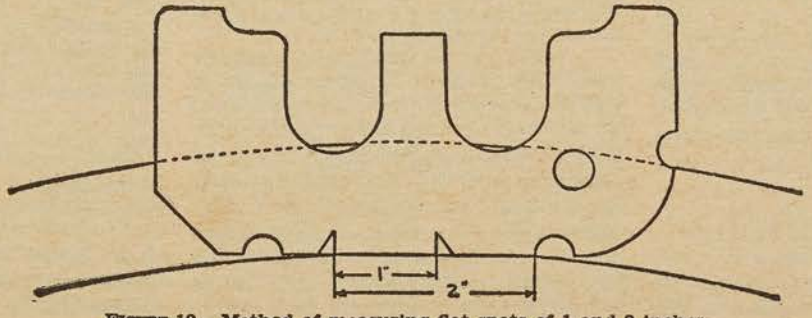


FIGURE 12.—Method of measuring flat spots of 1 and 2 inches.

(o) *Fusion welding.* Fusion welding shall not be used on tires or rolled steel wheels including building up of worn flanges, flat spots, shelled-out spots or for repair of cracks, except on locomotives used in switching and transfer service, and then only for repair of flat spots and worn flanges.

§ 230.223 Driving wheel tires.

(a) *Minimum thickness.* Minimum thickness for driving wheel tires on standard and narrow gauge locomotives:

Weight per axle (weight on drivers divided by number of pairs of driving wheels)	Diameter of wheel center	Minimum thickness, service limits	
		Road service	Switching service
	Inches	*Inches*	*Inches*
30,000 pounds and under	44 and under	1¼	1⅛
	Over 44 to 50	1 5/16	1 3/16
	Over 50 to 56	1⅜	1¼
	Over 56 to 62	1 7/16	1 5/16
	Over 62 to 68	1½	
	Over 68 to 74	1 9/16	
	Over 74	1⅝	
Over 30,000 to 35,000 pounds	44 and under	1 5/16	1 3/16
	Over 44 to 50	1⅜	1¼
	Over 50 to 56	1 7/16	1 5/16
	Over 56 to 62	1½	1⅜
	Over 62 to 68	1 9/16	
	Over 68 to 74	1⅝	
	Over 74	1 11/16	
Over 35,000 to 40,000 pounds	44 and under	1⅜	1¼
	Over 44 to 50	1 7/16	1 5/16
	Over 50 to 56	1½	1⅜
	Over 56 to 62	1 9/16	1 7/16
	Over 62 to 68	1⅝	
	Over 68 to 74	1 11/16	
	Over 74	1¾	
Over 40,000 to 45,000 pounds	44 and under	1 7/16	1 5/16
	Over 44 to 50	1½	1⅜
	Over 50 to 56	1 9/16	1 7/16
	Over 56 to 62	1⅝	1½
	Over 62 to 68	1 11/16	
	Over 68 to 74	1¾	
	Over 74	1 13/16	
Over 45,000 to 50,000 pounds	44 and under	1½	1⅜
	Over 44 to 50	1 9/16	1 7/16
	Over 50 to 56	1⅝	1½
	Over 56 to 62	1 11/16	1 9/16
	Over 62 to 68	1¾	
	Over 68 to 74	1 13/16	
	Over 74	1⅞	
Over 50,000 to 55,000 pounds	44 and under	1 9/16	1 7/16
	Over 44 to 50	1⅝	1½
	Over 50 to 56	1 11/16	1 9/16
	Over 56 to 62	1¾	1⅝
	Over 62 to 68	1 13/16	
	Over 68 to 74	1⅞	
	Over 74	1 15/16	
Over 55,000 pounds	44 and under	1⅝	1½
	Over 44 to 50	1 11/16	1 9/16
	Over 50 to 56	1¾	1⅝
	Over 56 to 62	1 13/16	1 11/16
	Over 62 to 68	1⅞	
	Over 68 to 74	1 15/16	
	Over 74	2	

(b) *Allowance for retaining rings.* When retaining rings are used, measurements of tires are to be taken from the outside circumference of the ring, and the minimum thickness of tires may be as much below the limits specified above as the tires extend between the retaining rings, provided it does not reduce the thickness of the tire to less than 1⅛ inches from the throat of flange to the counterbore for the retaining ring.

(c) *Tires for 2-foot gauge.* The minimum thickness for driving wheel tires shall be 1 inch for locomotives operated on track of 2-foot gauge.

(d) *Modification.* The thickness of tires, when weight per axle is less than 30,000 pounds, may be modified if upon application to the Director, Bureau of Railroad Safety, his investigation shows that conditions warrant such modifications.

CABS, CAB APRONS, PILOTS

§ 230.229 Cabs and aprons.

(a) Definition. The word "cab" as used in the rules and instructions in this subpart means that portion of the superstructure utilized for housing the enginemen and parts or appurtenances of the locomotive and through which a passageway is provided for the use of the enginemen.

(b) *Fastening and bracing; windows.* Cabs and superstructures shall be securely attached and braced. Cab windows shall be so located and maintained that the enginemen may have a clear view of track and signals from their usual and proper positions in the cab. All glass used in doors and windows of enginemen's compartments shall be of the shatter-proof type.

(c) *Clear-vision windows; dimensions.* Front cab doors or windows located in line of enginemen's vision when looking ahead from their usual and proper positions in the cab shall be equipped with an appliance that will clean the outside of the window over sufficient space to provide a clear view of track and signals ahead; or with a window hinged at the top, placed in the glass of each of the aforesaid doors or windows, that can be easily opened, closed, and fastened in desired position, and properly fitted so as to prevent an undue amount of rain or snow being blown into the cab. Hinged windows shall be 5 inches high, and the lower edge shall be without obstruction and as nearly as possible in line of the enginemen's vision when seated in the cab.

(d) *Floors.* Deck plates and floors of cabs, passageways, and compartments shall be kept free from oil, water, waste, or any obstruction that will create unnecessary peril. Deck plates and metal floors shall be properly roughened or other provisions made to afford secure footing.

(e) *Floor covering.* Floors of enginemen's compartments shall be constructed of or covered with heat-insulating material.

(f) *Heating.* (1) Enginemen's compartments shall be provided with heating arrangements that will maintain therein a temperature of not less than 50° F. Temperature shall be taken at substantially the center of compartment under normal winter weather conditions, under the running conditions of the locomotive with doors and windows closed.

(2) Operating cabs or compartments shall be provided with proper ventilation.

Interpretation: The concluding sentence of this rule means that, regardless of adjustments of doors and windows, further ventilation shall be supplied to cabs by means of additional openings, located as required.

(g) *Passage between units.* Safe and suitable means shall be provided for passage between units with open-end platforms.

Interpretation: This rule applies to similar units coupled in multiple control and operated in road service. By the term "open end platform" is meant units with platforms not protected their full width by a continuous barrier and which permit an open passageway between the platforms of two similar units coupled together. No passageway will be required through the nose-end of car-body type units similar in design to present diesel-electric "A" type units.

(h) *Fusees and torpedoes.* Containers shall be provided for carrying fusees and torpedoes. These containers may be separate, or a single container with suitable partition to separate the fusees from the torpedoes.

(i) *Fan openings.* Fan openings in hazardous locations shall be properly protected.

§ 230.230 Pilots.

Pilots, when used, shall be securely attached and properly braced. On approximately straight level track the minimum clearance of pilot above the rail shall be 3 inches, and the maximum clearance 6 inches.

LIGHTS

§ 230.231 Headlights.

(a) *Road locomotives.* Each locomotive used in road service between sunset and sunrise shall have a headlight which shall afford sufficient illumination to enable a person in the cab of such locomotive who possesses the usual visual

capacity required of locomotive enginemen, to see in a clear atmosphere, a dark, object as large as a man of average size standing erect at a distance of at least 800 feet ahead and in front of such headlight; and such headlight must be maintained in good condition.

(b) *Headlights on rear end.* Each locomotive used in road service, which is regularly required to run backward for any portion of its trip, except to pick up a detached portion of its train, or in making terminal movements, shall have on its rear a headlight which shall meet the foregoing requirements.

(c) *Dimmers.* Such headlights shall be provided with a device whereby the light from same may be diminished in yards and at stations or when meeting trains.

(d) *Leading locomotive.* When two or more locomotives are used in the same train, the leading locomotive only will be required to display a headlight.

(e) *Yard locomotives.* Each locomotive used in yard service between sunset and sunrise shall have two lights, one located on the front of the locomotive and one on the rear, each of which shall enable a person in the cab of the locomotive under the conditions, including visual capacity, set forth in paragraph (a) of this section, to see a dark object such as there described for a distance of at least 300 feet ahead and in front of such headlight; and such headlights must be maintained in good condition.

§ 230.232 Classification or marker lights.

Each locomotive shall be provided with such classification and marker lamps as may be required by the rules of the railroad company operating the locomotive. When such lamps are used they shall be kept clean. The classification lights shall be electrically lighted and adequate head clearance shall be provided. Necessary safe and suitable steps, toe boards, handrails and/or handholds shall be provided in order to make cab windows, headlights, classification lights, marker lights, pantographs and trolleys accessible for attention and care.

§ 230.233 Cab lights.

(a) *Instrument illumination.* Each locomotive unit shall have cab lights which will provide sufficient illumination for the control instruments, meters, and gauges to enable the enginemen to make accurate readings from their usual and proper positions in the cab. These lights shall be so located, constructed, and maintained, that light will shine only on those parts requiring illumination. There shall be a light conveniently located to enable the persons operating the locomotive to easily and accurately read train orders and time tables, and so constructed that it may be readily darkened or extinguished.

(b) *Compartments and passageways.* Cab passageways and compartments shall have adequate illumination. When employees are required to pass from one cab to another, the platform or passageway between them shall be illuminated.

(c) *Interference with vision.* Lights shall be so located, constructed or shielded that the light will not interfere with enginemen's vision of track and signals.

(d) *Lighting circuits; batteries.* All lights may be entirely supplied from storage batteries if desired. Where lights are not supplied from storage batteries, there shall be two or more lighting circuits for providing illumination required by paragraphs (a), (b), and (c) of this section. Battery containers shall be properly vented.

Whistles, Bells, Sanders, Train Signal

§ 230.234 Whistle.

Each locomotive shall be provided with a suitable whistle, or its equivalent, so arranged that it may be conveniently operated by the engineer or motorman from his position in the cab.

§ 230.235 Sanders.

Each locomotive unit shall be equipped with proper sanding apparatus, which shall be tested before each trip. Sand pipes shall be securely fastened and arranged to deliver the sand on the rails in front of the wheel contact.

§ 230.236 Location of headlights, sand boxes, bells, whistles.

Headlights, sand boxes, bells, and whistles shall be located in safe and accessible places. Where locomotives are equipped with overhead current collectors, headlights and sand boxes shall be so located, constructed, and arranged that they can be given necessary repairs and attention wtihout requiring a person to mount the roof or become exposed to contact with parts carrying high tension.

§ 230.237 Train-signal system.

The train-signal system, when used, shall be tested and known to be in safe and suitable condition for service before each trip.

Electrical Equipment

§ 230.238 Pantographs.

(a) *Current collector insulation.* Current collectors shall be adequately insulated from the locomotive structure for the maximum voltage carried by the conductor.

(b) *Operation.* Pantographs shall be so arranged that they can be operated from the engineer's or motorman's usual and proper place in the cab.

(c) *Automatic lock.* Pantographs which automatically rise when released shall be provided with an automatic locking device that will hold them while in the down position.

(d) *Lock and grounding.* Each pantograph operating on an overhead trolley wire shall be provided with a device for locking and grounding the pantograph when in lowest position, and can be applied and released only from a position where the operator will have a clear view of pantograph and roof without mounting the roof.

(e) *Shoes and horns.* Pantograph shoes with cracked or badly worn contact surface or with defective horn shall not be continued in service.

(f) *Air cylinder and hose.* Leaky or defective pantograph operating cylinder, connection, or air hose shall not be continued in service; air hose shall be of sufficient length to afford proper insulation.

§ 230.239 Trolley appurtenances.

(a) *Trolley hooks; insulation.* A trolley-pole hook substantially bolted in place and adequately insulated from the locomotive structure shall be provided that will hold the pole while in down position.

(b) *Ground switch.* When a locomotive is equipped with more than one trolley pole, each pole shall be equipped with a device for grounding the pole when it is secured by the hook referred to in paragraph (a), which can be applied and released only from a position where the operator will have a clear view of the trolley pole and roof without mounting the roof.

(c) *Rope; retriever or catcher.* Each trolley pole shall be provided with a suitable rope. A retriever or trolley catcher shall be provided for the pole used while the locomotive is in motion unless rope is under constant observation.

(d) *Insulation of trolley rope.* Where trolley wire carries more than 750 volts, each trolley rope shall be insulated from the pole for the maximum voltage carried by the trolley wire.

(e) *Harps and wheels.* Trolleys with badly burnt or warped harps, broken, badly burnt or worn wheels, shall not be continued in service.

§ 230.240 Deenergizing third rail shoes; defective shoe beams.

(a) When locomotives are equipped with both third rail and overhead collectors, third-rail shoes shall be deenergized while in yards and at stations when current collection is from overhead conductor and not intermittent from third rail and overhead.

(b) Third-rail shoe beams loose on brackets, split or cracked, or with accumulations of extraneous matter conducive of short circuits shall not be continued in service.

§ 230.241 Emergency pole; shoe insulation.

(a) Each locomotive equipped with a pantograph operating on an overhead trolley wire shall have a suitable emergency pole for operating the pantograph and the part which can be safely handled shall be marked. This pole shall be protected from moisture while not in use.

(b) Each locomotive equipped with third-rail shoes shall have a suitable device for insulating current collecting apparatus from third rail when desired.

§ 230.242 Lightning arrester.

(a) *When and where required.* Where current supply is continuously taken from an overhead conductor and lightning protection is not provided along the line of the road that will afford adequate protection for the locomotive, each locomotive unit shall be provided with a

suitable lightning arrester. In sections where freezing weather is generally encountered, lightning arresters will not be required on locomotive units between November 1 and March 1. The current-collector cable shall be tapped for the lightning arrester at a point as near the overhead current collector as possible.

(b) *Grounding conductor.* The lightning arrester shall have an adequate grounding conductor of not less than No. 6 American wire gauge, run in as straight a line to ground as possible, and protected against mechanical injury, but not run in metal conduit.

§ 230.243 Grounding of metal parts.

All unguarded noncurrent-carrying metal parts subject to becoming charged which are not thoroughly insulated shall be grounded.

§ 230.244 Guard current-carrying parts.

All current-carrying parts connected to circuits with potential of more than 150 volts shall be isolated, insulated, or guarded against accidental contact.

§ 230.245 Doors and cover plates marked "Danger."

All doors and cover plates guarding high-tension equipment shall be securely fastened in place, and kept marked, with the word "Danger" and the normal voltage carried by the parts so protected.

§ 230.246 Hand-operated switches; circuit breakers, contactors, fuses.

(a) All hand-operated switches carrying currents with a potential of more than 150 volts, which may be operated while under load, shall be inclosed in a cabinet or properly covered and be operative from the outside, and means provided to show whether switches are open or closed. Switches which may not be operated while under load shall be guarded against accidental contact and kept plainly marked with the words "must not be operated under load" and the voltage carried.

(b) Circuit breakers, contactors, and fuses shall be maintained in safe and suitable condition for service and shall be so located or guarded that persons may not be injured by their operation.

(c) Oil type circuit breakers shall be maintained in safe and suitable condition.

§ 230.247 Jumpers; cable connections.

(a) *General precautions.* Jumpers or cable connections between locomotives or units shall be so located and guarded to prevent unnecessary peril, and shall not be allowed to hang with one end free.

Interpretation: The requirements of this rule relating to the location and guarding of jumpers and cable connections are satisfied by installing a device which will support the cable at a sufficient height to provide reasonable clearance.

(b) *Tests; record.* Cable connections between units and jumpers that carry current having a potential of 600 volts or more shall be thoroughly cleaned, inspected, and tested as often as conditions require to maintain them in safe and suitable condition for service, but not less frequently than every 3 months, by immersing the cable portion in water and subjecting each conductor with another, and with the water, to a difference in potential of not less than one and three-fourths times the normal working voltages for not less than one minute. Date and place of inspection and test shall be legibly marked on the jumper or cable or on a tag securely attached thereto.

(c) *Defects.* Cable connections between units and jumpers with any of the following defects shall not be continued in service: broken or badly chafed insulation; broken or defective plugs, receptacles or terminals; broken or protruding strands of wire; jumpers of improper length.

§ 230.248 Wires and cables.

All cables and wires carrying current shall be of sufficient size to prevent undue heating and be properly separated or insulated and protected from mechanical injury.

§ 230.249 Motors and generators.

(a) Motors and generators shall be securely fastened in place. Axle collars shall be maintained tight on the axle. Axle-bearing and armature-bearing caps shall be securely bolted in place. Motors or generators with any of the following defects shall not be continued in service: Broken and loose or excessively worn bearings; excessive sparking or flashing over at the commutator; defective collector ring, brush holder, yoke or insulator; loose or broken connection; armature striking pole piece; short circuited armature or field coil; loose or broken armature coil bands or wedges.

(b) Motors, generators and their related wiring shall be maintained free from oil and sediment that could cause flash or fire hazard.

§ 230.250 Transformers.

Transformers shall be securely fastened in place. Liquid filled transformers and related piping shall be maintained reasonably free from leaks and the liquid maintained at proper level in transformer cases.

§ 230.251 Rheostats and grid resistors.

Rheostats and resistors shall be maintained free from accumulations of dirt or extraneous matter.

§ 230.252 Voltmeters and ammeters.

Voltmeters and ammeters on units receiving power from an outside source shall be tested whenever any irregularity is reported, but not less frequently than once every 6 months. Voltmeters and ammeters on units driven from power generated within the unit shall be tested whenever any irregularity is reported, but not less frequently than once every 12 months. Meters reading more than 5 percent in error shall be corrected.

§ 230.253 Insulation dielectric test; voltage to be applied.

Not less than once every year an insulation dielectric test of not less than 1 minute duration shall be applied to all circuits and parts carrying current with potential of more than 150 volts. The voltage applied to circuits other than motor or generator windings, shall be not less than 75 percent above the normal working voltage; the voltage applied to windings shall be not less than 50 percent above the normal working voltage. A careful examination shall be made of any weakness indicated and all defects remedied before the locomotive is put in use.

§ 230.254 Insulation inspection.

Not less than once every month a careful inspection of all visible insulation and electrical connections shall be made and all defects repaired.

INTERNAL COMBUSTION EQUIPMENT

§ 230.255 Fuel tanks and piping; safety cut-out valve.

(a) Fuel tanks and related piping shall be maintained free from leaks.

(b) A safety cut-out valve shall be provided in the fuel line adjacent to the supply tank, or in other safe location, which will automatically close when tripped. The cut-out valves shall be designed for hand operation from both outer sides of the unit and from inside of the enginemen's compartment. Operating handle locations shall be designated. Means shall be provided so that cut-out valves may be reset without hazard.

Interpretation: The requirements of the last sentence of this rule are satisfied if the cut-out valves may be reset without the necessity for employee getting under the locomotive.

§ 230.256 Filling and venting; gauge.

(a) Fuel reservoirs shall be arranged so they can be filled and vented only from outside of the cab or other compartments. Vent pipes shall not discharge on the roof nor on or between the rails.

(b) A gauge which will properly indicate the level of fuel in fuel reservoirs shall be provided for each reservoir, or series of reservoirs that are connected together and filled from a common source, and so located as to be readily visible to the person filling the reservoir or reservoirs.

§ 230.257 Grounding fuel tanks.

Fuel tanks and related piping shall be electrically grounded.

§ 230.258 Guards; set screws and keys.

(a) Exposed moving parts of mechanism liable to cause personal injury, and pipes carrying hot gases shall be isolated or guarded against personal contact.

(b) Set screws or keys shall not protrude from unguarded moving parts of mechanism.

§ 230.259 Exhaust gases.

Exhaust gases shall be released entirely outside of cab or other compartments. Exhaust stacks shall be of sufficient height or other means provided which will prevent entry of exhaust gases into enginemen's compartments under usual conditions of operation.

§ 230.260 Starting device.

Internal combustion engines of more than 5 horsepower shall be provided with

a starting device that will eliminate the necessity for cranking the engine by hand.

§ 230.261 Safety hangers.

Suitable safety hangers shall be provided for drive shafts.

§ 230.262 Engines and accessories.

(a) *Tagging for repairs.* Internal combustion engines shall be maintained in a safe and suitable condition for service. Whenever any internal combustion engine has been shut down because of defects and the unit is continued in service a distinctive tag giving reason for the shut-down shall be conspicuously attached near the engine starting control and shall remain attached until repairs have been made.

(b) *Cleaning.* All engines and accessories shall be kept reasonably free from oil and water leaks and from accumulations of oil or debris.

(c) *Alarms.* Temperature and pressure alarms, controls and related switches shall be properly maintained.

BOILERS USED WITH LOCOMOTIVES OTHER THAN STEAM

§ 230.300 Safe working pressure; factor of safety.

The safe working pressure for each boiler shall be fixed by the chief mechanical officer of the carrier or by a competent mechanical engineer under his supervision, after full consideration has been given to the general design, workmanship, age, and condition of the boiler. The minimum factor of safety shall be four.

§ 230.301 Stresses, staybolts, braces.

The maximum allowable stress per square inch of net cross-sectional area shall be 7,500 pounds for staybolts and 9,000 pounds for round, rectangular, and gusset braces.

§ 230.302 Strength of materials.

(a) *Steel or wrought iron.* When the tensile strength of steel or wrought iron is not known, it shall be taken at 50,000 pounds for steel and 45,000 pounds for wrought iron.

(b) *Rivets.* The maximum strength of rivets per square inch of cross-sectional area shall be taken as follows:

	Pounds
Iron rivets in single shear	38,000
Iron rivets in double shear	76,000
Steel rivets in single shear	44,000
Steel rivets in double shear	88,000

(c) *Tests.* When strength of material has been determined by tests duly authenticated, and shown on specification card or alteration report, such value may be used when calculating the safe working pressure.

(d) *Cast-iron boilers.* The maximum allowable working pressure on cast-iron boilers shall not exceed 15 pounds per square inch.

§ 230.303 Boiler number, badge plate, location.

(a) The builder's name and number, if known, shall be stamped on the boiler, and shall be shown on the specification card. If the builder's name and number are not known and cannot be obtained, the initials of the railroad and an assigned number shall be used. The name and number once given on the specification card shall not thereafter be changed.

(b) A metal badge plate showing the name and boiler number and safe working pressure shall be attached to each boiler. The badge plate on each steam boiler, except those boilers of the forced circulation type, shall be provided with a line indicating the lowest permissible water level and shall be attached to the boiler adjacent to the water glass. The badge plate on each hot-water boiler shall be attached to the boiler adjacent to the firing opening. If boiler is lagged, the lagging and jacket shall be cut away so that plate can be seen.

§ 230.304 Interior inspection.

Whenever a sufficient number of tubes are out, the interior of the boiler shall be as thoroughly inspected as construction will permit.

§ 230.305 Method of inspection.

All fire tubes of boilers in service shall be removed at least once every 4 years. After the tubes are taken out, the inside of the boiler must be as thoroughly cleaned and inspected as construction will permit. The boiler must be examined for cracks, pitting, grooving, or indications of overheating, and for damage where mud has collected or heavy scale formed. It must be seen that braces and stays are taut, that pins are properly secured in place, and that each is in condition to support its proportion of the load.

§ 230.306 Cracks.

Any boiler developing a crack in shell sheets shall be removed from service until proper repairs have been made. A report on Form No. 19–B showing the defects and the repairs made, shall be filed with the Director, Bureau of Railroad Safety, within 30 days after completion of the repair. (For Form No. 19–B, see § 230.329(b).)

§ 230.307 Fuse plugs; low water alarm.

(a) If boiler is equipped with a fusible plug, it shall be filled with tin not less than 99 percent pure and containing not more than one-tenth of 1 percent of lead nor more than one-tenth of 1 percent of zinc. Fusible plugs shall be removed and refilled at least once every year, and be shown on the report of inspection, Form No. 1–B.

(b) If boiler is equipped with a low-water alarm using fusible metal which comes in contact with water, steam, or products of combustion, fusible plug must be removed and cleaned at least once every 3 months, and the removal shown on the report of inspection, Form No. 1–B. If other type of low-water alarm is used, it shall be inspected and tested at least once every 3 months, and its condition shown on the report of inspection, Form No. 1–B.

Form No. 1–B

QUARTERLY BOILER INSPECTION AND REPAIR REPORT

_____, 19____.

Boiler number_____
Initials_____

Operated by _____ Company

In accordance with the act of Congress approved February 17, 1911, as amended March 4, 1915, and June 7, 1924, and the rules and instructions issued in pursuance thereof and approved by the Federal Railroad Administration, this boiler and its appurtenances were inspected on _____, 19___, at _____. All defects disclosed by said inspection have been properly repaired, except as noted on the reverse side of this report and the parts and appurtenances were left in the condition reported below.

1. Was hydrostatic test pressure applied to boiler?_____
   If so, give pounds ____ Date of previous test as shown by reports on file was____
2. Were caps removed from all flexible staybolts?_____
   Date of previous removal as shown by reports on file was_____
3. Were all fire tubes removed?_____
   Number removed_____
   Date of previous removal as shown by reports on file was_____
4. Was all lagging removed?_____
   Date of previous removal of all lagging as shown by reports on file was_____
5. Condition of interior of boiler is_____
6. Condition of exterior of boiler is_____
7. Condition of tubes is_____
   Condition of fire box sheets is_____
8. Condition of staybolts is_____
   Condition of braces is_____
9. Were safety valves tested and left in good condition?_____
   Safety valves were set to pop at _____ pounds, _____ pounds, _____ pounds.
10. Hydrostatic test pressure of_____ pounds was applied to fuel and water reservoirs. Date of previous test as shown by reports on file was_____
11. Were feed water appliances tested and left in good condition?_____
    _____
12. Condition of low-water alarm is_____
13. Was fusible plug removed and re-filled? _____. Date of previous refilling as shown by reports on file was_____
14. Was boiler washed?_____. Were water glass cocks and gauge-cock spindles removed and cocks cleaned?_____

I certify that the above report for items No. _____ is true and correct.

_____

I certify that the above report for items No. _____ is true and correct.

_____

The above work has been performed under my general supervision and I believe the report is true and correct.

_____,
Officer in Charge.

Note defects not properly repaired:

Boiler No. _____ was out of service the calendar months of:

State of _____ }
County of _____ } ss:

On this _____ day of _____, 19___, personally appeared before me _____ and signed the reverse side of this report, each of whom deposes and says that he personally made the inspections and tests reported in items the numbers of which precede his signature, and that the statements therein are true and correct.

Subscribed and sworn to before me according to law this _____ day of _____, 19___.

_____, Notary Public.

My commission expires _____

State of _____ }
County of _____ } ss:

On this _____ day of _____, 19___, personally appeared before me _____ and signed the reverse side of this report as officer in charge, who deposes and says that the inspections and tests reported were made under his general supervision, and that he believes the report is true and correct.

Subscribed and sworn to before me according to law this _____ day of _____, 19___.

_____, Notary Public.

My commission expires _____

(c) All other alarms and protective devices with which the boiler is equipped shall be inspected and tested at least once every 3 months, and record of such inspections and tests maintained by the railroad using the boiler.

§ 230.308 Exterior boilers.

(a) *Inspection.* The exterior of every boiler and steam separator shall be thoroughly inspected before it is put into service, and whenever the jacket and lagging, or casing, are removed. The jacket and lagging shall be removed at least once every 5 years from internally fired boilers, and from pressure parts of other boilers, and a thorough inspection made of the entire exterior surface while under hydrostatic pressure. The jacket and lagging shall also be removed whenever on account of indication of leaks the United States inspector or the railroad company's inspector considers it desirable or necessary.

(b) *Testing after repairs.* Before a boiler that has been out of service for 3 consecutive months or more is again used all automatic controls and safety devices shall be tested; any found defective shall be repaired and statement to effect that said devices are in proper working condition made on back of Form No. 1–B.

§ 230.309 Hydrostatic and steam tests.

(a) Every boiler before being put into service and at least once every 12 months thereafter, shall be subjected to a hydrostatic pressure 25 percent above the working pressure. While this test is being made by the railroad company's inspector, an authorized representative of the company, thoroughly familiar with boiler construction, must personally witness the test and thoroughly examine the boiler while under hydrostatic pressure. Before hydrostatic test is applied, the safety valves or water relief valves shall be removed and the holes capped or plugged, or means provided for holding valves closed without compressing the springs.

(b) After hydrostatic test has been made, all handhole plates and washout plugs shall be removed and as thorough interior examination made as construction will permit. Water-tube boilers must be examined with especial care for blistered tubes, tubes out of proper alignment, and for leakage or corrosion. Threaded and flanged joints, steam pipes, and blow-off lines shall be carefully examined for corrosion or wasting away. When all necessary repairs have been completed, the boiler shall be fired up, the steam pressure raised to not less than the allowed working pressure, and the boiler and appurtenances carefully examined. All cocks, valves, seams, studs, bolts, and rivets must be tight under this pressure.

§ 230.310 Test of rigid staybolts.

(a) All rigid staybolts shall be hammer tested at least once every 6 months and whenever the hydrostatic test is applied, except that staybolts which have telltale holes three-sixteenths inch in diameter extending their entire length and kept open need not be hammer tested.

(b) The inspector must tap each bolt and determine the broken bolts from the sound or the vibration of the sheet. If staybolt tests are made when the boiler is filled with water, there must be not less than 50 pounds pressure on the boiler.

§ 230.311 Staybolts with caps; examination.

(a) Except as provided in paragraph (b) of this section all staybolts having caps over the outer ends shall have the caps removed at least once every 2 years and the bolts and sleeves examined for breakage.

(b) When all flexible staybolts with which any boiler is equipped are provided with a telltale hole not less than three-sixteenths inch nor more than seven thirty-seconds inch in diameter, extending the entire length of the bolt and into the head not less than one-third of its diameter and these holes are protected from becoming closed by rust and corrosion by copper plating or other approved method, and are opened and tested each time the hydrostatic test is applied, with an electrical or other instrument approved by the Director, Bureau of Railroad Safety, that will positively indicate when the telltale holes are open their entire length, the caps will not be required to be removed. When this test is completed, the hydrostatic test must be applied and all staybolts removed which show leakage through the telltale hole.

The inner ends of the telltale holes must be kept closed with a fireproof porous material that will exclude foreign matter and permit leakage of steam or water, if the bolt is broken or fractured, into the telltale hole. When this test is completed, the ends of the telltale holes shall be closed with material of a different color than that removed and a record kept of colors used.

(c) The removal of flexible staybolt caps and other tests shall be reported on the report of inspection Form No. 1–B § 230.307, and a proper record kept in the office of the railroad company of the inspections and tests made.

(d) Fire-box sheets not covered by brick work must be carefully examined at least once every month for mud burn, bulging, and indication of broken staybolts.

(e) Staybolt caps shall be removed or any of the above tests made whenever the United States inspector or the railroad company's inspector considers it desirable in order to thoroughly determine the condition of staybolts or staybolt sleeves.

§ 230.312 Flexible staybolts without caps.

Flexible staybolts which do not have caps shall be tested the same as rigid staybolts. Each time a hydrostatic test is applied, such staybolt test shall be made while the boiler is under hydrostatic pressure of not less than the allowed working pressure, and proper notation of such test made on the report of inspection, Form No. 1–B.

§ 230.313 Broken staybolts.

No boiler shall be allowed to remain in service when there are two adjacent staybolts broken, or telltale holes plugged, nor when three or more are broken or plugged in the entire boiler.

§ 230.314 Telltale holes.

All staybolts shorter than 8 inches applied after July 1, 1911, except flexible bolts, shall have telltale holes three-sixteenths inch in diameter and not less than 1¼ inches deep in the outer end. These holes must be kept open at all times.

§ 230.315 Pressure gauge.

(a) *Graduation; location.* Each boiler shall have a gauge which will correctly indicate the working pressure. Pressure gauges shall be graduated to not less than one and one-half times the allowed working pressure of the boiler. Gauges must be located so that they will be kept reasonably cool and can be conveniently read.

(b) *Testing.* Pressure gauges shall be tested at time of quarterly boiler inspection, and whenever any irregularity is reported.

(c) *Method; correction.* Pressure gauges shall be compared with an accurate dead-weight tester or test gauge, constructed for the purpose of testing gauges. Other than at times of application of hydrostatic tests pressure gauges used on hot-water boilers may be tested in conjunction with the test of water relief valves by comparison, under air pressure, with an accurate test gauge. Gauges found inaccurate shall be corrected before being put into use.

(d) *Siphon.* Every pressure gauge used on steam boilers shall have a siphon of ample capacity to prevent steam from entering the gauge. The pipe connection shall enter the boiler direct and shall be maintained steam tight between boiler and gauge. The siphon pipe must be removed and it and its connections examined to see that they are open, each time the gauge is tested. Pressure gauges used on hot-water boilers may be mounted on the expansion tank provided no valves are interposed between the expansion tank and boiler.

§ 230.316 Safety valves.

(a) *Capacity, connection to boiler, location.* Every steam boiler shall be

equipped with at least two safety valves and every hot-water boiler shall be equipped with at least one water relief valve, the capacity of which shall be sufficient to prevent, under any conditions of service, an accumulation of pressure of more than 5 pounds above the allowed working pressure. The safety valves shall be connected with the boiler independent of any other connection, and located as closely to the boiler as may be consistent without discharging inside of cab. Water relief valves may be mounted on the expansion tank of hot-water boilers provided no valves are interposed between the expansion tank and the boiler. Sufficient clearance to prevent damage shall be provided where safety or relief valves or connections pass through cab structure. Ends of safety valve discharge lines shall be so located or protected as to not constitute a hazard from discharged steam.

on steam boilers shall be set and tested under steam at time of quarterly boiler inspection, and also when any irregularity is reported. When setting safety valves, the water in the boiler shall not be above the highest gauge cock. When safety valves or water relief valves are set or tested two gauges shall be used,

(b) *Setting and testing.* Safety valves one of which shall be so located that it will be in full view of the person setting such valves. Other than at times of application of hydrostatic test, water relief valves on hot-water boilers may be tested with air pressure; at times of hydrostatic test they shall be tested with hydraulic pressure. Gauges shall in all cases be tested immediately before the safety valves or water relief valves are set or tested or any change made in the setting, except that gauges on hot-water boilers may be tested with air pressure simultaneously with the test of relief valves at times other than when the hydrostatic test is made. If the indicated pressure of the test gauge and the gauge on boiler vary more than 3 pounds, they shall be removed from the boiler, tested, and corrected before the safety valves or water relief valves are set.

§ 230.317 Water glass and gauge cocks.

(a) *Lowest reading; danger lines.* Every steam boiler, except those of the forced circulation type, shall be equipped with at least one water glass, and 3 gauge cocks which can be easily opened and closed by hand. The lowest gauge cock and the lowest reading of the water glass and the line on the badge plate shall correspond and be not less than 2 inches above the danger line. The danger line shall be that at which there will be no danger of overheating any part of the boiler. The danger line for vertical fire-tube boilers shall be not less than one-half the length of the tube above the lower tube sheet; and for vertical submerged tube boilers, the upper surface of the top tube sheet.

(b) *Water-glass valves.* All water glasses shall be supplied with two valves, one in the upper and one in the lower connection to the boiler, and a drain valve, so constructed and located that the valves can be easily opened and closed by hand. Drain pipes shall discharge below decks or into a drain pipe so arranged to prevent splash from steam and water.

(c) *Cleaning.* The spindles of all gauge cocks, fill-test valves and water-glass valves shall be removed and cocks and valves thoroughly cleaned each time the boiler is washed.

(d) *Testing.* Water glasses must be blown out and gauge cocks tested before each trip.

(e) *Water and lubricator glass shields.* Tubular water glasses and lubricator glasses must be provided with a safe and suitable shield which will permit the glass to be easily seen and prevent the glass from flying in case of breakage.

(f) *Illumination.* Water glasses and pressure gauges shall be sufficiently illuminated to enable accurate readings to be easily made.

(g) *Drip pans.* Drip pans shall be provided for gauge cock discharge so arranged to prevent splash from steam and water.

(h) *Water-flow indicators.* Forced circulation boilers of the spill-over type not equipped with water glass and gauge cocks shall be equipped with a visual return water flow indicator.

(i) *Fill test valves.* Forced circulation boilers shall be equipped with a fill test valve or other means of determining when the boiler is filled with water.

§ 230.318 Feed-water appliances.

Feed-water appliances and their connections must be kept in good condition, free from leaks and accumulations of scale or other foreign matter and be tested before each trip.

§ 230.319 Water tubes; flared or beaded; defects.

The ends of all water tubes shall extend through the tube sheet or headers and be properly flared or beaded. If flared, they shall extend through sheet or header not less than one-fourth inch nor more than one-half inch and be flared to an angle of not less than 30°. If beaded, the bead shall extend over the sheet not less than one-eighth inch for the entire circumference of the tube. Water tubes improperly applied, bulged, blistered, leaking, cracked, or tubes with sufficient scale to cause overheating shall not be continued in service.

§ 230.320 Boiler washing.

(a) *Frequency.* Boilers shall be washed as often as water conditions require. Steam boilers in service shall be washed not less frequently than once each month, and at the time of quarterly inspection. Hot-water boilers in service shall be washed not less frequently than once each year. When boilers are washed, all handhole plates and washout plugs shall be removed. If boilers can be washed without removing handhold plates and washout plugs, such plates and plugs shall be removed immediately after boiler is washed and as thorough interior inspection be made as conditions will permit. Sediment and scale shall be removed from water tubes at washout periods.

(b) *Record.* An accurate record of all boiler washouts shall be kept in the office of the railroad company and a copy of the last record kept in the boiler compartment. The following information must be given on the day that the boiler is washed: Number of boiler; number of locomotive unit on which it is mounted; date of washout; signature of boiler washer or inspector who knows that boiler was washed; statement if spindles of gauge cocks, fill-test valves, test cocks and water-glass valves were removed and cocks and valves cleaned; signature of the inspector or employee who removed the spindles and cleaned the cocks and valves.

§ 230.321 Leaks.

(a) All valves, joints, studs, and seams shall be kept reasonably free from leaks.

(b) If a leak develops under the lagging, an examination and proper repairs shall be made.

(c) When washout plugs or boiler studs develop leakage, the pressure shall be removed, the threads examined, and proper repairs made.

(d) In new construction, or when renewals are made of iron or steel pipes in cabs that are subject to boiler pressures of more than 150 pounds per square inch, commercially designated extra strong pipe and extra heavy valves and fittings shall be used.

(e) Whenever any boiler or steam generator has been shut down because of defects and the unit in which it is installed is continued in service, a distinctive tag giving reasons for the shut-down shall be conspicuously attached near the starting controls and shall remain attached until repairs have been made.

§ 230.322 Feed-water tanks and strainers.

Feed-water tanks shall be maintained free from leaks and accumulations of scale, or other foreign matter, and suitable screens provided for feed pipes.

§ 230.323 Fuel tanks and piping.

(a) *Leaks.* Fuel tanks and related piping shall be maintained free from leaks.

(b) *Safety cut-out valve.* A safety cut-out valve shall be provided in the fuel line adjacent to the supply tank, or in other safe location, which will automatically close when tripped. The cut-out valves shall be designed for hand operation from both outer sides of the unit and from inside of the enginemen's compartment. Operating handle locations shall be designated. Means shall be provided so that cut-out valves may be reset without hazard.

Interpretation: The requirements of the last sentence of this rule are satisfied if the cut-out valves may be reset without the necessity for employee getting under the locomotive.

(c) *Vents.* Fuel reservoirs shall be arranged so they can be filled and vented only from outside of the cab or other compartments. Vent pipes shall not dis-

charge on the roof nor on or between the rails.

§ 230.324 Feed-water and fuel-oil reservoir testing.

Feed-water and fuel-oil reservoirs carrying pressure shall be inspected and tested in accordance with § 230.206 (a) and (b).

§ 230.325 Boiler and reservoir fastenings.

All boilers and reservoirs shall be securely fastened in place.

§ 230.326 Steam headers.

Where two or more boilers are connected to the same steam header, they shall each have a suitable valve between boiler and header.

§ 230.327 Oil burning fire boxes.

(a) *Gases in fire box.* Means shall be provided for expelling accumulated gases from fire box of oil-burning boilers before fire is lighted. Products of combustion shall be released entirely outside of cab or other compartments. Boilers shall be so arranged and exhaust stacks shall be of sufficient height or other means provided which will prevent entry of products of combustion into enginemen's compartments under usual conditions of operation.

(b) *Remote controlled ignition.* Remotely controlled means shall be provided to electrically ignite oil fired boilers.

SPECIFICATIONS

§ 230.328 Locomotive units.

(a) *Specification.* A specification, size 8 by 10½ inches, Form No. 4–A (§ 230.201), shall be filed with the Director, Bureau of Railroad Safety, for each unit, and a copy kept in the office of the mechanical engineer of the company operating the locomotive.

(b) *Alteration report.* When any changes are made which affect the data shown on the specification, a corrected specification or an alteration report, Form No. 19–A, size 8 by 10½ inches, showing such changes, shall be filed within 30 days after the changes are made.

Form No. 19–A

ALTERATION REPORT FOR LOCOMOTIVE UNITS

The following alterations were made on locomotive unit No. _____ operated by _____ Company, on _____, 19__, at _____.

NOTE: Describe below what alterations or changes were made which affect the data previously furnished in specification Form No. 4–A.

Approved _____
Mechanical Engineer.

§ 230.329 Boiler.

(a) *Specification.* A specification, size 8 by 10½ inches, Form No. 4–B, containing the results of the calculations made in determining the working pressure and other necessary data, shall be filed with the Director, Bureau of Railroad Safety, for each boiler used in connection with locomotives other than steam, and a copy shall be kept in the office of the mechanical engineer. These specifications shall be verified by the oath of the engineer making the calculations, and shall be approved by the chief mechanical officer of the railroad company operating the locomotive. These specifications shall be filed as promptly as thorough examination and accurate calculation will permit. When accurate specifications and drawings of boiler are available, the data for specification, Form No. 4–B, may be taken from such specifications and drawings. When accurate drawings and specifications are not available the required data must be obtained at the first opportunity when general repairs are made, or when tubs are removed. Specifications must be forwarded within 1 month after examination has been made; tubes being removed if necessary to enable the examination to be made before this date.

Form No. 4–B

SPECIFICATION FOR BOILER NO. ____

Operated by _____ Railroad Company
Built by _____ at _____
date _____ 19__
Builder's number _____, type _____
kind of material { Rivets _____ / Plate _____
Water level danger line is _____
(Give location)
Height of lowest reading of water glass above danger line is _____
Height of lowest gauge cock above danger line is _____
Feed water appliances _____;
(Kind)
Number _____
Safety valves _____; _____;
(Number) (Size)
_____; _____
(Make) (Style)
Is boiler equipped with fusible plugs? _____
Location _____
Is boiler equipped with low-water alarm? ___
Make _____
Fire tubes _____; _____
(Number) (O. Dia.)
Water tubes _____; _____;
(Number) (O. Dia.)
_____;
(Thickness)
Staybolts _____; _____; _____;
(Kind) (Number) (O. dia.)
_____; _____
(style of thds.) (Max. spacing)
Boiler shell _____; _____
(Diameter) (Thickness of sheets)
Were you furnished with authentic records of tests of material used in boiler? _____
Records on file in the office of the _____
of the _____
Company show lowest tensile strength of shell sheets to be _____ pounds per square inch.

A drawing or blueprint of the boiler showing principal features of construction, thickness of sheets, location and size of braces, staybolts, and details of seams must be filed as a part of this specification.

The maximum stresses, in pounds per square inch, at the allowed working pressure were found by calculation to be as follows:
Staybolts at least cross sectional area _____
Braces _____
Shearing stress on rivets _____
Tension on net section of plate at weakest seam _____

The foregoing dimensions and data which were taken from the boiler were furnished by _____

Data upon which above calculations were made were obtained from drawing No. _____ dated _____ 19__ furnished by _____

_____
Mechanical Engineer.

State of _____ }
County of _____ } ss:

_____, being duly sworn, says that he is the officer who signed the foregoing specification; that he has satisfied himself of the correctness of the drawings and data used, has verified all of the calculations, and has examined the record of present condition of boiler dated _____ and sworn to by Inspector _____ and believes that the design, construction, and condition of boiler No. _____ renders it safe for a working pressure of _____ pounds per square inch.

_____
(Name of affiant)

Subscribed and sworn to before me this _____ day of _____, 19__.

_____
Notary Public.

Approved _____
Title _____

(b) *Alteration report.* When any repairs or changes are made, which affect the data shown in the specification, a corrected specification or an alteration report on Form No. 19–B, size 8 by 10½ inches, properly certified to, giving details of such changes, shall be filed within 30 day from the date the repairs or changes are completed. Report of patches must be accompanied by a drawing or blueprint of the patch, showing its location in regard to the center line of boiler, giving accurate dimensions, and showing the nature and location of the defect. Patches previously applied must be reported the first time the boiler is stripped to permit an examination.

Form No. 19–B

ALTERATION REPORT FOR BOILER NO. ____

The following alterations were made on boiler No. ____ operated by _____ Company, on _____, 19__, at _____.

NOTE: Describe below what alterations or changes were made which will affect the data previously furnished in specification, Form No. 4–B. When blueprints or drawings accompany report, paste same below or on back of report.

State of _____ }
County of _____ } ss:

_____, being duly sworn, says that he inspected the alterations and changes described above and certifies that the above report is true and correct.

_____
(Name of affiant)

Subscribed and sworn to before me this _____ day of _____, 19__.

_____
Notary Public.

The above alterations have caused the following changes in calculated maximum stresses for this boiler.

NOTE: If stresses are not affected by the alterations, insert the words, "Stresses not changed."

_____
Mechanical Engineer.

PERIODICAL REPORTS

§ 230.330 Locomotive assignment lists.

Where locomotive units are transferred from one Federal inspection district to another Federal inspection district, an

assignment list of locomotive units shall be supplied to each such United States inspector at least once every 3 months, showing the unit numbers assigned to their respective districts, and the reports required by §§ 230.331–230.334 shall be sent to the United States inspector on whose list the unit numbers are shown.

§ 230.331 Monthly locomotive unit inspection and report.

(a) *30-day locomotive unit inspection and report.* Not less than once every 30 days a report shall be made on Form 1–A, covering each locomotive unit in use, which shall show the condition of the unit as determined by an inspection made in accordance with the law and these rules and instructions. The railroad may perform the inspection required by this rule within the 5 days next following the expiration of the 30-day period, if conditions beyond the control of the railroad render such additional time necessary; and in that event proper notation shall be made on the reverse of the report on Form 1–A. The report shall be prepared on a good grade of pale blue paper, size 6 x 9 inches, and subscribed and sworn to, before an officer authorized to administer oaths, by the inspectors who made the inspection, and by the officer in charge. A duplicate copy of this report shall be filed in the office of the mechanical officer having charge of the locomotive and within 10 days after each inspection one copy shall be transmitted to the U.S. Inspector.

(b) *Cab report.* A copy of the last inspection report shall be displayed under transparent cover in a conspicuous place in the cab of each unit. This copy must be a duplicate in all ways of the report filed with the United States inspector, except it need not be sworn to, and in the event this copy is destroyed or becomes lost or illegible it may be replaced by a conformed copy.

(c) *Out of service report.* When a locomotive is withheld from service for 30 or more consecutive days or was out of service when it would otherwise be due for inspection, an out-of-service report covering such unit shall be made on the reverse of Form 1–A. The out-of-service time shall be totalled and recorded on the reverse of Form 1–A and the interval prescribed for any particular test or inspection required by these rules may then be extended by the number of such consecutive out-of-service days recorded since the date of the last previous test or inspection, except as provided in paragraph (d) of this section. The report shall be made on each date on which an inspection or test would have been due except for the extension and shall show the name of the railroad, the place where made, the initials and number of the unit, the place where unit is out of service, and the reason for being out of service.

(d) *Out-of-service report when filed.* The out-of-service report shall be transmitted to the United States Inspector in charge within 10 days after the 30-day inspection period for which it is to cover. One copy of the report will be retained in the office of the mechanical officer having charge of the locomotive. It need not be sworn to but must be signed by the officer in charge of the locomotive unit. When out-of-service report has been filed, an inspection must be made and report made on Form 1–A before the unit is again returned to service.

§ 230.332 Quarterly boiler inspection and report.

(a) *General instructions.* Not less than once every 3 months each boiler used in connection with a locomotive unit shall be inspected in accordance with the law and the rules and instructions in this subpart and a report Form No. 1–B (§ 230.307), made on good grade of pale pink paper, size 6 by 9 inches. This report shall be subscribed and sworn to, duplicates filed, and copy placed in cab of unit, in the same manner and form as required by § 230.331, except the report shall show the boiler number instead of the unit number.

(b) *Out-of-service report.* An out-of-service report shall be filed for each boiler which was out of service for an entire calendar month or was out of service when due for inspection and remained out for the rest of the month. This report shall give the month intended to cover; the name of the railroad; the initials and number of the boiler; the place where boiler is out of service; the date it was removed from service; and the reason for being out of service. The report shall give date and place where made. Where inspection and report has been made during the month, out-of-service report will not be required.

(c) *When filed.* Out-of-service report shall not be filed until the end of the month for which it is to cover. It need not be sworn to, but must be signed by the officer in charge of the boiler.

§ 230.333 Final report.

When a locomotive unit or a boiler is permanently retired from service a final report shall be filed with the United States inspector in charge. This report, when filed, will close the record for the locomotive unit or boiler. The report shall show the name of the railroad; initials and number of the unit; the disposition made of it, whether scrapped or sold, and if sold, to whom. The final report for the boiler shall show the name of the railroad; the builder and number; the disposition made of it, whether scrapped or sold, and if sold, to whom. These reports shall bear the statement, "Unit (or boiler) will not again be used by this company." The report shall give date and place where made and be signed and sworn to by the officer in charge.

§ 230.334 Extensions.

(a) *Automatic extensions for time out of service.* The time for making inspections and tests on units and boilers which are out of service for 30 or more consecutive days may be extended without application as hereinafter provided. Time out of service shall be properly accounted for by out-of-service reports and notations made on the back of each subsequent inspection report and cab card for time claimed out of service. Less than 30 days out of service will not be counted toward extensions.

(b)—(f) [Reserved]

(g) *Fire tube removal.* Removal of fire tubes, as required by § 230.305, will be due after 48 calendar months' service, provided such service is performed within 6 consecutive years.

(h) *Jacket and lagging.* Jacket and lagging will be due for removal, as required by § 230.308, after 60 calendar months' service, provided such service is performed within 6 consecutive years.

(i) *Hydrostatic test of boiler.* Hydrostatic test of boiler, as required by § 230.309(a), will be due after 12 calendar months' service, provided such service is performed within 2 consecutive years.

(j) *Hammer test of staybolts.* Hammer test of staybolts, as required by §§ 230.310(a) and 230.312, will be due after 6 calendar months' service provided such service is performed within 1 year.

(k) *Removal of caps from flexible staybolts.* Removal of caps from flexible staybolts, as required by § 230.311(a), will be due after 24 calendar months' service, provided such service is performed within 3 consecutive years.

(l) *Boiler washing.* Boiler washing, as required by § 230.320(a), may be extended for a period equal to the full calendar months the boiler has been out of service since last washed, provided water conditions do not require more frequent washing.

ACCIDENTS

§ 230.335 Accident reports.

In the case of an accident resulting from failure from any cause of a locomotive or unit, or any part or appurtenance thereof, or from coming in contact with an electrically energized part or appurtenance thereof, resulting in serious injury or death to one or more persons, the carrier on whose line the locomotive or unit is being used shall immediately transmit by wire to the Director, Bureau of Railroad Safety, at his office in Washington, D.C. 20591, a report of such accident, stating the nature of the accident, number of persons killed or seriously injured, the place at which it occurred, as well as where the locomotive or unit may be inspected; which wire shall be immediately confirmed by mail, giving a full detailed report of such accident, stating, as far as may be known, the causes, and giving a complete list of the killed and injured.

§ 230.336 Modification of rules.

Upon application to the Director, Bureau of Railroad Safety, modification of the rules in this subpart, not inconsistent with their purpose, may be made for roads operating less than five locomotives, if an investigation shows that conditions warrant it.

§ 230.337 Changes to meet requirements.

Changes in construction which are necessary to meet the requirements of the rules in this part shall be made as rapidly as conditions permit, and all such changes, except as otherwise specified shall be completed before January 1, 1959.

Subpart D—Multiple Operated Electric Units

§ 230.400 Definitions.

All rules and instructions contained in this subpart apply to electrically operated units designed to carry freight and/or passenger traffic operated by a single set of controls which are defined thus:

(a) Unit or units with propelling motors, control apparatus and one or more control stands.

(b) Unit or units with propelling motors and control apparatus but without control stands.

(c) Unit or units without propelling motors or control apparatus but with control stands.

§ 230.401 Responsibility of carrier.

(a) The railroad company is held responsible for the general design, construction, inspection, and repair of all units used or permitted to be used on its line. It must know that all inspections, tests, and repairs are made and reports made and filed as required, and that all parts and appurtenances of every unit used are maintained in condition to meet the requirements of the law and the rules and instructions in this subpart. Nothing contained in this subpart, however, shall be construed as prohibiting any carrier from enforcing additional rules and instructions not inconsistent with those contained in this subpart, tending to a greater degree of precaution against accidents.

(b) The letter "F" shall be legibly stenciled on each side of every unit near the end, which, for identification purposes, will be known as the front end. The unit number shall be legibly stenciled on each side of every unit and shall be shown on the specification, Form No. 4–A.

§ 230.402 Inspector.

The term "inspector" as used in this subpart means, unless otherwise specified, the railroad company's inspector.

§ 230.403 Daily inspection.

Each unit in service shall be inspected at least once in every 24-hour period and a record made thereof on Form No. 2–B. If any defects are found, a report shall be made on Form No. 2–C to the proper representative of the company. Form No. 2–C shall show the name of the railroad; the initials and number of the unit; the place, date, and time of the inspection; the defects found; and the signature of the inspector. Form No. 2–C shall be approved by an authorized representative of the company. Form No. 2–B and Form No. 2–C shall then be filed in the office of the railroad company at the place where inspection is made and retained for a period of three years. If any defects exist which render the unit unsafe for further service, such defects shall be repaired before the unit is again placed in service.

§ 230.404 Air brake system.

The railroad company must know before each trip or day's work that the brakes are in safe and suitable condition for service; that the air compressor or compressors are in condition to provide an ample supply of air for the service in which the unit is put; that the devices for regulating all pressures are properly performing their functions; that the brake valve works properly in all positions; and that all condensation has been drained from the air brake system at least once within the preceding 24-hour period.

§ 230.405 Main reservoir system and compressors.

(a) The main reservoir system of each unit shall be equipped with at least one safety valve, so located as not to be subject to freezing, the capacity of which shall be sufficient to prevent an accumulation of pressure of more than 10 pounds per square inch above the maximum working air pressure fixed by the chief mechanical officer of the carrier operating the unit.

(b) A suitable governor shall be provided that will stop and start the air compressor within 5 pounds per square inch above or below the pressures fixed.

(c) Compressor governor when used in connection with the automatic air-brake system shall be so adjusted that the compressor will start when the main reservoir pressure is not less than 15 pounds per square inch above the maximum brake-pipe pressure fixed by the rules of the carrier and will not stop the compressor until the reservoir pressure has increased not less than 10 pounds per square inch.

(d) The compressor or compressors shall be tested for capacity by orifice test as often as conditions may require, but not less frequently than once every six months.

(e) The minimum capacity of any compressor permitted in service shall be approximately 80 percent of the capacity of the compressor when new. The diameter of orifice, speed of compressor, and air pressure to be maintained for compressors in common use are given in the following tables. For diagram of orifice see Figure 1.

§ 230.406 Testing of main reservoir.

(a) Every main reservoir before being put into service, and at least once every 24 months thereafter, shall be subjected to hydrostatic pressure not less than 25 percent above the maximum working pressure fixed by the chief mechanical officer, and report made on Form No. 1–A.

(b) The entire surface of each main reservoir shall be hammer tested each time the unit is shopped for general repairs, but not less frequently than once every 24 months, and report made on Form No. 1–A. This test shall be made while reservoir is empty.

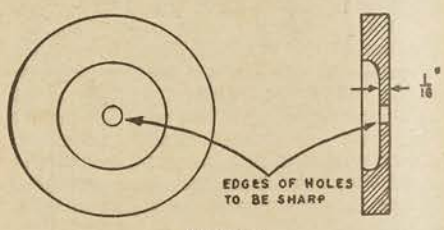


FIGURE 1.

CONDEMNING LIMITS FOR MOTOR-DRIVEN AIR COMPRESSORS

Westinghouse—Type DH–10—Orifice Size No. 46 Drill=0.081" Diameter

Shaft r. p. m.		Elevation in feet above sea level								
Compressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
260	1,380	56	54	52	50	48	46	44	43	41
240	1,270	53	51	49	47	45	44	42	40	39
220	1,163	48	46	45	43	41	40	38	37	35
215	1,140	47	45	44	42	40	39	37	36	35
210	1,110	46	44	43	41	39	38	36	35	34
205	1,087	45	43	42	40	39	37	36	34	33
200	1,060	44	42	41	39	38	36	35	34	32
195	1,032	43	41	40	38	37	35	34	33	31
190	1,010	42	40	39	37	36	34	33	32	30
185	981	40	39	37	36	35	33	32	31	----------
180	955	39	37	36	35	33	32	31	----------	----------
175	928	38	36	35	34	32	31	30	----------	----------
170	901	37	35	34	33	31	30	----------	----------	----------
165	875	35	34	33	31	30	----------	----------	----------	----------
160	850	34	33	32	30	----------	----------	----------	----------	----------
155	823	33	32	30	----------	----------	----------	----------	----------	----------
150	795	32	30	----------	----------	----------	----------	----------	----------	----------
145	770	31	----------	----------	----------	----------	----------	----------	----------	----------

CONDEMNING LIMITS FOR MOTOR-DRIVEN AIR COMPRESSORS—continued

Westinghouse—Type DH-16—Orifice Size No. 37 Drill=0.104" Diameter

250	1,280	56	54	52	50	48	46	44	42	41
240	1,230	54	52	50	48	46	44	43	41	39
230	1,180	51	49	47	46	44	42	41	39	38
225	1,155	50	48	46	44	43	41	40	38	37
220	1,130	49	47	45	43	41	40	38	37	36
215	1,100	48	46	45	43	41	40	38	37	35
210	1,080	46	45	43	41	40	38	37	35	34
205	1,050	45	43	42	40	39	37	36	34	33
200	1,025	44	42	41	39	38	36	35	33	32
195	1,000	43	41	39	38	36	35	34	32	31
190	975	41	40	38	37	35	34	33	31	30
185	950	40	39	37	36	34	33	32	30	30
180	925	39	37	36	35	34	32	31	30	----
175	900	38	36	35	34	32	31	30	----	----
170	875	36	35	34	32	31	30	----	----	----
165	845	35	34	33	31	30	----	----	----	----
160	820	34	33	31	30	----	----	----	----	----
155	795	33	31	30	----	----	----	----	----	----
150	770	31	30	----	----	----	----	----	----	----
145	745	30	----	----	----	----	----	----	----	----

Westinghouse—Type F-3-B—Orifice Size No. 26 Drill=0.1470" Diameter

250	Belt-driven	83	80	77	74	71	68	65	63	61
240		81	78	75	72	69	67	64	62	59
230		79	76	73	70	67	65	62	60	57
225		77	74	71	68	66	63	61	59	56
220		75	72	70	67	64	62	60	57	55
215		74	71	69	66	63	61	59	56	54
210		72	69	66	64	61	59	57	55	53
205		70	67	65	62	60	58	55	53	51
200		69	67	64	62	60	57	55	53	51
195		67	65	62	60	57	55	53	51	49
190		65	62	60	58	55	53	51	50	48
185		63	61	59	57	55	53	51	49	47
180		62	59	57	55	52	50	48	46	44
175		60	58	55	53	51	49	47	46	44
170		58	56	54	52	50	48	46	45	43
165		57	55	52	50	48	47	45	43	42
160		55	53	51	49	48	46	44	42	41
155		54	52	50	48	46	44	43	41	40
150		53	51	49	47	45	43	42	40	39
145		51	49	47	45	43	42	40	39	37
140		49	47	46	44	42	41	39	38	36

CONDEMNING LIMITS FOR MOTOR-DRIVEN AIR COMPRESSORS—continued

Westinghouse—Type D-4-N—Orifice Size 5/32" Drill

Shaft r. p. m.		Elevation in feet above sea level								
Compressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
240	1,305	80	77	74	71	68	65	63	61	58
230	1,250	78	75	72	69	66	63	61	59	57
220	1,200	77	74	71	68	65	63	61	58	56
215	1,170	75	72	69	66	64	61	59	57	54
210	1,140	73	70	67	65	62	60	57	55	53
205	1,115	71	68	66	63	61	58	56	54	52
200	1,090	70	67	65	62	60	57	55	53	51
195	1,060	68	65	63	60	58	56	53	51	49
190	1,030	67	64	62	59	57	55	53	51	49
185	1,000	65	62	60	58	55	53	51	49	47
180	980	63	60	58	56	54	52	50	48	46
175	950	61	59	56	54	52	50	48	46	44
170	925	60	58	55	53	51	49	47	45	43
165	895	58	56	53	51	49	48	46	44	42
160	870	57	55	52	50	48	46	45	43	41
155	840	55	53	51	49	47	45	43	42	40
150	815	53	51	49	47	45	43	42	40	38
145	790	51	49	47	44	43	41	39	38	37
140	760	50	48	46	44	43	41	39	38	37
135	735	48	46	44	42	41	40	38	37	35
130	705	47	45	43	41	40	38	37	36	34

Westinghouse—Types D-4-P and D-4-K—Orifice Size 5/32" Drill

Shaft r. p. m.			Elevation in feet above sea level								
Compressor	Motor		Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
			Minimum gauge pressure in pounds to be maintained								
	D-4-P	*D-4-K*									
230	1,250	1,380	82	79	76	73	70	67	65	62	60
220	1,200	1,320	80	77	74	71	68	65	63	61	58
210	1,140	1,260	78	75	72	69	66	64	62	59	57
205	1,115	1,230	76	73	70	67	65	62	60	58	56
200	1,090	1,200	74	71	68	65	63	61	58	56	54
195	1,060	1,170	72	69	66	64	62	59	57	55	53
190	1,030	1,140	70	67	65	62	60	58	55	53	51
185	1,000	1,110	68	65	63	61	58	56	54	52	50
180	980	1,080	66	63	61	59	57	54	52	50	48
175	950	1,050	64	61	59	57	55	53	51	49	47
170	925	1,020	62	60	57	55	53	51	49	47	45
165	895	990	60	58	56	54	52	50	49	47	45
160	870	960	58	56	54	52	50	48	46	44	43
155	840	930	56	54	52	50	48	46	44	43	41
150	815	900	54	52	50	48	46	44	43	41	40
145	790	870	52	50	48	46	44	43	41	40	38
140	760	840	50	48	46	44	43	41	39	38	36
135	735	810	48	46	44	43	41	39	38	37	35
130	705	780	46	44	42	41	39	38	36	35	33
125	680	750	44	42	41	39	38	36	35	34	32

CONDEMNING LIMITS FOR MOTOR-DRIVEN AIR COMPRESSORS—continued

Westinghouse—Type C-75—Orifice Size No. 16 Drill=0.177" Diameter

	Gear ratio 3.37	Gear ratio 4.72									
270	910	1,275	90	86	83	80	77	75	72	69	66
260	875	1,230	86	83	79	76	73	70	68	65	62
250	844	1,180	82	79	76	73	70	67	65	62	60
245	825	1,155	80	77	74	71	68	66	63	61	----
240	810	1,130	78	75	72	69	67	64	61	----	----
235	792	1,110	76	73	70	67	65	62	60	----	----
230	775	1,085	74	71	68	66	63	61	----	----	----
225	758	1,060	72	69	66	64	61	----	----	----	----
220	742	1,040	70	67	65	62	60	----	----	----	----
215	725	1,015	68	65	63	60	----	----	----	----	----
210	708	990	66	63	61	----	----	----	----	----	----
205	691	968	64	61	----	----	----	----	----	----	----
200	674	945	62	60	----	----	----	----	----	----	----
195	655	920	60	----	----	----	----	----	----	----	----

Westinghouse—Type CA-150—Orifice Size 15/64" Drill

Shaft r. p. m.		Elevation in feet above sea level								
Compressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
135	1,620	118	113	109	105	101	97	93	90	86
130	1,560	113	108	104	100	96	92	88	85	82
125	1,500	108	104	100	96	93	89	86	82	79
120	1,440	103	99	95	92	88	85	81	78	75
115	1,380	98	95	91	88	84	81	78	75	72
110	1,320	94	90	87	83	80	77	74	71	68
105	1,260	89	86	82	79	76	73	71	68	65
100	1,200	84	81	78	75	72	69	66	64	62
95	1,140	79	76	73	70	68	65	63	60	----
90	1,080	74	72	69	66	64	61	----	----	----
85	1,020	70	67	65	62	60	----	----	----	----
80	960	65	62	60	----	----	----	----	----	----
75	900	60	----	----	----	----	----	----	----	----

General Electric—Types CP-30-1500 and 1200—Orifice Size No. 29 Drill=0.136" Diameter

Shaft r. p. m.		Elevation in feet above sea level								
Motor	Compressor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
1,350	239	73	70	67	65	62	59	56	53	50
1,300	230	70	68	65	62	59	57	54	51	48
1,250	222	68	65	62	60	57	55	52	49	46
1,200	213	65	63	60	58	55	53	50	48	45
1,150	204	63	60	58	55	53	51	48	45	43
1,100	195	60	58	55	53	51	48	45	43	41
1,050	186	58	55	53	51	48	46	44	41	39
1,000	177	55	53	51	48	46	44	41	39	37
950	168	52	50	48	46	44	41	39	37	35
900	159	50	48	46	43	41	39	37	35	33
850	151	47	45	43	41	39	37	35	33	31
800	142	44	42	40	38	36	34	32	30	28
750	133	41	39	37	35	34	32	30	28	26

CONDEMNING LIMITS FOR MOTOR-DRIVEN AIR COMPRESSORS—continued

General Electric—Type CP-30-600—Orifice Size No. 29 Drill=0.136" Diameter

1,300	230	70	68	65	62	59	57	54	51	48
1,250	222	68	65	62	60	57	55	52	49	46
1,200	213	65	63	60	58	55	52	49	46	43
1,150	204	63	60	58	55	53	50	47	44	41
1,100	195	60	58	55	53	51	48	45	42	39
1,050	186	58	55	53	51	48	45	42	40	37
1,000	177	55	53	51	48	45	42	40	37	34
950	168	52	50	47	45	42	40	37	34	32
900	159	49	47	45	42	40	37	34	32	30
850	151	46	44	41	39	36	33	31	29	27
800	142	42	40	38	35	33	31	29	27	25
750	133	39	37	35	33	31	29	26	24	22

General Electric—Type CP-29-1500 and 1200—Orifice Size 7/64" Drill=0.1094" Diameter

1,500	274	82	78	74	70	66	62	59	55	51
1,400	256	77	73	70	66	62	59	55	51	48
1,300	238	72	69	65	62	58	55	51	48	44
1,200	219	67	64	60	57	54	51	47	44	41
1,100	201	62	59	56	52	49	46	43	40	37
1,000	183	56	53	51	48	45	42	39	36	34
900	165	51	48	46	43	40	38	35	32	30

General Electric—Type CP-28-600—Orifice size 7/64" Drill=0.1094" Diameter

Shaft r. p. m.		Elevation in feet above sea level								
Motor	Compressor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
1,450	265	80	76	72	68	65	61	57	53	49
1,350	247	75	71	67	64	60	57	53	50	46
1,250	228	70	66	63	60	56	53	49	46	43
1,150	210	65	61	58	55	52	48	45	42	39
1,050	192	59	56	53	50	47	44	41	38	35
950	174	53	51	48	45	42	40	37	34	32
850	155	48	45	43	40	38	35	33	30	28
750	137	42	40	37	35	33	31	28	26	24

General Electric—Type CP-26-Orifice Size 13/64" Drill=0.2031" Diameter

950	230	114	109	104	99	94	89	83	78	73
900	218	108	103	98	93	88	83	78	73	68
850	206	101	96	92	87	82	77	73	68	63
800	194	94	90	85	81	76	72	68	63	59
750	182	87	83	79	75	71	67	63	59	55
700	170	80	76	73	69	65	61	57	54	50
650	158	73	69	66	63	59	56	52	49	45
600	146	67	63	60	57	54	50	47	44	41
550	133	60	57	54	51	48	45	42	39	36
500	121	53	50	48	45	42	40	37	34	32

General Electric—Type CP-19-Orifice Size No. 18 Drill=0.1695" Diameter

220	106	101	96	91	87	82	77	72	68
210	102	97	92	88	83	79	74	69	65
200	97	92	87	83	79	74	70	65	61
190	93	88	84	80	75	71	67	63	58
180	88	84	80	76	71	67	63	59	55
170	83	79	75	71	67	63	60	56	52
160	78	74	71	67	63	59	56	52	48
150	73	70	66	63	59	56	52	48	45
140	68	65	61	58	55	51	48	45	42
130	63	60	57	54	51	47	44	41	38

CONDEMNING LIMITS FOR MOTOR-DRIVEN AIR COMPRESSORS—continued

General Electric—Type CP-34—Orifice Size 15/64" Drill=0.2344" Diameter

Shaft r. p. m.		Elevation in feet above sea level								
Compressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
250	1,140	123	118	112	107	101	96	90	85	79
240	1,094	118	112	107	102	96	91	86	81	75
230	1,049	112	107	102	97	92	87	82	77	71
220	1,004	107	102	97	92	87	82	78	73	68
210	958	101	96	92	87	82	78	73	69	64
200	912	96	91	87	82	78	73	69	64	60
190	867	90	86	82	77	73	69	64	60	56
180	822	85	81	77	73	69	65	61	57	53
170	776	79	75	71	67	64	60	56	53	49
160	730	73	70	66	63	59	56	53	49	45
150	685	68	65	61	58	55	52	48	45	42

General Electric—Type CP-33—Orifice Size 13/64" Drill=0.2031" Diameter

Shaft r. p. m.		Elevation in feet above sea level								
Compressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
235	1,050	117	111	106	101	96	91	86	80	75
224	1,000	111	106	101	96	91	86	81	76	71
213	950	105	100	95	90	85	80	75	71	66
202	900	98	94	90	85	80	76	71	67	62
190	850	92	88	83	79	75	70	66	62	58
179	800	86	82	78	74	69	65	61	57	53
168	750	79	75	72	68	64	60	57	53	49
157	700	73	69	66	62	59	55	52	48	45
145	650	67	64	60	57	54	51	48	44	41
134	600	60	57	54	51	48	45	42	39	36

Westinghouse—Types C-60 and XC-60—Orifice Size No. 22 Drill=0.157" Diameter

Shaft r. p. m.			Elevation in feet above sea level								
Compressor	Motor		Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
			Minimum gauge pressure in pounds to be maintained								
	C-60	*XC-60*									
240	1,080	1,290	99	95	91	88	85	81	78	75	72
230	1,035	1,240	97	93	90	86	83	80	77	74	71
220	990	1,180	94	90	87	84	80	77	74	71	68
210	945	1,130	92	88	85	82	78	75	73	70	67
205	925	1,100	89	85	82	79	76	73	70	67	65
200	900	1,075	87	84	80	77	74	71	68	66	63
195	880	1,050	84	81	78	75	72	69	66	64	61
190	855	1,020	82	79	76	73	70	67	65	62	60
185	835	995	79	76	73	70	67	65	62	60	----------
180	810	965	77	74	71	68	65	63	61	----------	----------
175	790	940	74	71	68	65	63	61	----------	----------	----------
170	765	915	72	69	66	64	61	----------	----------	----------	----------
165	745	885	69	66	64	61	----------	----------	----------	----------	----------
160	720	860	67	64	62	60	----------	----------	----------	----------	----------
155	700	830	64	62	60	----------	----------	----------	----------	----------	----------
150	675	805	62	60	----------	----------	----------	----------	----------	----------	----------

CONDEMNING LIMITS FOR MOTOR-DRIVEN AIR COMPRESSORS—continued

Westinghouse—Type D-3-F—Orifice Size No. 29 Drill=0.136" Diameter

Compressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
240	1,480	86	83	80	77	74	71	68	65	63
220	1,356	79	76	73	70	68	65	63	60	58
200	1,232	72	69	66	64	61	59	57	55	53
195	1,200	70	67	65	62	60	57	55	53	51
190	1,170	68	66	63	61	58	56	54	52	50
185	1,140	66	64	61	59	57	54	52	50	48
180	1,110	64	62	60	57	55	53	51	49	47
175	1,080	63	60	58	56	54	52	50	48	46
170	1,048	61	59	56	54	52	50	48	46	44
165	1,018	59	57	55	53	51	49	47	45	43
160	986	57	55	53	51	49	47	45	43	42
155	955	55	53	51	49	47	46	44	42	40
150	925	54	52	50	48	46	44	42	41	39
145	894	52	50	48	46	44	43	41	39	38
140	863	50	48	46	44	43	41	39	38	36
135	833	48	46	45	43	41	40	38	37	35
130	802	46	45	43	41	40	38	37	35	34
125	770	45	43	41	40	38	37	35	34	33
120	740	43	41	40	38	37	35	34	33	31
115	708	41	39	38	36	35	34	32	31	30
110	678	39	38	36	35	34	32	31	30	29
105	647	37	36	35	33	32	31	29	28	----------
100	616	36	34	33	32	30	29	28	----------	----------

Westinghouse—Type D-2-EG and D-2-EZ—Orifice Size 7/64" Drill

Shaft r. p. m.		Elevation in feet above sea level								
Com pressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
280	1,550	89	85	82	79	76	73	70	67	65
270	1,500	86	82	80	76	74	72	69	66	64
260	1,440	83	80	76	73	70	68	65	63	60
250	1,380	80	77	74	71	68	65	63	60	58
245	1,350	78	75	72	69	66	64	61	59	57
240	1,330	77	74	71	68	65	63	60	58	56
235	1,300	75	72	69	66	64	61	59	57	55
230	1,275	74	71	68	65	63	60	58	56	54
225	1,250	72	69	66	64	61	59	57	55	53
220	1,220	71	68	65	63	60	58	56	54	52
215	1,190	69	66	64	61	59	57	55	53	51
210	1,160	68	65	63	60	58	56	54	52	50
205	1,135	66	63	61	58	56	54	52	50	48
200	1,110	65	62	60	58	55	53	51	49	47
195	1,080	63	60	58	56	54	52	50	48	46
190	1,050	62	59	57	55	53	51	49	47	45
185	1,025	60	58	56	53	51	49	47	44	43
180	995	59	57	54	52	50	48	46	44	42
175	970	57	55	53	51	49	47	45	43	41
170	940	56	54	52	50	48	46	44	42	40
165	915	54	52	50	48	46	44	42	40	39
160	885	53	51	49	47	45	43	41	40	38
155	860	51	49	47	45	43	41	40	38	37
150	830	50	47	45	44	43	41	40	38	37

CONDEMNING LIMITS FOR MOTOR-DRIVEN AIR COMPRESSORS—continued

Westinghouse—Types D-8-N and D-8-LA—Orifice Size No. 29 Drill=0.1360" Diameter

Shaft r. p. m.		Elevation in feet above sea level								
Compressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
	D-8-N	*D-8-LA*								
250	1,650	1,070	79	76	73	70	67	65	62	60	58
240	1,588	1,030	76	73	70	67	65	62	60	57	55
230	1,520	985	73	70	67	65	62	60	57	55	53
220	1,453	942	70	67	64	62	59	57	55	53	51
215	1,420	921	68	65	63	60	58	55	53	51	49
210	1,390	900	66	63	61	59	56	54	52	50	48
205	1,355	878	64	62	60	57	55	53	51	49	47
200	1,320	856	63	60	58	56	54	52	50	48	46
195	1,290	835	61	59	57	54	52	50	48	46	45
190	1,255	814	60	58	55	53	51	49	47	45	44
185	1,225	792	58	56	54	51	49	48	46	44	42
180	1,190	772	57	55	53	51	49	47	45	43	42
175	1,155	750	56	54	52	50	48	46	44	42	41
170	1,123	728	54	52	50	48	46	44	43	41	40
165	1,090	707	53	51	49	47	45	43	41	40	38
160	1,058	685	51	49	47	45	44	42	40	39	37
155	1,025	665	49	48	46	44	42	41	39	37	36
150	990	643	48	46	44	42	41	39	38	36	35
145	956	621	46	44	43	41	39	38	36	35	34
140	925	600	45	43	41	40	38	37	35	34	33

Westinghouse—Type DH-25—Orifice Size 7/64" Drill

Shaft r. p. m.		Elevation in feet above sea level								
Compressor	Motor	Sea level	1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000
		Minimum gauge pressure in pounds to be maintained								
140	755	52	50	48	46	44	42	40	38	36
150	808	55	53	51	49	47	44	42	40	38
160	862	58	56	54	52	49	47	45	42	40
170	916	61	59	57	54	52	49	47	45	42
180	970	65	62	60	57	55	52	49	47	44
190	1,024	68	65	62	60	57	54	52	49	47
200	1,078	71	68	65	63	60	57	54	51	49
210	1,132	74	71	68	65	62	59	56	54	51
220	1,186	77	74	71	68	65	62	59	56	53
230	1,240	80	77	74	71	67	64	61	58	55
240	1,294	83	80	76	73	70	67	63	60	57
250	1,347	86	83	79	76	72	69	66	62	59

§ 230.407 Air gauges.

(a) Air gauges shall be so located that they may be conveniently read by the engineman from his usual position in the operating compartment and shall show main reservoir and brake pipe or equalizing reservoir pressures.

(b) Air gauges shall be tested at least once every three months, and whenever any irregularity is reported. They shall be compared with an accurate dead-weight tester, or test gauge constructed for the purpose of testing gauges, and gauges found incorrect shall be repaired before they are returned to service.

§ 230.408 Testing and cleaning of air brake equipment.

(a) Brake cylinders, slack adjusters, control valves, reducing valves, triple valves, transfer valves, straight air double check valves, brake pipe vent valves, relay valves, magnet valves and electri-pneumatic master controllers shall be cleaned, oiled and tested as often as conditions require to maintain them in safe and suitable condition for service but not less frequently than once every 15 months with the exception of the D-22, UE and PS types which must be cleaned, oiled and tested not less frequently than once every 24 months.

(b) The date of testing or cleaning, and the initials of the shop or station at which the work is done, shall be legibly stenciled in a conspicuous place on the unit, or placed on a card displayed under glass in each unit.

§ 230.409 Brake piston travel.

(a) Minimum brake cylinder piston travel shall be sufficient to provide proper brake shoe clearance when the brakes are released.

(b) On swivel trucks where the brakes on more than one truck are operated by the same cylinder the maximum piston travel shall not exceed 9 inches. Where the cylinder operates the brakes on one truck only and on units equipped with truck mounted brake cylinder the piston travel shall be properly adjusted for that type of brake cylinder.

§ 230.410 Foundation brake gear.

(a) Foundation brake gear shall be maintained to the standard for the unit. Levers, rods, brake beams, hangers, and pins shall not be fouled in any way which will affect the proper operation of the brake. All pins shall be properly secured in place with cotters, split keys, or nuts. Brake shoes must be properly fastened in place, and kept approximately in line with the tread of the wheel.

(b) Provision shall be made to prevent brake beams and bottom rods from dropping to the track structure in the event of failure of the brake beam, hangers, or connections.

§ 230.411 Leakage.

(a) Leakage from main air reservoir and related piping shall not exceed an average of 3 pounds per square inch per minute in a test of 3 minutes' duration, made after the pressure has been reduced 40 percent below maximum pressure.

(b) Brake-pipe leakage shall not exceed 3 pounds per square inch per minute.

(c) With a full service application from maximum brake pipe pressure, and with communication to the brake cylinders closed, the brakes shall remain effectively applied not less than 10 minutes.

§ 230.412 Draw gear.

Draw gear and attachments thereto shall be securely attached and properly maintained. Draw gear consisting of automatic couplers with friction or spring draft gear shall be so maintained that the lost motion in each assemblage, not absorbed by the springs or friction devices, will not exceed ½ inch. Standard couplers measuring 5⅛ inches or more between point of knuckle and guard arm shall not be continued in service.

§ 230.413 Axles; defects.

Driving and truck axles more than ½ inch under original diameter, or with any of the following defects, shall not be continued in service: Seams, cracked or bent axles, or cut journals.

§ 230.414 Gears and pinions.

(a) Exposed gears shall be provided with guards.

(b) Gears or pinions with any of the following defects shall not be continued in service: Loose on shaft; broken, cracked, or with excessively worn teeth; broken or defective rim fastenings; out of alignment or improperly meshed; split gears with loose or missing bolts.

§ 230.415 Spring rigging.

Springs or spring rigging with any of the following defects shall be renewed or repaired: Top leaf broken or two leaves in top half or any three leaves in spring broken (the long side of spring to be considered the top); springs with leaves working in band; broken coil springs; broken, cracked, or badly worn equalizer, hanger, bolt, gib, or pin.

§ 230.416 Lateral motion between wheels and boxes.

The total lateral motion between wheels and boxes on any pair of wheels shall not exceed one inch.

§ 230.417 Trucks.

(a) Truck center plates shall fit properly and be securely fastened. The male center plate shall extend into the female center plate not less than ¾ inch, except on motor trucks constructed to transmit tractive effort through center plate or center pin the male center plate shall extend into the female center plate not less than 1½ inches.

(b) Trucks shall be locked to the unit body and so arranged that the entire truck will lift with the unit body without disengaging the center plates. The attachments shall be of adequate strength and properly maintained. Such provision shall be made on units presently in service and not so equipped when the unit receives general repairs but not later than 24 months after April 1, 1956.

NOTE: Relief from the requirements of this rule will be granted upon an adequate showing by an individual carrier.

(c) Truck bolsters shall be maintained approximately level.

(d) Trucks with any of the following defects shall not be continued in service: Loose column, pedestal, or journal-box bolt; cracked or broken frame, unless properly repaired; loose tie bar; broken or defective motor suspension lug, spring, bar, or bolt; broken or cracked center casting; cracked or broken equalizer, hanger, gib or pin.

(e) Suspension lugs or bars shall be of ample strength to keep motors secured and provision shall be made to prevent nose-supported motors from falling in case of failure of motor supports.

§ 230.418 Side bearings.

(a) Side bearings shall be securely fastened in place. Friction side bearings with springs designed to carry weight shall not be continued in service with more than 25 percent of the springs broken in any one nest.

(b) Friction side bearings unless designed to carry weight shall not be run in contact. Maximum clearance of side bearings shall not exceed ¼ inch on each side, or a total of ½ inch on both sides, except where more than two side bearings are used under the same rigid superstructure, the clearance on one pair of side bearings under the same rigid superstructure shall not exceed ¼ inch on each side or a total of ½ inch on both sides. The other side bearings under the same rigid superstructure may have ½ inch clearance on each side or a total of one inch on both sides. These clearances apply where the spread of the side bearings is 50 inches or less. Where the spread is greater, the side bearing clearance may be increased in proportion.

§ 230.419 Clearance above top of rail.

No part or appliance of unit, except the wheels, contact shoes, and train stop or signal devices shall be less than 2½ inches above the top of rail.

§ 230.420 Specifications for wheels.

(a) Wheels shall be securely pressed on axles, except wheels and axles of special design and construction where other proper and safe means are provided for holding the wheels on the axles. Prick punching, shimming wheel fit, or pins driven in ends of axles will not be permitted.

(b) When wheels are applied, or wheels are turned, the circumference of the wheels on the same axle shall not vary more than 1/16 inch.

(c) Wheels used on standard-gauge track will be out of gauge if the inside gauge of flanges, measured on base line, is less than 53 inches or more than 53½ inches.

(d) The distance back to back of flanges of wheels mounted on the same axle shall not vary more than ¼ inch.

(e) The minimum height of flange measured from tread shall be one inch.

(f) The maximum taper for tread of truck wheels from throat of flange to outside of wheel shall be 5/16 inch.

§ 230.421 Wrought-steel or steel-tired wheels.

Wrought-steel or steel-tired wheels with any of the following defects shall not be continued in service:

(a) Slid flat, when the flat spot is 1½ inches or over in length.

(b) Flanges having flat vertical surface extending one inch or more from the tread, or flanges 15/16 inch thick or less.

(c) Burnt rim, shattered rim, spread rim, sub-surface defect, or shelled tread.

(d) Transverse cracks in tread or flange.

(e) Cracked or broken plate.

(f) Flanges 1½ inches or more from tread to top of flange.

(g) Out of gauge.

(h) Loose on axle.

(i) Wrought-steel wheels one inch or less in thickness at the rim.

(j) Steel-tired wheels with cracked or broken retaining ring, bolt or tire, or with loose tire.

(k) Steel-tired wheels with tread worn to within ¼ inch of the measuring line which is the inside edge of the limit of wear groove as shown in figures 2, 3, and 4.

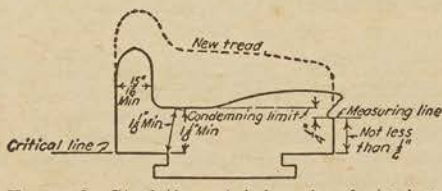


FIGURE 2—Steel tire retaining ring fastening.

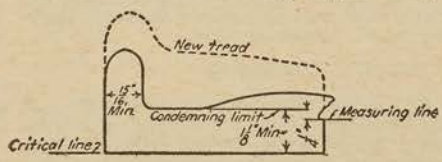


FIGURE 3—Steel tire shrinkage fastening only.



FIGURE 4—Steel tire retaining ring fastening.

§ 230.422 Cast iron or cast steel wheels.

Cast iron or cast steel wheels with any of the following defects shall not be continued in service:

(a) Slid flat, when the flat spot is 1½ inches or over in length.

(b) Flange, plate or bracket, cracked or broken, or with chip from flange exceeding 1½ inches in length and ½ inch in width.

(c) Broken rim, if the tread, measured from the flange at a point 5/8 inch above tread, is less than 3¾ inches in width.

(d) Shelled-out spots one inch long or over, or three shelled-out spots not more than 3 inches apart.

(e) Any seam running lengthwise and within the limit of 3¾ inches from flange.

(f) Flanges having a flat vertical surface extending 7/8 inch or more from the tread, or flange 1 1/16 inches thick, or less, gauged at a point 3/8 inch above the tread.

(g) Wheels with tread worn hollow 5/16 inch or with flanges more than 1½ inches from tread to top of flange.

(h) Cracked hub.

(i) Out of gauge.

(j) Loose on axle.

(k) Cast iron wheels with defective treads on account of brake burn cracks one inch or over in length, or with comby spots ½ inch or over in length.

(l) Cast steel wheels with transverse cracks in treads or flange.

§ 230.423 Windows and operating compartments.

(a) Windows at each end from which a unit may be operated shall be so located and maintained that the engineman will have a clear view of track and signals from his usual position while operating the unit.

(b) Windows located in line of engineman's vision when looking ahead from his usual position when operating the unit shall be of shatter-proof glass and equipped with a power operated wiper that will cover sufficient space to provide a clear view of track and signals ahead and, where frosting occurs, an adequate defrosting device. This equipment shall be installed on all units built after April 1, 1956, and on units presently in service when same receive general repairs but not later than 24 months after April 1, 1956.

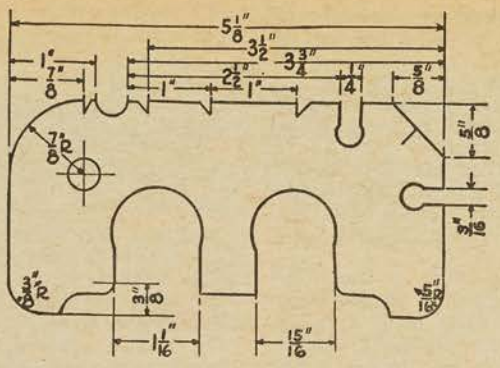


FIGURE 5—Wheel defect gauge.

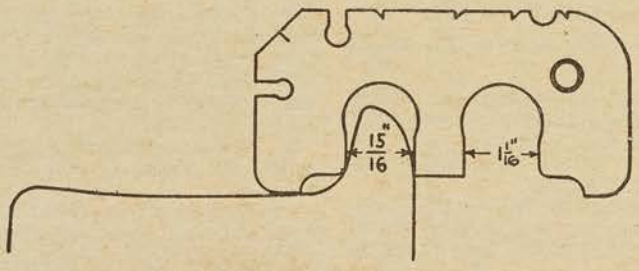


FIGURE 6—Method of gauging worn flanges.

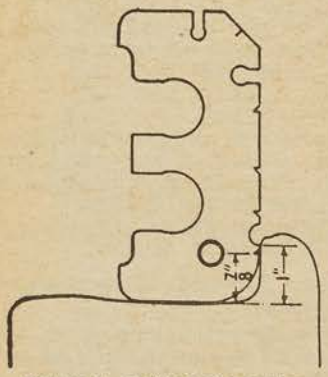


FIGURE 7—Method of gauging worn flanges.

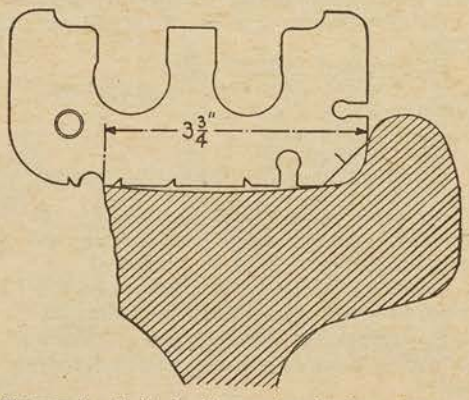


FIGURE 8—Method of gauging broken rims.

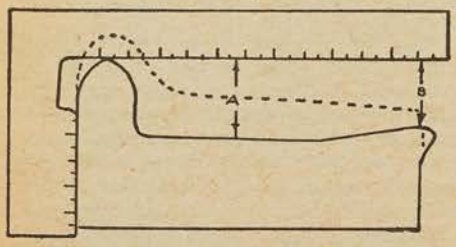


FIGURE 9—Method of measuring tread worn hollow. Tread worn hollow = *A* minus *B* limit, five-sixteenths inch.

(c) Floors of operating compartments shall be kept free from accumulations of oil, waste, or unnecessary obstructions.

(d) Floors of operating compartments shall be heat insulated.

(e) Operating compartments shall be provided with heating arrangements that will maintain therein a temperature of not less than 50 degrees F.

§ 230.424 Pilots.

Pilots, when used, shall be securely attached and properly braced. On approximately straight level track the minimum clearance of pilot above the rail shall be 3 inches, and the maximum clearance 6 inches.

NOTE: Relief from the requirements of this rule will be granted upon an adequate showing by an individual carrier.

§ 230.425 Headlights.

(a) Each unit operated separately and the leading unit of a multiple unit train shall have a headlight which shall afford sufficient illumination to enable a person in the operating compartment who possesses the usual visual capacity required of enginemen to see in a clear atmosphere a dark object as large as a man of average size standing erect at least 800 feet ahead and in front of such headlight; and such headlight must be maintained in good condition.

(b) Such headlights shall be provided with a device, which may be conveniently operated by the engineman, whereby the light from same may be diminished in yards and at stations or when meeting trains.

§ 230.426 Classification and marker lights.

Each unit shall be provided with such classification and marker lights as may be required by the rules of the railroad company operating the unit. When such lights are used they shall be kept clean and be electrically lighted. Such provision shall be made on all units built after April 1, 1956. Units presently in service, which are not so equipped, shall be equipped when the unit receives general repairs but not later than 24 months after April 1, 1956.

§ 230.427 Instrument lights.

(a) Each unit shall have lights which will provide sufficient illumination for the control instruments, meters, and gauges to enable the engineman to make accurate readings from his usual operating position. These lights shall be so located, constructed, and maintained, that light will shine only on those parts requiring illumination. There shall also be a light conveniently located to enable the engineman to easily and accurately read train orders and time tables, and so constructed that it may be readily darkened or extinguished.

(b) Lights shall be so located, constructed or shielded that the light will not interfere with engineman's vision of track and signals.

(c) All lights may be entirely supplied from storage batteries if desired. Where lights are not supplied from storage batteries, there shall be two or more lighting circuits for providing illumination required by paragraphs (a) and (b) of this section. Battery containers shall be properly vented. This provision shall be provided on all units built after April 1, 1956, and on units presently in service when same receive general repairs but not later than 24 months after April 1, 1956.

§ 230.428 Whistle.

Each leading unit shall be provided with a suitable whistle or horn so arranged that it may be conveniently operated by the engineman from his position in the operating compartment.

§ 230.429 Location of headlights and whistle.

Headlights and whistles shall be located in safe and accessible places. Where units are equipped with overhead current collectors, headlights shall be so located, constructed, and arranged that they can be given necessary repairs and attention without requiring a person to mount the roof or become exposed to contact with parts carrying high tension.

§ 230.430 Sanding apparatus.

Where sanding apparatus is used it shall be maintained in proper operating condition. Sand pipes shall be securely

fastened and arranged to deliver the sand on the rails in front of the wheel contact.

§ 230.431 Testing of train signal system.

The train signal system shall be tested and known to be in condition for service before each trip.

§ 230.432 Current collectors.

Current collectors shall be properly insulated from the unit structure for the maximum voltage carried by the conductor.

§ 230.433 Pantographs.

(a) Pantographs shall be so arranged that they can be operated from the engineman's usual and proper place in the operating compartment.

(b) Pantographs which automatically rise when released shall be provided with an automatic locking device that will hold them while in down position.

(c) Each pantograph operating on an overhead trolley wire shall be provided with a device for locking and grounding it when in lowest position, which can be applied and released only from a position where the operator will have a clear view of pantograph and roof without mounting the roof. Such grounding will not be required on units with insulated roofs.

(d) Pantograph shoes with cracked or badly worn contact surface or with defective horn shall not be continued in service.

(e) Leaky or defective pantograph operating cylinder or air line connection shall not be continued in service. Air line connections shall afford proper insulation.

§ 230.434 Trolley poles.

(a) When a unit is equipped with a trolley pole a hook shall be provided that will hold the pole while in down position. This hook shall be securely fastened and properly insulated from the unit structure.

(b) When a unit with a non-insulated roof is equipped with more than one trolley pole, each pole shall be equipped with a device for grounding the pole when it is secured by the hook referred to in paragraph (a) of this section, which can be applied and released only from a position where the operator will have a clear view of the trolley pole and roof without mounting the roof.

(c) Each trolley pole shall be equipped with a trolley pole rope. A retriever or trolley pole catcher shall also be provided.

(d) Where trolley wire has a potential of more than 750 volts, each trolley pole rope shall be insulated from the pole for the maximum voltage carried by the trolley wire.

(e) Trolleys shall not be continued in service if broken or excessively burned, warped, or worn.

§ 230.435 Units with third rail and overhead collectors.

(a) When units are equipped with both third rail and overhead collectors, third-rail shoes shall be de-energized while in yards and at stations when current collection is from overhead conductor and not intermittent from third rail and overhead.

(b) Third-rail shoe beams loose on brackets, split or cracked, or with accumulations of extraneous matter conducive of short circuits shall not be continued in service.

§ 230.436 Emergency pole for operating pantograph and insulation of current collecting apparatus.

(a) Each train of one or more units operated by means of a pantograph shall have a suitable emergency pole for operating the pantograph. This pole shall be protected from moisture while not in use and the part which can be safely handled shall be so marked.

(b) Each unit equipped with third-rail shoes shall have a device that will insulate current collecting apparatus from third rail when desired.

§ 230.437 Lightning arresters.

(a) Where current supply is continuously taken from an overhead conductor and lightning protection is not provided along the line of road that will afford adequate protection for the unit, each unit shall be provided with a suitable lightning arrester. In sections where freezing weather is generally encountered, lightning arresters will not be required on units between November 1 and April 1.

(b) The lightning arrester shall be properly grounded.

§ 230.438 Grounding of noncurrent-carrying parts.

All unguarded noncurrent-carrying metal parts subject to becoming charged which are not thoroughly insulated shall be grounded.

§ 230.439 Guarding of current-carrying parts.

All current-carrying parts connected to circuits with potential of more than 150 volts, except current collectors, shall be insulated, or located or guarded to prevent accidental contact.

§ 230.440 Protection against current-carrying equipment.

All doors and cover plates guarding current-carrying equipment in circuits having a potential of more than 150 volts shall be securely fastened in place, and the inside kept marked with the word "Danger" and the normal voltage of the circuit.

§ 230.441 Hand-operated switches.

(a) All current-carrying, hand-operated switches in circuits having a potential of more than 150 volts, which may be operated while under load shall be enclosed in a cabinet or properly covered. Switches which may not be operated while under load shall be guarded against accidental contact and kept plainly marked with the words "Must not be operated under load" and the voltage of the circuit. New units and units receiving general repairs after April 1, 1956, shall have all current-carrying, hand-operated switches in circuits having a potential of more than 150 volts, which may be operated while under load, enclosed in a cabinet or properly covered and be operative from the outside, and means provided to show whether switches are open or closed.

(b) Circuit breakers, contactors, and fuses shall be maintained in safe and suitable condition for service and shall be so located or guarded that persons will not be injured by their operation.

(c) Oil type circuit breakers shall be equipped with suitable sight glasses or indicators.

§ 230.442 Jumpers or cable connections.

(a) Jumpers or cable connections between units shall not be allowed to hang with one end free.

(b) Cable connections between units and all jumpers shall be thoroughly cleaned, inspected, and tested as often as necessary to maintain them in safe and suitable condition for service, but not less frequently than once each three months. Each jumper carrying current having a potential of 600 volts or more shall be tested by immersing the cable portion in water and subjecting each conductor with another, and with the water, to a difference in potential of not less than one and three-fourths times the normal working voltage for not less than one minute. Date and place of inspection and test shall be legibly stenciled on the jumper or stamped on a tag securely attached to jumper.

(c) Defective cable connections and jumpers shall not be continued in service.

§ 230.443 Cables and wires.

All cables and wires carrying current shall be in proper condition for service.

§ 230.444 Motors and generators.

Motors and generators shall be securely fastened in place and properly maintained.

§ 230.445 Transformers.

Transformers shall be securely fastened in place. Liquid filled transformers and related piping shall be maintained free from leaks and the liquid maintained at proper level in transformer cases.

§ 230.446 Rheostats and grid resistors.

Rheostats and grid resistors shall be maintained in proper condition for service.

§ 230.447 Insulation dielectric test.

Not less than once every year an insulation dielectric test of not less than one minute duration shall be applied to all circuits and parts carrying current with potential of more than 150 volts. The voltage applied to circuits other than motor windings, shall be not less than 75 per cent above the normal working voltage; the voltage applied to windings shall be not less than 50 per cent above the normal working voltage. A careful examination shall be made of any weakness indicated and all defects remedied before the unit is put in use.

§ 230.448 Insulation and electrical connections inspection.

Not less than once every 30 days a careful inspection of all visible insulation and electrical connections shall be made and all defects repaired.

§ 230.449 Filing of specification.

(a) A specification, Form No. 4–A, shall be filed with the Bureau of Railroad Safety, Federal Railroad Administration, for each unit, and a copy kept in the office of the chief mechanical officer of the company operating the unit.

(b) When any change is made which affects the data shown on the specification, a corrected specification or an alteration report, Form No. 19–A, showing such changes, shall be filed within 30 days after the changes are made.

§ 230.450 Transfer between inspection districts.

Where units are transferred from one Federal inspection district to another Federal inspection district, assignment list of units shall be supplied to the United States inspector for each of said districts at least once every three months, showing the unit numbers assigned to their respective districts and the reports required by §§ 230.449 to 230.451, inclusive, shall be sent to the United States inspector on whose list the unit numbers are shown.

§ 230.451 Filing of inspection reports.

(a) Not less than once every 30 days each unit in service shall be inspected in accordance with the law and these rules and instructions, and a report made on Form No. 1–A. This report shall be subscribed and sworn to before an officer authorized to administer oaths, by the inspectors who made the inspection, and by the officer in charge of the unit. Within 10 days after each inspection a duplicate of this report shall be filed with the United States inspector and a copy filed in the office of the mechanical officer.

(b) A copy of the last inspection report shall be kept under glass in a conspicuous place in a compartment in each unit. This must be a duplicate of the report filed with the United States inspector, except it need not be sworn to.

(c) An out-of-service report on Form No. 1–A shall be filed with the United States inspector for each unit which was out of service for an entire calendar month, or was out of service when due for inspection and remained out for the rest of the month. This report shall show the month covered thereby; the name of the railroad; the initials and number of the unit; the place where the unit is out of service; the date removed from service; the reason for being out of service; and shall bear the statement, "Unit will not again be used until inspection is made and report rendered." The report shall give date and place where made.

(d) Out-of-service report shall not be filed until the end of the month covered thereby. It need not be sworn to, but must be signed by the officer in charge of the unit. When out-of-service report has been filed, an inspection must be made and report made on Form No. 1–A before the unit is again returned to service.

§ 230.452 Retirement or change of unit numbers.

(a) When a unit is permanently retired from service a final report shall be filed with the United States inspector. The report shall show the name of the railroad; initials and number of the unit; the disposition made of it, whether scrapped or sold, and if sold, to whom. These reports shall bear the statement, "Unit will not again be used by this company." The report shall give date and place where made and be signed and sworn to by the chief mechanical officer.

(b) When the road number of a unit is changed, the first inspection and repair report rendered thereafter should show in the upper right-hand corner the old and new number:

Old No. 000
New No. XXX

§ 230.453 Extension of time for inspections and tests.

(a) The period of time within which inspections and tests are required to be made may be extended without application as hereinafter provided on units which are out of service for one or more months. Time out of service shall be properly accounted for by out-of-service reports and notations made on the back of each subsequent inspection report and cab card for time claimed out of service. Portions of calendar months out of service will not be counted in granting extensions.

(b) The period of time within which orifice test of compressors is required to be made in accordance with § 230.405 (d), may be extended for a period equal to the full calendar months the unit was out of service since last such test.

(c) The period of time within which hydrostatic and hammer tests are required to be made in accordance with § 230.406, may be extended for a period equal to the full calendar months the unit was out of service since the last such tests provided such service is performed within two consecutive years.

(d) Insulation dielectric tests of circuits, as required by § 230.447, may be extended for a period equal to the full calendar months the unit has been out of service.

§ 230.454 Reporting of accidents.

In the case of an accident resulting from failure of a unit, or any part or appurtenance thereof, or from coming in contact with an electrically energized part or appurtenance thereof, resulting in serious injury or death to one or more persons, the carrier on whose line the accident occurred shall immediately report such accident by telegram to the Director, Bureau of Railroad Safety, Federal Railroad Administration, at his office in Washington, D.C. 20591. Such report should state the nature of the accident, number of persons killed or seriously injured, the place at which it occurred and the place where the unit may be inspected. The telegraphic report shall be confirmed by mail, giving a full detailed report of such accident, stating, as far as may be known, the causes, and giving a complete list of the killed and injured.

§ 230.455 Changes in construction.

Changes in construction which are necessary to meet the requirements of these rules shall be made as rapidly as conditions permit, and all such changes, except as otherwise specified, shall be completed before 6 months after April 1, 1956.

§ 230.456 Safety appliances.

(a) (1) Each unit shall be equipped with the same complement of safety appliances as is required for passenger-train cars included in the classification comparable to it set up in Part 231 of this chapter. In cases where both ends of a unit do not fall into any single classification set up in the above-mentioned order, as amended, each end and the side at each end shall be provided with the same complement of safety appliances as is required for passenger-train cars of the classification within which each belongs.

(2) Units of construction not covered specifically in the above-mentioned order relative to handholds, sill-steps, ladders, and hand-brakes may be considered as of special construction, but shall have, as nearly as possible, the same complement of handholds, sill-steps, ladders, and hand-brakes as are required for cars of the nearest approximate type.

(b) Any unit equipped with a pilot which extends beyond the end of the unit must also be equipped, as near as possible, with the same complement of pilot sill-steps and pilot beam handholds as is required for Steam Locomotives Used in Road Service in Part 231 of this chapter.

(c) Units having headlights which cannot be safely and conveniently reached from end platforms shall be equipped with secure handholds and steps suitable for the use of men in getting to and from such headlights.

NOTE: Relief from the requirements of this rule will be granted upon an adequate showing by an individual carrier.

§ 230.457 Body structure.

(a) Units built new after April 1, 1956 and operated in trains having a total empty weight of 600,000 pounds or more shall have body structure designed to meet or exceed the following minimum specifications:

(1) The unit structure shall resist a minimum static end load of 800,000 pounds at the rear draft stops ahead of the bolster on the center line of draft, without developing any permanent deformation in any member of the unit structure.

(2) An anti-climbing arrangement shall be applied at each end, designed so that coupled units under full compression shall mate in a manner which will resist one unit from climbing the other. This arrangement shall resist

a vertical load of 100,000 pounds without exceeding the yield point of its various parts or its attachments to the unit structure.

(3) The coupler carrier and its connections to the unit structure shall be designed to resist a vertical downward thrust from the coupler shank of 100,000 pounds for any horizontal position of the coupler, without exceeding the yield points of the materials used. When yielding type of coupler carrier is used an auxiliary arrangement shall be provided, designed in accordance with these requirements.

(4) The outside end of each unit shall be provided with two main vertical members, one at each side of the diaphragm opening. Each main member shall have an ultimate shear value of not less than 300,000 pounds at a point even with the top of the underframe member to which it is attached. The attachment of these members at bottom shall be sufficient to develop their full shear value. If reinforcement is used to provide the shear value such reinforcement shall have full value for a distance of 18 inches up from the underframe connection, then taper to a point approximately 30 inches above the underframe connection.

(5) Strength of locking means of truck to unit body shall be not less than the equivalent of an ultimate shear value of 250,000 pounds.

(b) Units built new after April 1, 1956, and operated in trains having a total empty weight of less than 600,000 pounds shall have body structure designed to meet or exceed the following minimum specifications:

(1) The unit structure shall resist a minimum static end load of 400,000 pounds at the rear draft stops ahead of the bolster on the center line of draft, without developing any permanent deformation in any member of the unit structure.

(2) An anti-climbing arrangement shall be applied at each end designed so that coupled units under full compression shall mate in a manner which will resist one unit from climbing the other. This arrangement shall resist a vertical load of 75,000 pounds without exceeding the yield point of its various parts or its attachments to the unit structure.

(3) The coupler carrier and its connections to the unit structure shall be designed to resist a vertical downward thrust from the coupled shank of 75,000 pounds for any horizontal position of the coupler, without exceeding the yield points of the materials used. When a yielding type of coupler carrier is used an auxiliary arrangement shall be provided, designed in accordance with these requirements.

(4) The outside end of each unit shall be provided with two main vertical members, one at each side of the diaphragm opening. Each main member shall have an ultimate shear value of not less than 200,000 pounds at a point even with the top of the underframe member to which it is attached. The attachments of these members at bottom shall be sufficient to develop their full shear value. If reinforcement is used to provide the shear value such reinforcement shall have full value for a distance of 18 inches up from the underframe connection, then taper to a point approximately 30 inches above the underframe connection.

(5) Strength of locking means of truck to unit body shall be not less than the equivalent of an ultimate shear value of 250,000 pounds.

§ 230.458 Report forms.[1]

(a) Monthly inspection and repair report, Form No. 1–A, shall be printed on a good grade of pale blue paper, size 6 by 9 inches.

(b) Daily inspection and repair reports, Forms Nos. 2–B and 2–C.

(c) Specification, Form No. 4–A, shall be size 8 by 10½ inches.

(d) Alteration report, Form No. 19–A, shall be size 8 by 10½ inches.

PART 231—RAILROAD SAFETY APPLIANCE STANDARDS

Sec.

231.1 Box and Other House Cars. (Does not include cars with roofs 16 feet 10 inches or more above top of rail.)
231.2 Hopper cars and high-side gondolas with fixed ends.
231.3 Drop-end high-side gondola cars.
231.4 Fixed-end low-side gondola and low-side hopper cars.
231.5 Drop-end low-side gondola cars.
231.6 Flat cars.
231.7 Tank cars with side platforms.
231.8 Tank cars without side sills and tank cars with short side sills and end platforms.
231.9 Tank cars without end sills.
231.10 Caboose cars with platforms.
231.11 Caboose cars without platforms.
231.12 Passenger-train cars with wide vestibules.
231.13 Passenger-train cars with open-end platforms.
231.14 Passenger-train cars without end platforms.
231.15 Steam locomotives used in road service.
231.16 Steam locomotives used in switching service.
231.17 Specifications common to all steam locomotives.
231.18 Cars of special construction.
231.19 Definition of "Right" and "Left."
231.20 Variation in size permitted.
231.21 Tank cars without underframes.
231.22 Operation of track motor cars.
231.23 Unidirectional passenger-train cars adaptable to van-type semi-trailer use.
231.24 Box and Other House Cars with roofs, 16 feet 10 inches or more above top of rail.
231.25 Track motorcars (self-propelled 4-wheel cars which can be removed from the rails by men).
231.26 Pushcars.
231.27 Box and Other House Cars without roof hatches (does not include cars with roofs 16 feet 10 inches or more above top of rail).
231.28 Box and Other House Car with roof hatches.

AUTHORITY: The provisions of this Part 231 issued under secs. 2, 4, and 6, 27 Stat. 531, as amended, secs. 1 and 3, 32 Stat. 943, as amended, secs. 1–6, 36 Stat. 298–299, as amended, sec. 6 (e) and (f), 80 Stat. 939; 45 U.S.C. 2, 4, 6, 8, 10, 11–16, 49 U.S.C. 1655.

[1] Filed with the Office of the Federal Register as part of the original document.

§ 231.1 Box and Other House Cars. (Does not include cars with roofs 16 feet 10 inches or more above top of rail.)

NOTE: Cars of this type built on or before April 1, 1966, or under construction prior thereto and placed in service before October 1, 1966, shall be equipped as nearly as possible on or before April 1, 1974, with the same complement of safety appliances, depending upon type, as is specified in § 231.27 for box and other house cars without roof hatches, or in § 231.28 for box and other house cars with roof hatches, and cars built after April 1, 1966, or under construction prior thereto and placed in service after October 1, 1966, shall be equipped, depending upon type, as specified in § 231.27 for box and other house cars without roof hatches or in § 231.28 for box and other house cars with roof hatches.

(a) *Hand brakes*—(1) *Number.* (i) Each box or other house car shall be equipped with an efficient hand brake which shall operate in harmony with the power brake thereon.

(ii) The hand brake may be of any efficient design, but must provide the same degree of safety as the design shown on plate A.

(2) *Dimensions.* (i) The brake shaft shall be not less than 1¼ inches in diameter, of wrought iron or steel without weld.

(ii) The brake wheel may be flat or dished, not less than 15, preferably 16, inches in diameter, of malleable iron, wrought iron, or steel.

(3) *Location.* (i) The hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car, to the left of and not less than 17 nor more than 22 inches from center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(iv) Carriers are not required to change the location of brake wheels and brake shafts on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* (i) There shall be not less than 4 inches clearance around rim of brake wheel.

(ii) Outside edge of brake wheel shall be not less than 4 inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill.

(iii) Top brake-shaft support shall be fastened with not less than ½-inch bolts or rivets. (See plate A.)

(iv) A brake-shaft step shall support the lower end of brake shaft. A brake-shaft step which will permit the brake chain to drop under the brake shaft shall not be used. U-shaped form of brake-shaft step is preferred. (See plate A.)

(v) Brake shaft shall be arranged with a square fit at its upper end to secure the hand-brake wheel; said square fit shall be not less than seven-eighths

of an inch square. Square-fit taper, nominally 2 in 12 inches. (See plate A.)

(vi) Brake chain shall be of not less than ⅜-, preferably 7/16-, inch wrought iron or steel, with a link on the brake-rod end of not less than 7/16-, preferably ½-, inch wrought iron or steel, and shall be secured to brake-shaft drum by not less than ½-inch hexagon or square-headed bolt. Nut on said bolt shall be secured by riveting end of bolt over nut. (See plate A.)

(vii) Lower end of brake shaft shall be provided with a trunnion of not less than ¾-, preferably 1, inch in diameter extending through brake-shaft step and held in operating position by a suitable cotter or ring. (See plate A.)

(viii) Brake-shaft drum shall be not less than 1½ inches in diameter. (See plate A.)

(ix) Brake ratchet wheel shall be secured to brake shaft by a key or square fit; said square fit shall be not less than 15/16 inches square. When ratchet wheel with square fit is used, provision shall be made to prevent ratchet wheel from rising on shaft to disengage brake pawl. (See plate A.)

(x) Brake ratchet wheel shall be not less than 5¼, preferably 5½, inches in diameter and shall have not less than 14, preferably 16, teeth. (See plate A.)

(xi) If brake ratchet wheel is more than 36 inches from brake wheel, a brake-shaft support shall be provided to support this extended upper portion of brake shaft; said brake-shaft support shall be fastened with not less than ½-inch bolts or rivets.

(xii) The brake pawl shall be pivoted upon a bolt or rivet not less than five-eighths of an inch in diameter, or upon a trunnion secured by not less than ½-inch bolt or rivet, and there shall be a rigid metal connection between brake shaft and pivot of pawl.

(xiii) Brake wheel shall be held in position on brake shaft by a nut on a threaded extended end of brake shaft; said threaded portion shall be not less than three-fourths of an inch in diameter; said nut shall be secured by riveting over or by the use of a lock nut or suitable cotter.

(xiv) Brake wheel shall be arranged with a square fit for brake shaft in hub of said wheel; taper of said fit, nominally 2 in 12 inches. (See plate A.)

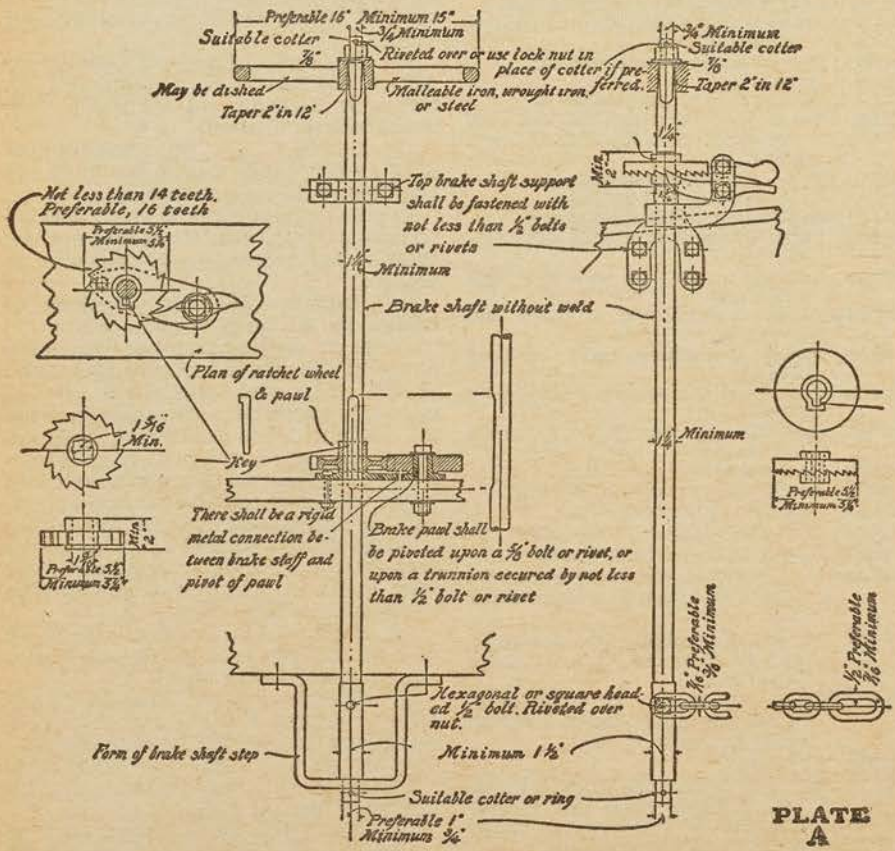


PLATE A

(b) *Brake step.* If brake step is used, it shall be not less than 28 inches in length. Outside edge shall be not less than 8 inches from face of car and not less than 4 inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill.

(1) *Manner of application.* Brake step shall be supported by not less than two metal braces having a minimum cross-sectional area ⅜ by 1½ inches or equivalent, which shall be securely fastened to body of car with not less than ½-inch bolts or rivets.

(c) *Running boards*—(1) *Number.* One longitudinal running board. On outside-metal-roof cars two latitudinal extensions.

(2) *Dimensions.* Longitudinal running board shall be not less than 18 and preferably 20 inches in width. Latitudinal extensions shall be not less than 24 inches in width. Wooden running boards or extensions hereafter installed shall be constructed of wood not less thn 1⅛ inches in thickness.

(3) *Location.* Full length of car, center of roof. On outside-metal-roof cars there shall be two latitudinal extensions from longitudinal running board to ladder locations, except on refrigerator cars where such latitudinal extensions can not be applied on account of ice hatches.

(4) *Manner of application.* (i) Running board shall be continuous from end to end and not cut or hinged at any point: *Provided,* That the length and width of running board may be made up of a number of pieces securely fastened to saddle-blocks with screws, bolts, or rivets.

(ii) The ends of longitiudinal running board shall be not less than 6 nor more than 10 inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or endsill; and if more than 4 inches from edge of roof of car, shall be securely supported their full width by substantial metal braces.

(iii) Running board shall be securely fastened to car and be made of wood or of material which provides the same as or a greater degree of safety than wood of 1⅛ inches thickness. When made of material other than wood the tread surface shall be of anti-skid design and constructed with sufficient open space to permit the elimination of snow and ice from the tread surface.

(d) *Sill steps*—(1) *Number.* Four.

(2) *Dimensions.* Minimum cross-sectional area ½ by 1½ inches, or equivalent, of wrought iron or steel. Minimum length of tread, 10, preferably 12, inches. Minimum clear depth, 8 inches.

(3) *Location.* (i) One near each end on each side of car, so that there shall be not more than 18 inches from end of car to center of tread of sill step.

(ii) Outside edge of tread of step shall be not more than 4 inches inside of face of side of car, preferably flush with side of car.

(iii) Tread shall be not more than 24, preferably not more than 22, inches above the top of rail.

(iv) Carriers are not required to change location of sill steps on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* (i) Sill steps exceeding 21 inches in depth shall have an additional tread.

(ii) Sill steps shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets.

(e) *Ladders*—(1) *Number.* Four.

(2) *Dimensions.* (i) Minimum clear length of tread: Side ladders 16 inches; end ladders 14 inches. Maximum spacing between ladder treads, 19 inches.

(ii) Top ladder tread shall be located not less than 12 nor more than 18 inches from roof at eaves.

(iii) Spacing of side ladder treads shall be uniform within a limit of 2 inches from top ladder tread to bottom tread of ladder.

(iv) Maximum distance from bottom tread of side ladder to top tread of sill step, 21 inches.

(v) End ladder treads shall be spaced to coincide with treads of side ladders, a variation of 2 inches being allowed. Where construction of car will not permit the application of a tread of end ladder to coincide with bottom tread of side ladder, the bottom tread of end ladder must coincide with second tread from bottom of side ladder.

(vi) Hardwood treads, minimum dimensions 1½ by 2 inches.

(vii) Iron or steel treads, minimum diameter five-eighths of an inch.

(viii) Minimum clearance of treads, 2, preferably 2½, inches.

(3) *Location.* (i) One on each side, not more than 8 inches from right end of car; one on each end, not more than 8 inches from left side of car; measured from inside edge of ladder stile or clearance of ladder treads to corner of car.

(ii) Carriers are not required to change the location of ladders on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(iii) Carriers are not required to change the end ladders on steel or steel-underframe cars with platform end sill, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) *Manner of application.* (i) Metal ladders without stiles near corners of cars shall have foot guards or upward projections not less than 2 inches in height near inside end of bottom treads.

(ii) Stiles of ladders, projecting 2 or more inches from face of car, will serve as foot guards.

(iii) Ladders shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets. Three-eighths-inch bolts may be used for wooden treads which are gained into stiles.

(f) *End ladder clearance.* (1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel, brake step, running board or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions herein noted, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

(g) *Roof handholds* — (1) Number. (i) One over each ladder.

(ii) One right-angle handhold may take the place of two adjacent specified roof handholds, provided the dimensions and locations coincide, and that an extra leg is securely fastened to car at point of angle.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches. Minimum clearance, 2, preferably 2½ inches.

(3) *Location.* (i) On roof of car, one parallel to treads of each ladder, not less than 8 nor more than 15 inches from edge of roof, except on refrigerator cars where ice hatches prevent, when location may be nearer edge of roof.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handhold under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Roof handholds shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets.

(h) *Side handholds*—(1) *Number.* Four. (Tread of side ladder is a side handhold.)

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches, preferably 24 inches. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* (i) Horizontal, one near each end on each side of car. Side handholds shall be not less than 24 nor more than 30 inches above center line of coupler, except as provided above, where tread of ladder is a handhold. Clearance of outer end of handhold shall be not more than 8 inches from end of car.

(ii) Carriers are not required to change the location of handholds, on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Side handholds shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets.

(i) *Horizontal end handholds*—(1) *Number.* Eight or more, four on each end of car. (Tread of end ladder is an end handhold.)

(2) *Dimensions.* (i) Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches, preferably 24 inches.

(ii) A handhold 14 inches in length may be used where it is impossible to use one 16 inches in length.

(iii) Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* (i) One near each side on each end of car, not less than 24 nor more than 30 inches above center line of coupler, except as provided above, when tread of end ladder is an end handhold. Clearance of outer end of handhold shall be not more than 8 inches from side of car.

(ii) One near each side of each end of car on face of end sill or sheathing over end sill, projecting outward or downward. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(iii) On each end of cars with platform end sills 6 or more inches in width, measured from end post or siding and extending entirely across end of car, there shall be one additional end handhold not less than 24 inches in length, located near center of car, not less than 30 nor more than 60 inches above platform end sill.

(iv) Carriers are not required to change the location of handholds, on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Horizontal end handholds shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets.

(j) *Vertical end handholds*—(1) *Number.* Two on full-width platform end-sill cars, as heretofore described.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 18, preferably 24, inches. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* (i) One on each end of car opposite ladder, not more than 8 inches from side of car; clearance of bottom end of handhold shall be not less than 24 nor more than 30 inches above center line of coupler.

(ii) Carriers are not required to change the location of handholds, on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Vertical end handholds shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets.

(k) *Uncoupling levers*—(1) *Number.* Two. Uncoupling levers may be either single or double, and of any efficient design.

(2) *Dimensions.* (i) Handles of uncoupling levers, except those shown on

plate B or of similar designs, shall be not more than 6 inches from sides of car.

(ii) Uncoupling levers of design shown on plate B and of similar designs shall conform to the following prescribed limits:

(iii) Handles shall be not more than 12, preferably 9, inches from sides of cars. Center lift arms shall be not less than 7 inches long.

(iv) Center of eye at end of center lift arm shall be not more than 3½ inches beyond center of eye of uncoupling pin of coupler when horn of coupler is against the buffer block or end sill. (See plate B.)

(v) Ends of handles shall extend not less than 4 inches below bottom of end sill or shall be so constructed as to give a minimum clearance of 2 inches around handle. Minimum drop of handles shall be 12 inches; maximum, 15 inches over all. (See plate B.)

(vi) Handles of uncoupling levers of the "rocking" or "push-down" type shall be not less than 18 inches from top of rail when lock block has released knuckle, and a suitable stop shall be provided to prevent inside arm from flying up in case of breakage.

(3) *Location.* One on each end of car. When single lever is used, it shall be placed on left side of end of car.

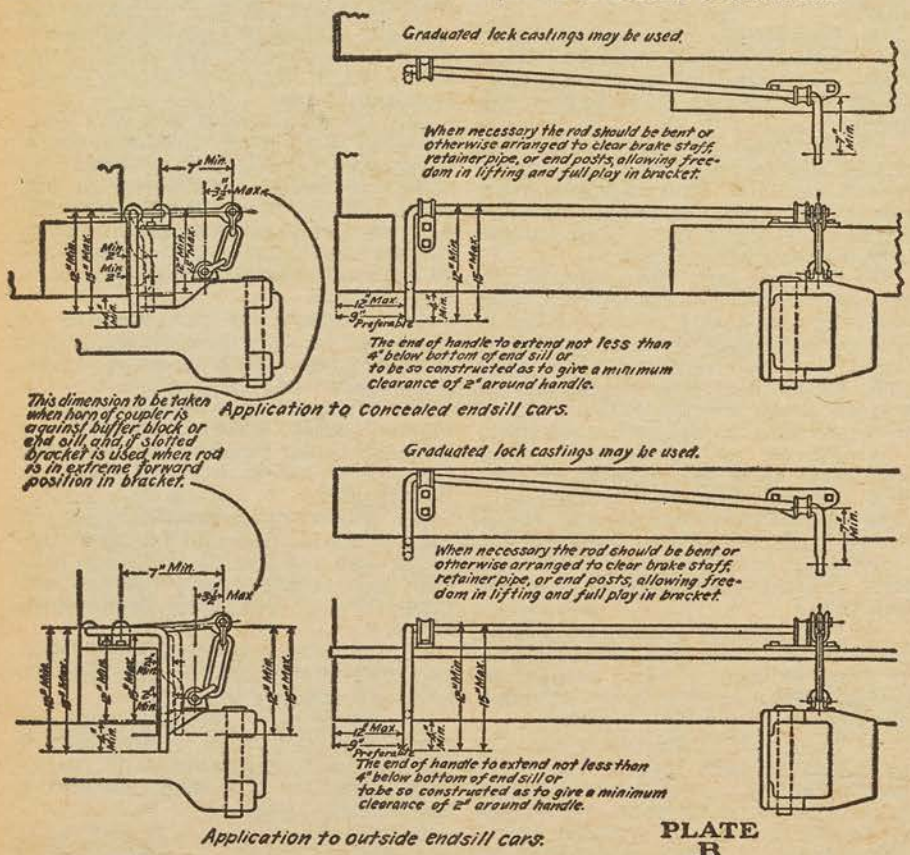


PLATE B

§ 231.2 Hopper cars and high-side gondolas with fixed ends.

(Cars with sides more than 36 inches above the floor are high-side cars.)

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1 (a) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (a) (2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of, and not more than 22 inches from, center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(iv) Carriers are not required to change the location of brake wheels and brake shafts on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (a) (4)).

(b) *Brake step.* Same as specified for "Box and other house cars" (see § 231.1 (b)).

(c) *Sill steps.* Same as specified for "Box and other house cars" (see § 231.1 (d)).

(d) *Ladders*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1 (e) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (e) (2)), except that top ladder tread shall be located not more than 4 inches from top of car.

(3) *Location.* Same as specified for "Box and other house cars" (see § 231.1 (e) (3)).

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (e) (4)).

(e) *Side handholds.* Same as specified for "Box and other house cars" (see § 231.1 (h)).

(f) *Horizontal end handholds.* Same as specified for "Box and other house cars" (see § 231.1 (i)).

(g) *Vertical end handholds.* Same as specified for "Box and other house cars" (see § 231.1 (j)).

(h) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1 (k)).

(i) *End-ladder clearance.* (1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel, brake step, or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions herein noted, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.3 Drop-end high-side gondola cars.

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(a) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (a) (2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (a) (4)).

(b) *Sill steps.* Same as specified for "Box and other house cars" (see § 231.1 (d)).

(c) *Ladders*—(1) *Number.* Two.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (e) (2)), except that top ladder tread shall be located not more than 4 inches from top of car.

(3) *Location.* (i) One on each side, not more than 8 inches from right end of car, measured from inside edge of ladder stile or clearance of ladder treads to corner of car.

(ii) Carriers are not required to change the location of ladders on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (e) (4)).

(d) *Side handholds.* Same as specified for "Box and other house cars" (see § 231.1 (h)).

(e) *Horizontal end handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (i) (2)).

(3) *Location.* (i) One near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (i) (4)).

(f) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1 (k)).

(g) *End ladder clearance.* (1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph, shall extend beyond the outer face or buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.4 Fixed-end low-side gondola and low-side hopper cars.

(Cars with sides 36 inches or less above the floor are low-side cars.)

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (a) (2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car, to the left of and not more than 22 inches from center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(iv) Carriers are not required to change the location of brake wheels and brake shafts on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (a) (4)).

(b) *Brake step.* Same as specified for "Box and other house cars" (see § 231.1 (b)).

(c) *Sill steps.* Same as specified for "Box and other house cars" (see § 231.1 (d)).

(d) *Side handholds* — (1) *Number.* Same as specified for "Box and other house cars" (see § 231.1 (h) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (h) (2)).

(3) *Location.* (i) Horizontal, one near each end on each side of car, not less than 24 nor more than 30 inches above center line of coupler, if car construction will permit, but handhold shall not project above top of side. Clearance of outer end of handhold shall be not more than 8 inches from end of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (h) (4)).

(e) *Horizontal end handholds*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1 (i) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (i) (2)).

(3) *Location.* (i) One near each side on each end of car, not less than 24 nor more than 30 inches above center line of coupler, if car construction will permit. Clearance of outer end of handhold shall be not more than 8 inches from side of car.

(ii) One near each side of each end of car on face of end sill, projecting outward or downward. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (i) (4)).

(f) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1 (k)).

(g) *End-ladder clearance.* (1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake step, brake wheel or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.5 Drop-end low-side gondola cars.

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(a) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (a) (2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (a) (4)), provided that top brake-shaft support may be omitted.

(b) *Sill steps.* Same as specified for "Box and other house cars" (see § 231.1 (d)).

(c) *Side handholds*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1 (h) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (h) (2)).

(3) *Location.* (i) Horizontal, one near each end on each side of car, not less than 24 nor more than 30 inches above center line of coupler, if car construction will permit, but handhold shall not

project above top of side. Clearance of outer end of handhold shall be no more than 8 inches from end of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (h) (4)).

(d) *End handholds* — (1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (i) (2)).

(3) *Location.* (i) Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (i) (4)).

(e) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1 (k)).

(f) *End-ladder clearance.* (1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.6 Flat cars.

(Cars with sides 12 inches or less above the floor may be equipped the same as flat cars.)

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1 (a) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231 (a) (2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on the end of car to the left of center, or on side of car not more than 36 inches from right-hand end thereof.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(iv) Carriers are not required to change the location of brake wheels and brake shafts on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (a) (4)).

(b) *Sill steps.* Same as specified for "Box and other house cars" (see § 231.1 (d)).

(c) *Side handholds*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1 (h) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (h) (2)).

(3) *Location.* (i) Horizontal, one on face of each side sill near each end. Clearance of outer end of handhold shall be not more than 12 inches from end of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (h) (4)).

(d) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (i) (2)).

(3) *Location.* (i) Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (i) (4).

(e) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1 (k).

§ 231.7 Tank cars with side platforms.

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" see § 231.1(a) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (a) (2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (a) (4)).

(b) *Sill steps.* Same as specified for "Box and other house cars" (see § 231.1 (d)).

(c) *Side handholds*—(1) *Number.* Four or more.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (h) (2)).

(3) *Location.* (i) Horizontal, one on face of each side sill near each end. Clearance of outer end of handhold shall be not more than 12 inches from end of car.

(ii) If side safety railings are attached to tank or tank bands, four additional vertical handholds shall be applied, one as nearly as possible over each sill step and securely fastened to tank or tank-band.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (h) (4)).

(d) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (i) (2)).

(3) *Location.* (i) Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (i) (4)).

(e) *Tank-head handholds*—(1) *Number.* Two. (Not required if safety railing runs around ends of tank.)

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably 2½, inches. Clear length of handholds shall extend to within 6 inches of outer diameter of tank at point of application.

(3) *Location.* (i) Horizontal, one across each head of tank not less than 30 nor more than 60 inches above platform.

(ii) Carriers are not required to change the location of handholds on cars

in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Tank-head handholds shall be securely fastened.

(f) *Safety railings*—(1) *Number.* One continuous safety railing running around sides and ends of tank, securely fastened to tank or tank bands at ends and sides of tank; or two running full length of tank at sides of cars supported by posts.

(2) *Dimensions.* Not less than three-fourths of an inch, iron.

(3) *Location.* Running full length of tank either at side supported by posts or securely fastened to tank or tank bands, not less than 30 nor more than 60 inches above platform.

(4) *Manner of application.* Safety railings shall be securely fastened to tank body, tank bands, or posts.

(g) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1 (k)).

(h) *End-ladder clearance.* (1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake-shaft brackets, brake wheel or uncoupling level shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.8 Tank cars without side sills and tank cars with short side sills and end platforms.

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (a) (2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) *Running boards*—(1) *Number.* One continuous running board around sides and ends; or two running full length of tank, one on each side.

(2) *Dimensions.* Minimum width on sides, 10 inches. Minimum width on ends, 6 inches.

(3) *Location.* Continuous around sides and ends of cars. On tank cars having end platforms extending to bolsters, running boards shall extend from center to center of bolsters, one on each side.

(4) *Manner of application.* (i) If side running boards are applied below center of tank, outside edge of running boards shall extend not less than 7 inches beyond bulge of tank.

(ii) The running boards at ends of car shall be not less than 6 inches from a point vertically above the inside face of knuckle when closed with coupler horn against the buffer block, end sill or back stop.

(iii) Running boards shall be securely fastened to tank or tank bands.

(c) *Sill steps*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(d)(1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (d) (2)).

(3) *Location.* (i) One near each end on each side under side handhold.

(ii) Outside edge of tread of step shall be not more than 4 inches inside of face of side of car, preferably flush with side of car.

(iii) Tread shall be not more than 24, preferably not more than 22, inches above the top of rail.

(iv) Carriers are not required to change the location of sill steps on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed in said order.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (d) (4)).

(d) *Ladders.* If running boards are so located as to make ladders necessary.)

(1) *Number.* Two on cars with continuous running boards. Four on cars with side running boards.

(2) *Dimensions.* (i) Minimum clear length of tread, 10 inches. Maximum spacing of treads, 19 inches. Hardwood treads, minimum dimensions, 1½ by 2 inches.

(ii) Wrought iron or steel treads, minimum diameter five-eighths of an inch. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* On cars with continuous running boards, one at right end of each side. On cars with side running boards, one at each end of each running board.

(4) *Manner of application.* Ladders shall be securely fastened with not less than ½-inch bolts or rivets.

(e) *Side handholds*—(1) *Number.* Four or more.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (h) (2)).

(3) *Location.* (i) Horizontal, one on face of each side sill near each end on tank cars with short side sills, or one attached to top of running board projecting outward above sill steps or ladders on tank cars without side sills. Clearance of outer end of handhold shall be not more than 12 inches from end of car.

(ii) If side safety railings are attached to tank or tank bands four additional vertical handholds shall be applied, one as nearly as possible over each sill step and securely fastened to tank or tank bands.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (h) (4)).

(f) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (i) (2)).

(3) *Location.* (i) Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (i) (4)).

(g) *Tank-head handholds*—(1) *Number.* Two. (Not required if safety railing runs around ends of tank.)

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* (i) Horizontal, one across each head of tank not less than 30 nor more than 60 inches above platform on running board. Clear length of handholds shall extend to within 6 inches of outer diameter of tank at point of application.

(ii) Carriers are not required to change the location of handholds on cars in service July 7, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Tank-head handholds shall be securely fastened.

(h) *Safety railings*—(1) *Number.* One running around sides and ends of tank or two running full length of tank.

(2) *Dimensions.* Minimum diameter, seven-eighths of an inch, wrought iron or steel. Minimum clearance, 2½ inches

(3) *Location.* Running full length of tank, not less than 30 nor more than

60 inches above platform or running board.

(4) *Manner of application.* Safety railings shall be securely fastened to tank or tank bands and secured against end shifting.

(i) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1 (k)).

(j) *End-ladder clearance.* (1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake-shaft brackets, brake wheel, running boards or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same, above end sills, other than exceptions herein noted, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.9 Tank cars without end sills.

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(a) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1(a) (2)).

(3) *Location.* Each hand brake shall be so located that it can be safely operated while car is in motion. The brake shaft shall be located on end of car to the left of center.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1(a) (4)).

(b) *Brake step.* Same as specified for "Box and other house cars" (see § 231.1 (b)).

(c) *Running boards*—(1) *Number.* One.

(2) *Dimensions.* Minimum width on sides, 10 inches. Minimum width on ends, 6 inches.

(3) *Location.* Continuous around sides and ends of tank.

(4) *Manner of application.* (i) If running boards are applied below center of tank, outside edge of running boards shall extend not less than 7 inches beyond bulge of tank.

(ii) Running boards at ends of car shall be not less than 6 inches from a point vertically above the inside face of knuckle when closed with coupler horn against the buffer block, end sill or back stop.

(iii) Running boards shall be securely fastened to tank or tank bands.

(d) *Sill steps*—(1) *Number.* Four. (If tank has high running boards, making ladders necessary, sill steps must meet ladder requirements.)

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (d) (2)).

(3) *Location.* (i) One near each end on each side, flush with outside edge of running board as near end of car as practicable.

(ii) Tread not more than 24, preferably not more than 22, inches above the top of rail.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* (i) Steps exceeding 18 inches in depth shall have an additional tread and be laterally braced.

(ii) Sill steps shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with ½-inch rivets.

(e) *Side handholds*—(1) *Number.* Four or more.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (h) (2)).

(3) *Location.* (i) Horizontal, one near each end on each side of car over sill step on running board, not more than 2 inches back from outside edge of running board, projecting downward or outward.

(ii) Where such side handholds are more than 18 inches from end of car, an additional handhold must be placed near each end on each side not more than 30 inches above center line of coupler.

(iii) Clearance of outer end of handhold shall be not more than 12 inches from end of car.

(iv) If safety railings are on tank, four additional vertical handholds shall be applied, one over each sill step on tank.

(v) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1(h) (4)).

(f) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1(i) (2)).

(3) *Location.* (i) Horizontal, one near each side on each end of car on running board, not more than 2 inches back from edge of running board projecting downward or outward, or on end of tank not more than 30 inches above center line of coupler.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1(i) (4)).

(g) *Safety railings*—(1) *Number.* One.

(2) *Dimensions.* Minimum diameter, seven-eighths of an inch, wrought iron or steel. Minimum clearance, 2½ inches.

(3) *Location.* Saftey railings shall be continuous around sides and ends of car, not less than 30 nor more than 60 inches above running board.

(4) *Manner of application.* Safety railings shall be securely fastened to tank or tank bands, and secured against end shifting.

(h) *Uncoupling levers*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(k) (1).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1(k) (2)), except that minimum length of uncoupling lever shall be 42 inches, measured from center line of end of car to handle of lever.

(3) *Location.* Same as specified for "Box and other house cars" (see § 231.1 (k) (3)), except that uncoupling lever shall be not more than 30 inches above center line of coupler.

(i) *End-ladder clearance.* (1) No part of car above buffer block within 30 inches from side of car, except brake shaft, brake-shaft brackets, brake wheel or uncoupling lever shall extend to within 12 inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or back stop, and no other part of end of car or fixtures on same, above buffer block, other than exceptions herein noted, shall extend beyond the face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

§ 231.10 Caboose cars with platforms.

(a) *Hand brakes*—(1) *Number.* (i) Each caboose car shall be equipped with an efficient hand brake which shall operate in harmony with the power brake thereon.

(ii) The hand brake may be of any efficient design, but must provide the same degree of safety as the design shown on plate A.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1(a) (2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft on caboose cars with platforms shall be located on platform to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are

renewed, at which time they must be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (a) (4)).

(b) *Running boards*—(1) *Number.* One longitudinal running board.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (c) (2)).

(3) *Location.* (i) Full length of car, center of roof. (On caboose cars with cupolas, longitudinal running boards shall extend from cupola to ends of roof.)

(ii) Outside - metal - roof - cars shall have latitudinal extensions leading to ladder locations.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (c) (4)).

(c) *Ladders*—(1) *Number.* Two.

(2) *Dimensions.* None specified.

(3) *Location.* One on each end.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (e) (4)).

(d) *Roof handholds*—(1) *Number.* One over each ladder. Where stiles of ladders extend 12 inches or more above roof, no other roof handholds are required.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (g) (2)).

(3) *Location.* (i) On roof of caboose, in line with and running parallel to treads of ladder, not less than 8 nor more than 15 inches from edge of roof.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (g) (4)).

(e) *Cupola handholds*—(1) *Number.* One or more.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* (i) One continuous handhold extending around top of cupola not more than 3 inches from edge of cupola roof.

(ii) Four right-angle handholds, one at each corner, not less than 16 inches in clear length from point of angle, may take the place of the one continuous handhold specified, if locations coincide.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Cupola handholds shall be securely fastened with not less than ½-inch bolts with nuts outside and riveted over or with not less than ½-inch rivets.

(f) *Side handholds*—(1) *Number.* Four.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 36 inches. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* (i) One near each end on each side of car, curving downward toward center of car from a point not less than 30 inches above platform to a point not more than 8 inches from bottom of car. Top end of handhold shall be not more than 8 inches from outside face of end sheathing.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (h) (4)).

(g) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (i) (2)).

(3) *Location.* (i) Horizontal, one near each side on each end of car on face of platform end sill. Clearance of outer end of handhold shall be not more than 16 inches from end of platform end sill.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (i) (4)).

(h) *End-platform handholds* — (1) *Number.* Four.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* (i) One right-angle handhold on each side of each end extending horizontally from door post to corner of car at approximate height of platform rail, then downward to within 12 inches of bottom of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Handholds shall be securely fastened with bolts, screws, or rivets.

(i) *Caboose-platform steps.* Safe and suitable box steps leading to caboose platforms shall be provided at each corner of caboose. Lower tread of step shall be not more than 24 inches above top of rail.

(j) *Uncoupling levers.* Same as specified for "Box and other house cars" (see (§ 231.1(k)).

§ 231.11 Caboose cars without platforms.

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) *Location.* (i) Each hand brake shall be so located that it can be safely operated while car is in motion.

(ii) The brake shaft on caboose cars without platforms shall be located on end of car to the left of center.

(iii) Carriers are not required to change the brakes from right to left side on steel or steel-underframe cars with platform end sills, in service July 1, 1911, except when such appliances are renewed, at which time they must be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) *Brake step.* Same as specified for "Box and other house cars" (see § 231.1 (b)).

(c) *Running boards*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1 (c) (1)).

(2) *Dimension.* Same as specified for "Box and other house cars" (see § 231.1 (c) (2)).

(3) *Location.* (i) Full length of car, center of roof. (On caboose cars with cupolas, longitudinal running boards shall extend from cupola to ends of roof.)

(ii) Outside-metal-roof cars shall have latitudinal extensions leading to ladder locations.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (c) (4)).

(d) *Sill steps.* Same as specified for "Box and other house cars" (see § 231.1 (d)).

(e) *Side-door steps*—(1) *Number.* Two. (If caboose has side doors.)

(2) *Dimensions.* Minimum length, 5 feet. Minimum width, 6 inches. Minimum thickness of tread, 1½ inches. Minimum height of back stop, 3 inches. Maximum height from top of rail to top of tread, 24 inches.

(3) *Location.* One under each side door.

(4) *Manner of application.* Side-door steps shall be supported by 2 iron brackets having a minimum cross-sectional area ⅞ by 3 inches or equivalent, each of which shall be securely fastened to car by not less than two ¾-inch bolts.

(f) *Ladders*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (e) (2)).

(3) *Location.* Same as specified for "Box and other house cars" (see § 231.1 (e) (3), except when caboose has side doors, then side ladders shall be located not more than 8 inches from doors.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (e) (4)).

(g) *End-ladder clearance.* (1) No part of car above end sills within 30 inches from side of car, except buffer block, brake shaft, brake wheel, brake step, running board, or uncoupling lever shall extend to within 12 inches of a vertical plane, parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same above end sills, other than exceptions noted in this subparagraph, shall extend beyond the outer face of buffer block.

(2) Carriers are not required to make changes to secure additional end-ladder clearance on cars in service July 1, 1911, that have 10 or more inches end-ladder clearance, within 30 inches of side of car, until car is shopped for work amounting to practically rebuilding body of car, at which time they must be made to comply with the standards prescribed.

(h) *Roof handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (g) (2)).

(3) *Location.* (i) One over each ladder, on roof in line with and running parallel to treads of ladder, not less than 8 nor more than 15 inches from edge of roof.

(ii) Where stiles of ladders extend 12 inches or more above roof, no other roof handholds are required.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Roof handholds shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets.

(i) *Cupola handholds*—(1) *Number.* One or more.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably 2½ inches.

(3) *Location.* (i) One continuous cupola handhold extending around top of cupola, not more than 3 inches from edge of cupola roof.

(ii) Four right-angle handholds, one at each corner, not less than 16 inches in clear length from point of angle, may take the place of the one continuous handhold specified, if locations coincide.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Cupola handhold shall be securely fastened with not les sthan ½-inch bolts with nuts outside and riveted over or with not less than ½-inch rivets.

(j) *Side handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1 (h) (2)).

(3) *Location.* (i) Horizontal, one near each end on each side of car, not less than 24 nor more than 30 inches above center line of coupler. Clearance of outer end of handhold shall be not more than 8 inches from end of car.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231. (h) (4)).

(k) *Side-door handholds*—(1) *Number.* Four: Two curved, two straight.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably 2½ inches.

(3) *Location.* (i) One curved handhold, from a point at side of each door opposite ladder, not less than 36 inches above bottom of car, curving away from door downward to a point not more than 6 inches above bottom of car.

(ii) One vertical handhold at ladder side of each door from a point not less than 36 inches above bottom of car to a point not more than 6 inches above level of bottom of door.

(iii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed.

(4) *Manner of application.* Side-door handholds shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over or with not less than ½-inch rivets.

(l) *Horizontal end handholds*—(1) *Number.* Same as specified for "Box and other house cars." (See § 231.1 (i) (1)).

(2) *Dimensions.* Same as specified for "Box and other house cars." (See § 231.1 (i) (2)).

(3) *Location.* (i) Same as specified for "Box and other house cars" (see § 231.1 (i) (3)), except that one additional end handhold shall be on each end of cars with platform end sills as heretofore described, unless car has door in center of end. Said handhold shall be not less than 24 inches in length, located near center of car, not less than 30 nor more than 60 inches above platform end sill.

(ii) Carriers are not required to change the location of handholds on cars in service July 1, 1911, except end handholds under end sills, where the appliances are within 3 inches of the required location, except that when cars undergo regular repairs they must then be made to comply with the standards prescribed in said order.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1 (i) (4)).

(m) *Vertical end handholds.* Same as specified for "Box and other house cars" (see § 231.1 (j)).

(n) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1 (k)).

§ 231.12 Passenger-train cars with wide vestibules.

(a) *Hand brakes*—(1) *Number.* Each passenger-train car shall be equipped with an efficient hand brake, which shall operate in harmony with the power brake thereon.

(2) *Location.* Each hand brake shall be so located that it can be safely operated while car is in motion.

(b) *Side handholds*—(1) *Number.* Eight.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, metal. Minimum clear length, 16 inches. Minimum clearance, 1¼, preferably 1½ inches.

(3) *Location.* Vertical, one on each vestibule door post.

(4) *Manner of application.* Side handholds shall be securely fastened with bolts, rivets, or screws.

(c) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* (i) Minimum diameters, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches. Minimum clearance, 2, preferably 2½ inches.

(ii) Handholds shall be flush with or project not more than 1 inch beyond vestibule face.

(3) *Location.* Horizontal, one near each side on each end projecting downward from face of vestibule end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(4) *Manner of application.* End handholds shall be securely fastened with bolts or rivets. When marker sockets or brackets are located so that they can not be conveniently reached from platforms, suitable steps and handholds shall be provided for men to reach such sockets or brackets.

(d) *Uncoupling levers.* (1) Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

(2) Minimum length of ground uncoupling attachment, 42 inches, measured from center line of end of car to handle of attachment.

(3) On passenger-train cars used in freight or mixed-train service, the uncoupling attachment shall be so applied that the coupler can be operated from left side of car.

§ 231.13 Passenger-train cars with open-end platforms.

(a) *Hand brakes*—(1) *Number.* Each passenger-train car shall be equipped with an efficient hand brake, which shall operate in harmony with the power brake thereon.

(2) *Location.* Each hand brake shall be so located that it can be safely operated while car is in motion.

(b) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches. Minimum clearance, 2, preferably 2½ inches. Handholds shall be flush with or project not more than 1 inch beyond face of end sill.

(3) *Location.* Horizontal, one near each side of each end on face of platform end sill, projecting downward. Clearance of outer end of handhold shall be not more than 16 inches from end of end sill.

(4) *Manner of application.* End-handholds shall be securely fastened with bolts or rivets.

(c) *End-platform handholds* — (1) *Number.* Four. (Cars equipped with safety gates do not require end-platform handholds.)

(2) *Dimensions.* Minimum clearance 2, preferably 2½ inches, metal.

(3) *Location.* Horizontal from or near door post to a point not more than 12 inches from corner of car, then approximately vertical to a point not more than 6 inches from top of platform. Horizontal portion shall be not less than 24 inches in length nor more than 40 inches above platform.

(4) *Manner of application.* End-platform handholds shall be securely fastened with bolts, rivets, or screws.

(d) *Uncoupling levers.* (1) Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

(2) Minimum length of ground uncoupling attachment, 42 inches, measured from center of end of car to handle of attachment.

(3) On passenger-train cars used in freight or mixed-train service the uncoupling attachments shall be so applied that the coupler can be operated from left side of car.

§ 231.14 Passenger-train cars without end platforms.

(a) *Handbrakes*—(1) *Number.* Each passenger-train car shall be equipped with an efficient hand brake which shall operate in harmony with the power brake thereon.

(2) *Location.* Each hand brake shall be so located that it can be safety operated while car is in motion.

(b) *Sill steps*—(1) *Number.* Four.

(2) *Dimensions.* Minimum length of tread, 10, preferably 12, inches. Minimum cross-sectional area, ½ by 1½ inches or equivalent, wrought iron or steel. Minimum clear depth, 8 inches.

(3) *Location.* (i) One near each end on each side not more than 24 inches from corner of car to center of tread of sill step.

(ii) Outside edge of tread of step shall be not more than 2 inches inside of face of side of car.

(iii) Tread shall be not more than 24, preferably not more than 22, inches above the top of rail.

(4) *Manner of application.* (i) Steps exceeding 18 inches in depth shall have an additional tread and be laterally braced.

(ii) Sill steps shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets.

(c) *Side handholds*—(1) *Number.* Four.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16, preferably 24, inches. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* Horizontal or vertical, one near each end on each side of car over sill step.

(i) If horizontal, not less than 24 nor more than 30 inches above center line of coupler.

(ii) If vertical, lower end not less than 18 nor more than 24 inches above center line of coupler.

(4) *Manner of application.* Side handholds shall be securely fastened with bolts, rivets or screws.

(d) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 16 inches. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* Horizontal, one near each side on each end projecting downward from face of end sill or sheathing. Clearance of outer end of handhold shall be not more than 16 inches from side of car.

(4) *Manner of application.* (i) Handholds shall be flush with or project not more than 1 inch beyond face of end sill.

(ii) End handholds shall be securely fastened with bolts or rivets.

(iii) When marker sockets or brackets are located so that they can not be conveniently reached from platforms, suitable steps and handholds shall be provided for men to reach such sockets or brackets.

(e) *End handrails.* (On cars with projecting end sills.)

(1) *Number.* Four.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* One on each side of each end, extending horizontally from doorpost or vestibule frame to a point not more than 6 inches from corner of car, then approximately vertical to a point not more than 6 inches from top of platform end sill; horizontal portion shall be not less than 30 nor more than 60 inches above platform end sill.

(4) *Manner of application.* End handrails shall be securely fastened with bolts, rivets or screws.

(f) *Side-door steps*—(1) *Number.* One under each door.

(2) *Dimensions.* Minimum length of tread, 10, preferably 12, inches. Minimum cross-sectional area, ½ by 1½ inches or equivalent, wrought iron or steel. Minimum clear depth, 8 inches.

(3) *Location.* Outside edge of tread of step not more than 2 inches inside of face of side of car. Tread not more than 24, preferably not more than 22, inches above the top of rail.

(4) *Manner of application.* (i) Steps exceeding 18 inches in depth shall have an additional tread and be laterally braced.

(ii) Side-door steps shall be securely fastened with not less than ½-inch bolts with nuts outside (when possible) and riveted over, or with not less than ½-inch rivets.

(iii) A vertical handhold not less than 24 inches in clear length shall be applied above each side-door step on door post.

(g) *Uncoupling levers.* (i) Uncoupling attachments shall be applied so they can be operated by a person standing on the ground.

(ii) Minimum length of ground uncoupling attachment, 42 inches, measured from center line of end of car to handle of attachment.

(iii) On passenger-train cars used in freight or mixed-train service, the uncoupling attachment shall be so applied that the coupler can be operated from the left side of car.

§ 231.15 Steam locomotives used in road service.

(a) *Tender till-steps*—(1) *Number.* Four on tender.

(2) *Dimensions.* (i) Bottom tread not less than 8 by 12 inches, metal. (May have wooden treads.)

(ii) If stirrup steps are used, clear length of tread shall be not less than 10, preferably 12, inches.

(3) *Location.* One near each corner of tender on sides.

(4) *Manner of application.* Tender sill-steps shall be securely fastened with bolts or rivets.

(b) *Pilot sill-steps*—(1) *Number.* Two.

(2) *Dimensions.* Tread not less than 8 inches in width by 10 inches in length, metal. (May have wooden treads.)

(3) *Location.* One on or near each end of buffer-beam outside of rail and not more than 16 inches above rail.

(4) *Manner of application.* Pilot sill-steps shall be securely fastened with bolts or rivets.

(c) *Pilot-beam handholds*—(1) *Number.* Two.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 14, preferably 16, inches. Minimum clearance, 2½ inches.

(3) *Location.* One on each end of buffer-beam. If uncoupling lever extends across front end of locomotive to within 8 inches of end of buffer-beam, and is seven-eights of an inch or more in diameter, securely fastened, with a clearance of 2½ inches, it is a handhold.)

(4) *Manner of application.* Pilot-beam handholds shall be securely fastened with bolts or rivets.

(d) *Side handholds*—(1) *Number.* Six.

(2) *Dimensions.* Minimum diameter, if horizontal, five-eighths of an inch; if vertical, seven-eighths of an inch,

wrought iron or steel. Horizontal, minimum clear length, 16 inches. Vertical, clear length equal to approximate height of tank. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* (i) Horizontal or vertical. If vertical, one on each side of tender within 6 inches of rear or on corner; if horizontal, same as specified for "Box and other house cars" (see § 231.1 (h) (3)).

(ii) One on each side of tender near gangway; 1 on each side of locomotive at gangway; applied vertically.

(4) *Manner of application.* Side handholds shall be securely fastened with not less than ½-inch bolts or rivets.

(e) *Rear-end handholds*—(1) *Number.* Two.

(2) *Dimensions.* Minimum diameter, five-eighths of an inch, wrought iron or steel. Minimum clear length, 14 inches. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* Horizontal, one near each side of rear end of tender on face of end sill. Clearance of outer end of handhold shall be not more than 16 inches from side of tender.

(4) *Manner of application.* Rear-end handholds shall be securely fastened with not less than ½-inch bolts or rivets.

(f) *Uncoupling levers*—(1) *Number.* Two double levers, operative from either side.

(2) *Dimensions.* Rear-end levers shall extend across end of tender with handles not more than 12, preferably 9, inches from side of tender with a guard bent on handle to give not less than 2 inches clearance around handle.

(3) *Location.* One on rear end of tender and one on front end of locomotive. Handles of front-end leavers shall be not more than 12, preferably 9, inches from ends of buffer-beam, and shall be so constructed as to give a minimum clearance of 2 inches around handle.

(4) *Manner of application.* Uncoupling levers shall be securely fastened with bolts or rivets.

(g) *Couplers.* Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

§ 231.16 Steam locomotives used in switching service.

(a) *Footboards*—(1) *Number.* Two or more.

(2) *Dimensions.* (i) Minimum width of tread, 10 inches.

(ii) Minimum height of back stop, 4 inches above tread.

(iii) Height from top of rail to top of tread, not more than 12 nor less than 9 inches.

(iv) If made of wood, minimum thickness of tread shall be 1½, preferably 2 inches.

(v) Footboards may be made of material other than wood which provides the same as or a greater degree of safety than wood of 1½ inches thickness. When made of material other than wood, the tread surface shall be of antiskid design and constructed with sufficient open space to permit the elimination of snow and ice from the tread surface.

(3) *Location.* Ends or sides. If on ends, they shall extend not less than 18 inches outside of gauge of straight track, and shall be not more than 12 inches shorter than buffer-beam at each end.

(4) *Manner of application.* (i) End footboards may be constructed in two sections, provided that practically all space on each side of coupler is filled; each section shall be not less than 3 feet in length.

(ii) Footboards shall be securely bolted to two 1- by 4-inch metal brackets, provided footboard is not cut or notched at any point.

(iii) If footboard is cut or notched or in two sections, not less than four 1- by 3-inch metal brackets shall be used, two located on each side of coupler. Each bracket shall be securely bolted to buffer-beam, end sill or tank frame by not less than two ⅞-inch bolts.

(iv) If side footboards are used, a substantial handhold or rail shall be applied not less than 30 inches nor more than 60 inches above tread of footboard.

(b) *Sill steps*—(1) *Number.* Two or more.

(2) *Dimensions.* (i) Lower tread of step shall be not less than 8 by 12 inches, metal. (May have wooden treads.)

(ii) If stirrup steps are used, clear length of tread shall be not less than 10, preferably 12, inches.

(3) *Location.* One or more on each side at gangway secured to locomotive or tender.

(4) *Manner of application.* Sill steps shell be securely fastened with bolts or rivets.

(c) *End handholds*—(1) *Number.* Two.

(2) *Dimensions.* Minimum diameter, 1 inch, wrought iron or steel. Minimum clearance, 4 inches, except at coupler casting or braces when minimum clearance shall be 2 inches.

(3) *Location.* One on pilot, buffer-beam; one on rear end of tender, extending across front end of locomotive and rear end of tender. Ends of handholds shall be not more than 6 inches from ends of buffer-beam or end sill, securely fastened at ends.

(4) *Manner of application.* End handholds shall be securely fastened with bolts or rivets.

(d) *Side handholds* — (1) *Number.* Four.

(2) *Dimensions.* Minimum diameter, seven-eighths of an inch, wrought iron or steel. Clear length equal to approximate height of tank. Minimum clearance, 2, preferably 2½, inches.

(3) *Location.* Vertical. One on each side of tender near front corner; one on each side of locomotive at gangway.

(4) *Manner of application.* Side handholds shall be securely fastened with bolts or rivets.

(e) *Uncoupling levers*—(1) *Number.* Two double levers, operative from either side.

(2) *Dimensions.* (i) Handles of front-end levers shall be not more than 12, preferably 9, inches from ends of buffer-beam, and shall be so constructed as to give a minimum clearance of 2 inches around handle.

(ii) Rear-end levers shall extend across end of tender with handles not more than 12, preferably 9, inches from side of tender, with a guard bent on handle to give not less than 2 inches clearance around handle.

(3) *Location.* One on rear end of tender and one on front end of locomotive.

(f) *Handrails and steps for headlights.* Switching locomotives with sloping tenders with manhole or headlight located on sloping portion of tender shall be equipped with secure steps and handrail or with platform and handrail leading to such manhole or headlight.

(g) *End-ladder clearance.* No part of locomotive or tender except draft rigging, coupler and attachments, safety chains, buffer block, footboard, brake pipe, signal pipe, steam-heat pipe or arms of uncoupling lever shall extend to within 14 inches of a vertical plane passing through the inside face of knuckle when closed with horn of coupler against buffer block or end sill.

(h) *Couplers.* Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

§ 231.17 Specifications common to all steam locomotives.

(a) *Hand brakes.* (1) Hand brakes will not be required on locomotives nor on tenders when attached to locomotives.

(2) If tenders are detached from locomotives and used in special service, they shall be equipped with efficient hand brakes.

(b) *Running boards* — (1) *Number.* Two.

(2) *Dimensions.* Not less than 10 inches wide. If of wood, not less than 1½ inches in thickness; if of metal, not less than three-sixteenths of an inch, properly supported.

(3) *Location.* One on each side of boiler extending from cab to front end near pilot-beam. (Running boards may be in sections. Flat-top steamchests may form section of running board.)

(4) *Manner of application.* (i) Running boards shall be securely fastened with bolts, rivets, or studs.

(ii) Locomotives having Wootten type boilers with cab located on top of boiler more than 12 inches forward from boiler head shall have suitable running boards running from cab to rear of locomotive, with handrailings not less than 20 nor more than 48 inches above outside edge of running boards, securely fastened with bolts, rivets, or studs.

(c) *Handrails*—(1) *Number.* Two or more.

(2) *Dimensions.* Not less than 1 inch in diameter, wrought iron or steel.

(3) *Location.* One on each side of boiler extending from near cab to near front end of boiler, and extending across front end of boiler, not less than 24 nor more than 66 inches above running board.

(4) *Manner of application.* Handrails shall be securely fastened to boiler.

(d) *Tenders of Vanderbilt type.* (1) Tenders known as the Vanderbilt type

shall be equipped with running boards; one on each side of tender not less than 10 inches in width and one on top of tender not less than 48 inches in width, extending from coal space to rear of tender.

(2) There shall be a handrail on each side of top running board, extending from coal space to rear of tank, not less than 1 inch in diameter and not less than 20 inches in height above running board from coal space to manhole.

(3) There shall be a handrail extending from coal space to within 12 inches of rear of tank, attached to each side of tank above side running board not less than 30 nor more than 66 inches above running board.

(4) There shall be one vertical end handhold on each side of Vanderbilt type of tender, located within 8 inches of rear of tank extending from within 8 inches of top of end sill to within 8 inches of side handrail. Post supporting rear end of side running board, if not more than 2 inches in diameter and properly located, may form section of handhold.

(5) An additional horizontal end handhold shall be applied on rear end of all Vanderbilt type of tenders which are not equipped with vestibules. Handhold to be located not less than 30 nor more than 66 inches above top of end sill. Clear length of handhold to be not less than 48 inches.

(6) Ladders shall be applied at forward ends of side running boards.

(e) *Handrails and steps for headlights.* (1) Lomotives having headlights which can not be safely and conveniently reached from pilot-beam or steam chests shall be equipped with secure handrails and steps suitable for the use of men in getting to and from such headlights.

(2) A suitable metal end or side ladder shall be applied to all tanks more than 48 inches in height, measured from the top of end sill, and securely fastened with bolts or rivets.

(f) *Couplers.* Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

§ 231.18 Cars of special construction.

Cars of construction not covered specifically in the foregoing sections in this part, relative to handholds, sill steps, ladders, hand brakes and running boards may be considered as of special construction, but shall have, as nearly as possible, the same complement of handholds, sill steps, ladders, hand brakes, and running boards as are required for cars of the nearest approximate type.

§ 231.19 Definition of "Right" and "Left."

"Right" or "Left" refers to side of person when facing end or side of car from ground.

§ 231.20 Variation in size permitted.

To provide for the usual inaccuracies of manufacturing and for wear, where sizes of metal are specified, a total variation of 5 percent below size given is permitted.

§ 231.21 Tank cars without underframes.

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and other house cars" (see § 231.1(a)(1)).

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1(a)(2)).

(3) *Location.* Each hand brake shall be so located that it can be safely operated while car is in motion. The brake shaft shall be located on end of car to the left of center.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1(a)(4)).

(b) *End platforms*—(1) *Number.* Two.

(2) *Dimensions.* Minimum width, ten inches. Minimum thickness, one and three-quarters inches.

(3) *Location.* One on each end extending across car a distance equal to or greater than any other portion of car. Outside edge of end platform shall extend not less than seven inches beyond bulge of tank head and safety railing.

(4) *Manner of application.* End platforms shall be securely fastened to the draft sills and be sufficiently rigid to prevent sagging.

(c) *Sill steps.* Same as specified for "Box and other house cars" (see § 231.1(d)).

(d) *End platform safety railing*—(1) *Number.* Two.

(2) *Dimensions.* Minimum of seven-eighths inch diameter, wrought iron or steel, or one and one-quarter inch pipe. Minimum clearance, two and one-half inches.

(3) *Location.* One safety railing at each end of car shall extend horizontally across car not less than thirty-six inches nor more than fifty-four inches above end platform and extend downward within three inches of the end of the platform. The safety railing shall be located not more than six inches from the inside edge of the platform.

(4) *Manner of application.* Safety railings shall be supported at center of car and at each end by extending downward at the ends and attaching to the platform.

(e) *Side railing*—(1) *Number.* Two.

(2) *Dimensions.* One and one-quarter inch pipe. Minimum clearance two and one-half inches.

(3) *Location.* One on each side of car extending from end platform to side ladder and from side ladder to end platform at opposite end of car at a distance of not less than fifty-one inches from center line of car.

(4) *Manner of application.* Safety railings shall be securely attached to end platforms and supported from the car at intervals not exceeding ten feet.

(f) *Side handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1(h)(2)).

(3) *Location.* Four horizontal; one on face of end platform end, over sill step, projecting downward or outward. Clearance of outer end of handhold shall be not more than twelve inches from end of car. Vertical portion of end platform safety railing shall be considered as a side vertical handhold.

(4) *Manner of application.* Same as prescribed for "Box and other house cars" (see § 231.1(h)(4)).

(g) *End handholds*—(1) *Number.* Four.

(2) *Dimensions.* Same as specified for "Box and other house cars" (see § 231.1(i)(2)).

(3) *Location.* Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall not be more than sixteen inches from side of car.

(4) *Manner of application.* Same as specified for "Box and other house cars" (see § 231.1(i)(4)).

(h) *Uncoupling levers.* Same as specified for "Box and other house cars" (see § 231.1(k)).

(i) *End ladder clearance.* No part of car above end sills within thirty inches from side of car, except buffer block, brake shaft, brake-shaft brackets, brake wheel, running boards or uncoupling lever shall extend to within twelve inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same, above end sills, other than exceptions herein noted, shall extend beyond the outer face of the buffer block.

(j) *Operating platform, ladder and safety railing*—(1) *Number.* One operating platform, two ladders and safety railing.

(2) *Dimensions.* (i) Ladder: Ladder stiles, three-eighths by two inches or equivalent, wrought iron or steel. One and one-quarter inch extra strong pipe will be considered equivalent.

(ii) Ladder treads minimum diameter, five-eighths of an inch, wrought iron or steel.

(iii) Minimum clear length of treads, fourteen inches.

(iv) Maximum spacing of treads, nineteen inches.

(v) Minimum clearance of treads and ladder stiles, two inches, preferably two and one-half inches.

(vi) Operating platform, minimum width, seven inches; minimum thickness, one and three-quarters inches.

(vii) Safety railing, one and one-quarter inch wrought iron or steel pipe.

(3) *Location.* (i) Operating platform to be of sufficient length to provide access to all operating fittings. Ladder to be located on sides of car at center.

(ii) The safety railing shall enclose the operating platform, manway and fittings used in the loading and unloading of the tank. Railing shall be open only at the ladders where it shall extend in a vertical direction down to, and be securely attached to the platform. Maximum width of opening, twenty-four inches.

(4) *Manner of application.* (i) The ladders shall be securely fastened to the

operating platform. The lower portion of ladder shall be braced in such a manner as to prevent any movement.

(ii) The operating platforms shall be supported to prevent sagging and be securely attached to the tank.

(iii) The safety railing shall be securely attached to four stanchions or corner posts, which shall be securely attached to the tank or operating platform.

(k) *Manner of application of safety appliances on tank cars covered with jackets.* On tanks covered with jackets, metal pads shall be securely attached to the shell proper, to which brackets shall be fastened for securing the safety appliances attached to the tanks; or, the safety appliances (with the exception of the operating platform brackets) may be secured to the jackets reinforced with metal pads at the point of attachment, which pads shall extend at least two inches from the center line of rivet holes. The operating platform brackets shall be secured to the jacket reinforced with suitable bands. When the safety appliances are attached to the jacket covering of the tank, the jacket shall be tightened so that there will be no danger of its slipping around.

§ 231.22 Operation of track motor cars.

On and after August 1, 1963, it shall be unlawful for any railroad subject to the requirements of the Safety Appliance Acts to operate or permit to be operated on its line track motor cars to pull or haul trailers, push trucks, hand cars, or similar cars or equipment.

NOTE: At 28 F.R. 7839, Aug. 1, 1963, the effective date of § 231.22 was stayed until further order.

§ 231.23 Unidirectional passenger-train cars adaptable to van-type semi-trailer use.

(a) *Hand brakes*—(1) *Number.* Same as specified for "Passenger-Train Cars Without End-Platforms."

(2) *Location.* Each hand brake shall be so located that it can be safely operated while car is in motion. The hand brake operating device shall be located on the end of car to the left of center.

(b) *Brake step*—(1) *Number.* One (1).

(2) *Dimensions.* Not less than twenty-eight (28) inches in length. Outside edge not less than eight (8) inches from face of car, except when "A" frame is used and extends beyond end of car, a platform of anti-skid design covering the extended portion of the "A" frame may be used as brake step.

(3) *Manner of application.* Brake step shall be securely fastened to car and when additional support is necessary, metal braces having a minimum cross-sectional area three-eighths (⅜) by one and one-half (1½) inches or equivalent shall be securely fastened to body of car with not less than one-half (½) inch bolts or rivets.

(c) *Sill steps*—(1) *Number.* Two (2).

(2) *Dimensions.* Minimum length of tread, ten (10) preferably twelve (12) inches. Minimum cross-sectional area, one-half (½) by one and one-half (1½) inches, or equivalent, wrought iron, steel or other metal of equivalent strength. Minimum clear depth, eight (8) inches.

(3) *Location.* One (1) near the rear or trailing end of the car on each side, not more than twenty-four (24) inches from corner of car to center of tread of sill step.

(4) *Manner of application.* Same as specified for "Passenger-Train Cars Without End-Platforms."

(d) *End-clearance.* No part of car above end sills except the brake step shall extend to within twenty (20) inches of a vertical plane parallel with end of car and passing through the outside edge of any part of an adjoining car.

(e) *Side handholds*—(1) *Number.* Four (4).

(2) *Dimensions.* Minimum diameter, five-eighths (⅝) of an inch, wrought iron, steel or metal of equivalent strength. Minimum clear length, sixteen (16) preferably twenty-four (24) inches. Minimum clearance, two (2) preferably two and one-half (2½) inches.

(3) *Location.* Horizontal, two (2) over each sill step. Lower handhold shall be not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler. Upper handhold shall be not less than fifteen (15) nor more than nineteen (19) inches above lower handhold. Clearance of outer end of handhold shall be not more than eight (8) inches from end of car.

(4) *Manner of application.* Side handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

(f) *Horizontal end-handholds*—(1) *Number.* Seven (7).

(2) *Dimensions.* Minimum diameter, five-eighths (⅝) of an inch, wrought iron, steel or other metal of equivalent strength. Minimum clear length, sixteen (16) inches. Minimum clearance, two (2) preferably two and one-half (2½) inches.

(3) *Location.* End-sill: One (1) near each side at the rear or trailing end of car on face of end-sill or sheathing over end-sill, projecting outward or downward. Clearance of outer end of handhold shall be not more than sixteen (16) inches from side of car.

(i) Lower: One near each side of the rear or trailing end of car, not less than twenty-four (24) nor more than thirty (30) inches above center line of coupler.

(ii) Upper: One (1) near each side at the rear or trailing end of car not less than fifteen (15) nor more than nineteen (19) inches above lower handhold. Clearance of outer ends of lower and upper handholds shall be not more than eight (8) inches from side of car. Lower and upper handholds shall be spaced to coincide with corresponding side handholds, a variation of two (2) inches being allowed. On front end of car there shall be one (1) additional end handhold full length of car not less than forty (40) nor more than fifty (50) inches above center line of coupler. Clearance of each end of handhold shall be not more than eight (8) inches from side of car. When construction will not permit the use of a single handhold, four (4) handholds, each not less than sixteen (16) inches in length may be used, provided dimensions and location coincide.

(4) *Manner of application.* End handholds shall be securely fastened with not less than one-half (½) inch bolts with the nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets. When marker sockets or brackets are located so that they cannot be conveniently reached, suitable steps and handholds shall be provided for men to reach such sockets or brackets.

(g) *Uncoupling levers.* Each car shall be equipped to provide means of coupling and uncoupling without the necessity of men going between the cars.

§ 231.24 Box and Other House Cars with roofs, 16 feet 10 inches or more above top of rail.[1]

(a) *Hand brakes*—(1) *Number.* Same as specified for "Box and Other House Cars."

(2) *Dimensions.* Same as specified for "Box and Other House Cars."

(3) *Location.* Each hand brake shall be located so that it can be safely operated from the end-platform. Each brake shaft shall be located on end of car to left of center and not more than twenty-four (24) inches from left side of car.

(4) *Manner of application.* Same as specified for "Box and Other House Cars."

(b) *End-platforms* — (1) *Number.* Two (2).

(2) *Dimensions.* Width, not less than ten (10) inches. Length, full width of car.

(3) *Location.* One (1) on each end of car not more than eight (8) inches above center sill.

(4) *Manner of application.* Each end-platform shall be securely supported by not less than four (4) metal braces having a minimum cross sectional area three-eighths (⅜) by one and one-half (1½) inches or equivalent which shall be securely fastened to body of car with not less than one-half (½) inch bolts or rivets. The outside edge of each end-platform shall be not less than six (6) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler-horn against the buffer-block or end sill and cushioning device (if used) at full buff. End-platform shall be made of running board material as specified for "Box and Other House Cars."

(c) *Sill steps.* Same as specified for "Box and Other House Cars."

[1] By order of Oct. 26, 1964, as amended, these standards effective Oct. 22, 1964, are interpreted to apply to future "Hy-Cube" cars and are not intended to apply to such cars already in service prior to Oct. 22, 1964, nor to such cars under construction prior thereto but placed in service before Nov. 23, 1964.

(d) *End-ladder clearance.* No part of car above end-sills within thirty (30) inches from side of car, except buffer block brake-shaft, brake wheel, end-platform, horizontal end handholds, or coupling lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle, when closed with the coupler horn against the buffer block or end-sill and cushioning device (if used) at full buff, and no other part of end of car or fixtures on same above end-sill, other than exceptions herein noted, shall extend beyond outer face of buffer block.

(e) *Side handholds*—(1) *Number.* Sixteen (16).

(2) *Dimensions.* Same as specified for "Box and Other House Cars."

(3) *Location.* Horizontal: Four (4) near each end and on each side of car spaced not more than nineteen (19) inches apart and with the bottom handhold located not more than twenty-one (21) inches from top tread of sill step, and top handhold shall coincide in height with horizontal end-platform handhold, a variation of two (2) inches being allowed. Spacing of side handholds shall be uniform within a limit of two (2) inches from top handhold to bottom handhold. Clearance of outer ends of handholds shall be not more than eight (8) inches from end of car.

(4) *Manner of application.* Same as specified for "Box and Other House Cars," except each bottom handhold shall have foot guard or upward projection not less than two (2) inches in height near inside end.

(f) *Horizontal end handholds*—(1) *Number.* Four (4).

(2) *Dimension.* Same as specified for "Box and Other House Cars."

(3) *Location.* One (1) near each side of each end of car on outer edge of end platform, projecting downward with clearance of outer end not more than sixteen (16) inches from side of car.

(4) *Manner of application.* Same as specified for "Box and Other House Cars."

(g) *Horizontal end-platform handholds*—(1) *Number.* Two (2).

(2) *Dimensions.* Same as specified for "Horizontal End Handholds" for "Box and Other House Cars," except length shall extend across end of car.

(3) *Location.* Extending across each end of car, not less than forty-eight (48) nor more than sixty (60) inches above tread of end-platform with clearance at each end of not more than four (4) inches from side of car, supported by an extra leg near center of handholds.

(4) *Manner of application.* Same as specified for "Horizontal End Handholds" for "Box and Other House Cars."

(h) *Vertical end-handholds*—(1) *Number.* Four (4).

(2) *Dimensions.* Minimum diameter five-eighths (⅝) of an inch, wrought iron or steel. Minimum clearance, two (2), preferably two and one-half (2½) inches.

(3) *Location.* One (1) on each side of each end of car, not more than four (4) inches from side of car, extending downward from end of horizontal end-platform handhold to within eight (8) inches above tread of end-platform. One (1) continuous handhold with two (2) right angles, or two (2) right angle handholds, may take the place of two (2) specified vertical end-handholds and one (1) horizontal end-platform handhold, provided the dimensions and locations coincide, and extra legs at points of angle and center are provided and securely fastened to car.

(4) *Manner of application.* Same as specified for "Box and Other House Cars."

(i) *Uncoupling levers.* Same as specified for "Box and Other House Cars."

(j) *Painting and stenciling.* (1) That portion of each end of car more than fifteen (15) feet above top of rail shall be painted with contrasting reflectorized paint and shall bear the words "No running board" to the left of center and "Excess height car" to the right of center.

(2) Lettering to be not less than three (3) inches high. On each side-sill near end corner there shall be painted a yellow rectangular area with a three-fourths (¾) inch black border containing the words "This car excess height—no running board." Lettering to be not less than one and one-half (1½) inches high. When car is equipped with center sill or underframe cushioning device having more than twelve (12) inches longitudinal impact absorbing travel, and a part of the uncoupling device and/or brake pipe is located parallel to the exposed end of the center sill, such part shall provide at least two (2) inches of clearance near the coupler of sufficient length to permit use as an emergency handhold during air hose coupling operation and the top of exposed ends of sliding center sill shall be coated with anti-skid paint.

§ 231.25 Track motorcars (self-propelled 4-wheel cars which can be removed from the rails by men).

(a) *Handbrakes (includes foot operated brake).* Each track motorcar shall be equipped with an efficient handbrake so located that it can be safely operated while the car is in motion. Each handbrake shall be equipped with a ratchet or other suitable device which will provide a means of keeping the brake applied when car is not in motion.

NOTE: The requirements of this rule will be satisfied if the ratchet or other suitable device operates in connection with at least one handbrake on track motorcars that may be equipped with more than one such brake.

(b) *Handholds.* One or more safe and suitable handholds conveniently located shall be provided. Each handhold shall be securely fastened to car.

(c) *Sill steps or footboards.* Each track motorcar shall be equipped with safe and suitable sill steps or footboards conveniently located and securely fastened to car when bed or deck of track motorcar is more than 24 inches above top of rail.

(d) *Couplers.* When used to haul other cars, each track motorcar shall be equipped with a coupler at each end where such cars are coupled (1) which provides a safe and secure attachment, (2) which can be coupled or uncoupled without the necessity of men going between the ends of the cars.

§ 231.26 Pushcars.

(a) *Handbrakes.* When used to transport persons, each pushcar shall be equipped with an efficient handbrake so located that it can be safely operated while the car is in motion.

(b) *Handholds (includes handles).* Each pushcar shall be provided with one or more secure handholds. When used to transport persons, each pushcar shall be provided with one or more safe and suitable handholds conveniently located above the top of the bed of each pushcar.

(c) *Sill steps or footboards.* When used to transport persons, each pushcar shall be equipped with safe and suitable sillsteps or footboards conveniently located and securely fastened to car, when bed or deck of pushcar is more than 24 inches above top of rail.

(d) *Couplers.* When moved together with other vehicles, each pushcar shall be equipped with a coupler at each end where such vehicles are coupled (1) which provides a safe and secure attachment, and (2) which can be coupled or uncoupled without the necessity of men going between the ends of the cars.

NOTE: Sections 231.25 and 231.26 are applicable only when the vehicles governed thereby are coupled together and moved together.

§ 231.27 Box and other house cars without roof hatches (does not include cars with roofs 16 feet 10 inches or more above top of rail).

(a) *Handbrakes.* The handbrake may be of any efficient design, but must provide the same degree of safety as, or a greater degree of safety than, the following specifications:

(1) *Number.* (i) Each box or other house car without roof hatches shall be equipped with an efficient vertical wheel handbrake which shall operate in harmony with the power brake thereon.

(ii) The handbrake may be of any efficient design, but must provide a total braking force applied to brake shoes not less than the total force applied to the brake shoes by the brake cylinders at 50 pounds per square inch.

(2) *Dimensions.* (i) The brake wheel may be deep or shallow, of malleable iron, wrought iron, steel, or other material of equivalent strength.

(ii) Overall diameter of brake wheel nominally twenty-two (22) inches.

(iii) Depth of brake wheel hub shall be two and five-eighths (2⅝) inches with square taper shaft fit, taper two (2) inches in twelve (12) inches with small end of taper fit seven-eighths (⅞) inches.

(iv) Brake wheel and drum shall be arranged so that both will revolve when applying and gradually releasing the handbrake. Handbrake shall be provided with means to prevent application of the brake by winding in a counterclockwise direction.

(v) Brake shaft shall be arranged with a square fit at its outer end to secure the handbrake wheel; said square fit shall be not less than seven-eighths (⅞) of an inch square. Square-fit taper: nominally two (2) in twelve (12) inches (see Plate A).

(vi) All chains shall be not less than nine-sixteenths (9/16) inch BBB coil chain.

(vii) All handbrake rods shall be not less than three-fourths (¾) inch diameter.

(3) *Location.* (i) The handbrake shall be so located that it can be safely operated from horizontal end platform while car is in motion.

(ii) The brake shaft shall be located on end of car, to the left of and not less than seventeen (17) nor more than twenty-two (22) inches from center and not less than twenty-six (26) nor more than forty (40) inches above top of end-platform tread.

(4) *Manner of application.* (i) Brake wheel shall be held in position on brake shaft by a nut on a threaded extended end of brake shaft; said thread portion shall be not less than three-fourths (¾) of an inch in diameter; said nut shall be secured by riveting over or by the use of a locknut or suitable cotter.

(ii) Outside edge of brake wheel shall be not less than four (4) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill.

(iii) Handbrake housing shall be securely fastened to car.

(b) *End platforms*—(1) *Number.* Two (2).

(2) *Dimensions.* Width not less than eight (8) inches; length, not less than sixty (60) inches.

(3) *Location.* One (1) centered on each end of car not more than eight (8) inches above top of center sill.

(4) *Manner of application.* (i) Each end platform shall be securely supported by not less than three (3) metal braces having a minimum cross sectional area of three-eighths (⅜) by one and one-half (1½) inches or equivalent, which shall be securely fastened to body of car with not less than one-half (½) inch bolts or rivets.

(ii) Where conventional draft gear or cushioning device having longitudinal travel less than six (6) inches is used the outside edge of each end platform shall be not less than twelve (12) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against buffer block. Where cushioning device having longitudinal travel six (6) inches or more is used the outside edge of each end platform shall be not less than six (6) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with end sill and cushioning device at full buff. End platform shall be made of wood or of material which provides the same as or a greater degree of safety than wood of 1⅛ inches thickness. When made of material other than wood the tread surface shall be of anti-skid design and constructed with sufficient open space to permit the elimination of snow and ice from the tread surface.

(c) *Sill Steps*—(1) *Number.* Four (4).

(2) *Dimensions.* Minimum cross-sectional area one-half (½) by one and one-half (1½) inches, or equivalent, of wrought iron, steel, or other material of equivalent strength. Minimum length of tread, ten (10), preferably twelve (12) inches. Minimum clear depth, eight (8) inches.

(3) *Location.* (i) One (1) near each end of each side car, so that there shall be no more than eighteen (18) inches from end of car to center of tread of sill step.

(ii) Outside edge of tread of step shall be not more than four (4) inches inside of face of side of car, preferably flush with side of car.

(iii) Tread shall be not more than twenty-four (24), preferably not more than twenty-two (22) inches above the top of rail.

(4) *Manner of application.* (i) Sill steps exceeding twenty-one (21) inches in depth shall have an additional tread.

(ii) Sill steps shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

(d) *End ladder (appliances) clearance.* No part of car above end sills within thirty (30) inches from side of car, except buffer block, brake shaft, brake wheel, end platform, horizontal end handholds, or uncoupling lever shall extend to within twelve (12) inches of a vertical plane parallel with end of car and passing through the inside face of knuckle, when closed with the coupler horn against the buffer block or end sill and cushioning device (if used) at full buff, and no other part of end of car or fixtures on same above end sill, other than exceptions herein noted, shall extend beyond outer face of buffer block.

(e) *Side handholds*—(1) *Number.* Sixteen (16).

(2) *Dimensions.* Minimum diameter, five-eights (⅝) of an inch, wrought iron, steel, or other material of equivalent strength. Minimum clear length, sixteen (16) inches, preferably twenty-four (24) inches. Minimum clearance, two (2), preferably two and one-half (2½) inches.

(3) *Location.* Horizontal; four (4) near each end and on each side of car spaced not more than nineteen (19) inches apart and with the bottom handhold located not more than twenty-one (21) inches from top tread of sill step, and top handhold shall coincide in height with top end handhold, a variation of two (2) inches being allowed. Spacing of side handholds shall be uniform within a limit of two (2) inches from top handhold to bottom handhold. Clearance of outer ends of handholds shall be not more than eight (8) inches from end of car.

(4) *Manner of application.* Side handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets. Each bottom handhold shall have foot guard or upward projection not less than two (2) inches in height near inside end.

(f) *End handholds*—(1) *Number.* Sixteen (16).

(2) *Dimensions.* (i) Minimum diameter, five-eights (⅝) of an inch, wrought iron, steel, or other material of equivalent strength.

(ii) Minimum clear length, sixteen (16) inches, preferably twenty-four (24) inches.

(iii) Minimum clearance, two (2), preferably two and one-half (2½) inches.

(3) *Location.* Horizontal: Four (4) near each side and on each end of car spaced not more than nineteen (19) inches apart and with the bottom handhold located not more than twenty-one (21) inches from top tread of sill step, and top handhold shall coincide in height with end platform handholds, a variation of two (2) inches being allowed. Clearance of outer ends of handholds shall be not more than eight (8) inches from side of car.

(4) *Manner of application.* End handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets. Each bottom handhold shall have foot guard or upward projection not less than two (2) inches in height near inside end.

(g) *Horizontal end-platform handholds*—(1) *Number.* Two (2).

(2) *Dimensions.* (i) Minimum diameter, five-eighths (⅝) of an inch, wrought iron, steel, or other material of equivalent strength.

(ii) Minimum clearance, two (2), preferably two and one-half (2½) inches.

(iii) Minimum clear length sixty (60) inches. When security of attachment requires, an extra supporting leg may be applied near center of clear length.

(3) *Location.* One (1) on each end of car above end platform. Outer legs shall be not more than six (6) inches from inner legs of top end handholds. Height above tread of end platform: Not less than forty-eight (48) nor more than sixty (60) inches.

(4) *Manner of application.* End-platform handholds shall be securely fastened with not less than one-half (½) inch bolts with nuts outside (when possible) and riveted over, or with not less than one-half (½) inch rivets.

(h) *Uncoupling levers*—(1) *Number.* Two (2).

(2) *Dimensions.* (i) Handles of uncoupling levers, except those shown on Plate B or of similar designs, shall be not more than six (6) inches from side of car.

(ii) Uncoupling levers of design shown on Plate B and of similar designs shall conform to the following prescribed limits:

(*a*) Handles shall be not more than twelve (12), preferably nine (9) inches

from sides of car. Center lift arms shall be not less than seven (7) inches long.

(b) Center of eye at end of center lift arm shall be not more than three and one-half (3½) inches beyond center of eye of uncoupling pin of coupler when horn of coupler is against the buffer block or end sill (see Plate B).

(c) End of handles shall extend not less than four (4) inches below bottom of end sill or shall be so constructed as to give a minimum clearance of two (2) inches around handle. Minimum drop of handles shall be twelve (12) inches; maximum, fifteen (15) inches overall (see Plate B).

(iii) Handles of uncoupling levers of the "rocking" or "push-down" type shall be not less than eighteen (18) inches from top of rail when lockblock has released knuckle, and a suitable stop shall be provided to prevent inside arm from flying up in case of breakage.

(3) *Location.* One (1) on each end of car. When single lever is used, it shall be placed on left side of end of car.

(i) *Existing box and other house cars without roof hatches.* (1) Box and other house cars without roof hatches built on or before April 1, 1966, or under construction prior thereto and placed in service before October 1, 1966, shall be deemed equipped as nearly as possible within the intent of § 231.1 and of this section when: (i) The running board, roof handholds over side and end ladders at "A" end of car and ladder treads above the fourth tread from bottom of side and end ladder at "A" end are removed; (ii) one (1) horizontal end-platform handhold is applied on each end of car as specified in this section except the right hand end shall be not more than eight (8) inches from side of car, or where car end contour makes impractical the use of a single continuous end handhold, there is applied the equivalent consisting of two (2) handholds, the center handhold to be a minimum of thirty (30) inches in clear length and the handhold to the right to be a minimum of nineteen (19) inches in clear length and to extend to within eight (8) inches of the right side of the car, such handholds to be not more than twelve (12) inches apart; and (iii) with handbrake operated near roof of car: a brake step shall be provided as specified in § 231.1 and lettering one and one-half (1½) inches high shall be painted on a yellow background on side sill near "B" end of car with a three-fourths (¾) inch black border containing the words "Keep Off Roof—No Running Board," or with handbrake operated from approximate level of top of end sill: roof handholds and side and end ladder treads above the fourth tread from the bottom of ladders at "B" end of car shall be removed and a brake step as specified by § 231.1 shall be used with top of tread surface being level with or not more than four (4) inches below adjacent end handhold.

(2) Subdivision (ii) of subparagraph (1) of this paragraph shall not apply to cars equipped with end platforms and end platform handholds.

§ 231.28 Box and other house cars with roof hatches.

The specifications of § 231.27 shall apply except as to the following:

(a) *Running boards.* Same as specified in § 231.1, except: the end of longitudinal running board shall be not less than six (6) inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against buffer block or end sill.

(b) *Ladders*—(1) *Number.* Two (2).

(2) *Dimensions.* (i) Minimum clear length of tread: Sixteen (16) inches.

(ii) Maximum spacing between treads nineteen (19) inches.

(3) *Location.* One (1) on each end of car not more than eight (8) inches from left-hand side.

(4) *Manner of application.* Same as specified in § 231.1.

(c) *Roof handholds*—(1) *Number.* Two (2), one (1) over each ladder.

(2) *Dimensions.* Same as specified in § 231.1.

(3) *Location.* On roof of car. One (1) parallel to treads of each ladder, not less than eight (8) nor more than fifteen (15) inches from edge of roof, except on refrigerator cars where ice hatches prevent, when location may be nearer edge of roof.

(4) *Manner of application.* Same as specified in § 231.1.

(d) *End handholds.* (Treads of end ladders are end handholds.) Same as specified for § 231.27.

(e) *Existing box and other house cars with roof hatches.* Box and other house cars with roof hatches built on or before April 1, 1966, or under construction prior thereto and placed in service before October 1, 1966, shall be deemed equipped as nearly as possible within the intent of § 231.1 and of this section when: Equipped as specified in § 231.1, except (1) the side ladder treads above the fourth tread from bottom of side ladder near "A" end of car and roof handhold over the side ladder near "A" end shall be removed; (2) and (1) end platform handhold shall be provided on each end of car as specified in § 231.27(i); and when handbrake is operated near roof of car a brake step shall be provided as specified by § 231.1 or when handbrake is operated from approximate level of top of end sill the roof handhold over side ladder near "B" end and treads above the fourth tread from bottom of side ladder near "B" end shall be removed and a brake step as specified in § 231.1 shall be used with top of tread surface level with or not more than four (4) inches below adjacent end handhold.

PART 232—RAILROAD POWER BRAKES AND DRAWBARS

Sec.

232.1 Power brakes: minimum percentage.
232.2 Drawbars: standard height.
232.3 Power brakes and appliances for operating power-brake systems.

RULES FOR INSPECTION, TESTING AND MAINTENANCE OF AIR BRAKE EQUIPMENT

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APPENDIX—Specifications and requirements for power brakes and appliances for operating power-brake systems for freight service.

AUTHORITY: The provisions of this Part 232 issued under secs. 1, 3, 5, and 6, 27 Stat. 523, as amended, secs. 1–3, 32 Stat. 943, as amended, secs. 1, 2, 3, and 6, 36 Stat. 298–299, sec. 6 (e) and (f), 80 Stat. 939; 45 U.S.C. 1, 3, 5, 6, 8–10, 11, 12, 15, 16, 49 U.S.C. 1655.

§ 232.1 Power brakes; minimum percentage.

On and after September 1, 1910, on all railroads used in interstate commerce, whenever, as required by the Safety Appliance Act as amended March 2, 1903, any train is operated with power or train brakes, not less than 85 percent of the cars of such train shall have their brakes used and operated by the engineer of the locomotive drawing such train, and all power-brake cars in every such train which are associated together with the 85 percent shall have their brakes so used and operated.

§ 232.2 Drawbars; standard height.

Except on cars specified in the proviso in section 6 of the Safety Appliance Act of March 2, 1893 (sec. 6, 27 Stat. 532, 45 U.S.C. 6) as the same was amended April 1, 1896 (29 Stat. 85; 45 U.S.C. 6) the standard height of drawbars heretofore designated in compliance with law is hereby modified and changed in the manner hereinafter prescribed, to wit: The maximum height of drawbars for freight cars measured perpendicularly from the level of the tops of rails to the centers of drawbars for standard-gauge railroads in the United States subject to said act shall be 34½ inches, and the minimum height of drawbars for freight cars on such standard-gauge railroads measured in the same manner shall be 31½ inches, and on narrow-gauge railroads in the United States subject to said act the maximum height of drawbars for freight cars measured from the level of the tops of rails to the centers of drawbars shall be 26 inches, and the minimum height of drawbars for freight cars on such narrow-gauge railroads measured in the same manner shall be 23 inches, and on 2-foot-gauge railroads in the United States subject to said act the maximum height of drawbars for freight cars measured from the level of the tops of rails to the centers of drawbars shall be 17½ inches, and the minimum height of drawbars for freight cars on such 2-foot-gauge railroads measured in the same manner shall be 14½ inches.

§ 232.3 Power brakes and appliances for operating power-brake systems.

(a) The specifications and requirement for power brakes and appliances for operating power-brake systems for freight service set forth in the appendix to the report on further hearing, of May 30, 1945, are hereby adopted and prescribed. (See Appendix to this Part for order in Docket 13528.)

RULES FOR INSPECTION, TESTING AND MAINTENANCE OF AIR BRAKE EQUIPMENT

§ 232.10 General rules; locomotives.

(a) Air brake and hand brake equipment on locomotives including tender must be inspected and maintained in accordance with the requirements of the Locomotive Inspection and United States Safety Appliance Acts and related orders and regulations of the Federal Railroad Administrator (FRA).

(b) It must be known that air brake equipment on locomotives is in a safe and suitable condition for service.

(c) Compressor or compressors must be tested for capacity by orifice test as often as conditions require but not less frequently than required by law and orders of the FRA.

(d) Main reservoirs shall be subjected to tests periodically as required by law and orders of the FRA.

(e) Air gauges must be tested periodically as required by law and orders of the FRA, and whenever any irregularity is reported. They shall be compared with an accurate deadweight tester, or test gauge. Gauges found inaccurate or defective must be repaired or replaced.

(f) (1) All operating portions of air brake equipment together with dirt collectors and filters must be cleaned, repaired and tested as often as conditions require to maintain them in a safe and suitable condition for service, and not less frequently than required by law and orders of the FRA.

(2) On locomotives so equipped, hand brakes, parts, and connections must be inspected, and necessary repairs made as often as the service requires, with date being suitably stencilled or tagged.

(g) The date of testing or cleaning of air brake equipment and the initials of the shop or station at which the work was done shall be placed on a card displayed under transparent covering in the cab of each locomotive unit.

(h) (1) Minimum brake cylinder piston travel must be sufficient to provide proper brake shoe clearance when brakes are released.

(2) Maximum brake cylinder piston travel when locomotive is standing must not exceed the following:

	Inches
Steam locomotives:	
Cam type of driving wheel brake	3½
Other types of driving wheel brakes	6
Engine truck brake	8
Engine trailer truck brake	8
Tender brake (truck mounted and tender bed mounted)	8
Tender brake (body mounted)	9
Locomotives other than steam:	
Driving wheel brake	6
Swivel type truck brake with brakes on more than one truck operated by one brake cylinder	7
Swivel type truck brake equipped with one brake cylinder	8
Swivel type truck brake equipped with two or more brake cylinders	6

(i) (1) Foundation brake rigging, and safety supports, where used, must be maintained in a safe and suitable condition for service. Levers, rods, brake beams, hangars and pins must be of ample strength and must not bind or foul in any way that will affect proper operation of brakes. All pins must be properly applied and secured in place with suitable locking devices. Brake shoes must be properly applied and kept approximately in line with treads of wheels or other braking surfaces.

(2) No part of the foundation brake rigging and safety supports shall be closer to the rails than specified by law and orders of the FRA.

(j) (1) Main reservoir leakage: Leakage from main air reservoir and related piping shall not exceed an average of 3 pounds per minute in a test of three minutes' duration, made after the pressure has been reduced 40 percent below maximum pressure.

(2) Brake pipe leakage: Brake pipe leakage must not exceed 5 pounds per minute after a reduction of 10 pounds has been made from brake pipe air pressure of not less than 70 pounds.

(3) Brake cylinder leakage: With a full service application of brakes, and with communication to the brake cylinders closed, brakes must remain applied not less than five minutes.

(4) The main reservoir system of each unit shall be equipped with at least one safety valve, the capacity of which shall be sufficient to prevent an accumulation of pressure of more than 10 pounds per square inch above the maximum setting of the compressor governor fixed by the chief mechanical officer of the carrier operating the locomotive.

(5) A suitable governor shall be provided that will stop and start the air compressor within 5 pounds above or below the pressures fixed.

(6) Compressor governor when used in connection with the automatic air brake system shall be so adjusted that the compressor will start when the main reservoir pressure is not less than 15 pounds above the maximum brake-pipe pressure fixed by the rules of the carrier and will not stop the compressor until the reservoir pressure has increased not less than 10 pounds.

(k) The communicating signal system on locomotives when used in passenger service must be tested and known to be in a safe and suitable condition for service before each trip.

(l) Enginemen when taking charge of locomotives must know that the brakes are in operative condition.

(m) In freezing weather drain cocks on air compressors of steam locomotives must be left open while compressors are shut off.

(n) Air pressure regulating devices must be adjusted for the following pressures:

	Pounds
LOCOMOTIVES	
(1) Minimum brake pipe air pressure:	
Road Service	70
Switch Service	60
(2) Minimum differential between brake pipe and main reservoir air pressures, with brake valve in running position	15
(3) Safety valve for straight air brake	80–55
(4) Safety valve for LT, ET, No. 8–EL, No. 14 El, No. 6–DS, No. 6–BL and No. 6–SL equipment	30–68
(5) Safety valve for HSC and No. 24–RL equipment	30–75
(6) Reducing valve for independent or straight air brake	30–50
(7) Self-lapping portion for electro-pneumatic brake (minimum full application pressure)	50
(8) Self-lapping portion for independent air brake (full application pressure)	30–50
(9) Reducing valve for air signal	40–60
(10) Reducing valve for high-speed brake (minimum)	50
CARS	
(11) Reducing valve for high-speed brake	58–62
(12) Safety valve for PS, LN, UC, AML, AMU and AB–1–B air brakes	58–62
(13) Safety valve for HSC air brake	58–77
(14) Governor valve for water raising system	60
(15) Reducing valve for water raising system	20–30

§ 232.11 Train air brake system tests.

(a) Supervisors are jointly responsible with inspectors, enginemen and trainmen for condition of air brake and air signal equipment on motive power and cars to the extent that it is possible to detect defective equipment by required air tests.

(b) Communicating signal system on passenger equipment trains must be tested and known to be in a suitable condition for service before leaving terminal.

(c) Each train must have the air brakes in effective operating condition, and at no time shall the number and location of operative air brakes be less than permitted by Federal requirements. When piston travel is in excess of 10 inches, the air brakes cannot be considered in effective operating condition.

(d) Condensation must be blown from the pipe from which air is taken before connecting yard line or motive power to train.

§ 232.12 Initial terminal road train air brake tests.

All trains must be given inspection and test as specified by paragraphs (a) to (h) of this section at points: (1) Where a train is originally made up (Initial Terminal); (2) Where train consist is changed other than by adding or removing a solid block of cars and train brake system remains charged; (3) Where train

is received in interchange. Each carrier shall establish designated intermediate inspection points within a limit of not to exceed 500 miles where additional inspection will be made to determine that (1) Brake pipe leakage does not exceed 5 pounds per minute; (2) Brakes apply on each car from a 20 pound service brake pipe reduction; (3) That brake rigging is properly secured and does not bind or foul.

NOTE: Relief from the 500-mile inspection requirement of this section will be granted upon an adequate showing by an individual carrier.

(a) Train air brake system must be charged to required air pressure, angle cocks and cutout cocks must be properly positioned, air hose must be properly coupled and must be in condition for service. An examination must be made for leaks and necessary repairs made to reduce leakage to a minimum. Retaining valves and retaining valve pipes must be inspected and known to be in condition for service. If train is to be operated in electro-pneumatic brake operation, brake circuit cables must be properly connected.

(b) (1) After the air brake system on a freight train is charged to within 15 pounds of the setting of the feed valve on the locomotive, but to not less than 60 pounds, as indicated by an accurate gauge at rear end of train, and on a passenger train when charged to not less than 70 pounds, and upon receiving the signal to apply brakes for test, a 15 pound brake pipe service reduction must be made in automatic brake operation, the brake valve lapped, and the number of pounds of brake pipe leakage per minute noted as indicated by brake pipe gauge, after which brake pipe reduction must be increased to full service. Inspection of the train brakes must be made to determine that angle cocks are properly positioned, that the brakes are applied on each car, that piston travel is correct, that brake rigging does not bind or foul, and that all parts of the brake equipment are properly secured. When this inspection has been completed, the release signal must be given and brakes released and each brake inspected to see that all have released.

(2) When a passenger train is to be operated in electro-pneumatic brake operation and after completion of test of brakes as prescribed by subparagraph (1) of this paragraph the brake system must be recharged to not less than 90 pounds air pressure, and upon receiving the signal to apply brakes for test, a minimum 20 pound electro-pneumatic brake application must be made as indicated by the brake cylinder gauge. Inspection of the train brakes must then be made to determine if brakes are applied on each car. When this inspection has been completed, the release signal must be given and brakes released and each brake inspected to see that all have released.

(3) When the locomotive used to haul the train is provided with means for maintaining brake pipe pressure at a constant level during service application of the train brakes, this feature must be cut out during train air brake tests.

(c) Brake pipe leakage must not exceed 5 pounds per minute.

(d) (1) At initial terminal piston travel of body mounted brake cylinders which is less than 7 inches or more than 9 inches must be adjusted to nominally 7 inches.

(2) Minimum brake cylinder piston travel of truck mounted brake cylinders must be sufficient to provide proper brake shoe clearance when brakes are released. Maximum piston travel must not exceed 6 inches.

(3) Piston travel of brake cylinders on freight cars equipped with other than standard single capacity brake, must be adjusted as indicated on badge plate or stenciling on car located in a conspicuous place near brake cylinder.

(e) When test of air brakes has been completed the engineman and conductor must be advised that train is in proper condition to proceed.

(f) During standing test, brakes must not be applied or released until proper signal is given.

(g) (1) When train air brake system is tested from a yard test plant, an engineer's brake valve or a suitable test device must be used to provide increase and reduction of brake pipe air pressure or electro-pneumatic brake application and release at the same or a slower rate as with engineer's brake valve and yard test plant must be connected to the end which will be nearest to the hauling road locomotive.

(2) When yard test plant is used, the train air brake system must be charged and tested as prescribed by paragraphs (a) to (e) of this section inclusive, and when practicable should be kept charged until road motive power is coupled to train, after which, an automatic brake application and release test of air brakes on rear car must be made. If train is to be operated in electro-pneumatic brake operation, this test must also be made in electro-pneumatic brake operation before proceeding.

(3) If after testing the brakes as prescribed in subparagraph (2) of this paragraph the train is not kept charged until road motive power is attached, the brakes must be tested as prescribed by paragraph (b) (1) of this section and if train is to be operated in electro-pneumatic brake operation as prescribed by paragraph (b) (2) of this section.

(h) Before adjusting piston travel or working on brake rigging, cutout cock in brake pipe branch must be closed and air reservoirs must be drained. When cutout cocks are provided in brake cylinder pipes, these cutout cocks only may be closed and air reservoirs need not be drained.

NOTE: For interpretations of trains received in interchange, see 30 F.R. 4063, Mar. 27, 1965.

§ 232.13 Road train and intermediate terminal train air brake tests.

(a) Passenger trains: Before motive power is detached or angle cocks are closed on a passenger train operated in either automatic or electro-pneumatic brake operation, except when closing angle cocks for cutting off one or more cars from the rear end of train, automatic air brake must be applied. After recoupling, brake system must be recharged to required air pressure and before proceeding and upon receipt of proper request or signal, application and release tests of brakes on rear car must be made from locomotive in automatic brake operation. If train is to be operated in electro-pneumatic brake operation, this test must also be made in electro-pneumatic brake operation before proceeding. Inspector or trainman must determine if brakes on rear car of train properly apply and release.

(b) Freight trains: Before motive power is detached or angle cocks are closed on a freight train, brakes must be applied with not less than a 20 pound brake pipe reduction. After recoupling and angle cocks are opened, it must be known that brake pipe air pressure is being properly restored as indicated by the caboose gauge and that brakes on rear car are released. In the absence of a caboose gauge, air brake test must be made as prescribed by that portion of paragraph (a) of this section pertaining to automatic brake operation.

(c) (1) At a point other than initial terminal where locomotive or caboose is changed, or where one or more consecutive cars are cut off from rear end or head end of train with consist otherwise remaining intact, after train brake system is charged to within 15 pounds of feed valve setting on locomotive but not less than 60 pounds as indicated at rear of freight train, and on a passenger train to at least 70 pounds, a 20 pound brake pipe reduction must be made and it must be determined that brakes on rear car apply and release properly.

(2) Before proceeding it must be known that brake pipe pressure as indicated at rear of freight train is being restored.

(3) On trains operating with electro-pneumatic brakes, with brake system charged to not less than 70 pounds, test must be made to determine that rear brakes apply and release properly from a minimum 20 pounds electro-pneumatic brake application as indicated by brake cylinder gauge.

(d) (1) At a point other than a terminal where one or more cars are added to a train, and after the train brake system is charged to not less than 60 pounds as indicated by a gauge at the rear of freight train and on a passenger train to not less than 70 pounds, tests of air brakes must be made to determine that brake pipe leakage does not exceed five (5) pounds per minute as indicated in the brake pipe gauge after a 15 pound brake pipe reduction. After the leakage test is completed, brake pipe reduction must be increased to full service, and it must be known that the brakes on each of these cars and on the rear car of train apply and release. Cars added to train which have not been inspected in accordance with § 232.12 (a) to (h) must be so inspected and tested at next terminal where facilities are available for such attention.

(2) (i) At a terminal where a solid block of cars which has been previously charged and tested as prescribed by § 232.12 (a) to (h) is added to a train, test must be made to determine that brakes on the rear car of train apply and release.

(ii) When cars which have not been previously charged and tested as prescribed by § 232.12 (a) to (h) are added to a train, such cars may either be given inspection and tests in accordance with § 232.12 (a) to (h), or tested as prescribed by subparagraph (1) of this paragraph prior to departure in which case these cars must be inspected and tested in accordance with § 232.12 (a) to (h) at next terminal.

(3) Before proceeding it must be known that the brake pipe pressure at the rear of freight train is being restored.

(e) (1) Transfer train and yard train movements not exceeding 20 miles, must have the air brake hose coupled between all cars, and after the brake system is charged to not less than 60 pounds, a 15 pound service brake pipe reduction must be made to determine that the brakes are applied on each car before releasing and proceeding.

(2) Transfer train and yard train movements exceeding 20 miles must have brake inspection in accordance with § 232.12 (a) to (h).

(f) The automatic air brake must not be depended upon to hold a locomotive, cars or train, when standing on a grade, whether locomotive is attached or detached from cars or train. When required, a sufficient number of hand brakes must be applied to hold train, before air brakes are released. When ready to start, hand brakes must not be released until it is known that the air brake system is properly charged.

§ 232.14 Inbound brake equipment inspection.

(a) At points where inspectors are employed to make a general inspection of trains upon arrival at terminals, visual inspection must be made of retaining valves and retaining valve pipes, release valves and rods, brake rigging, safety supports, hand brakes, hose and position of angle cocks and make necessary repairs or mark for repair tracks any cars to which yard repairs cannot be promptly made.

(b) Freight trains arriving at terminals where facilities are available and at which special instructions provide for immediate brake inspection and repairs, shall be left with air brakes applied by a service brake pipe reduction of 20 pounds so that inspectors can obtain a proper check of the piston travel. Trainmen will not close any angle cock or cut the locomotive off until the 20 pound service reduction has been made. Inspection of the brakes and needed repairs should be made as soon thereafter as practicable.

§ 232.15 Double heading and helper service.

(a) When more than one locomotive is attached to a train, the engineman of the leading locomotive shall operate the brakes. On all other motive power units in the train the brake pipe cutout cock to the brake valve must be closed, the maximum main reservoir pressure maintained and brake valve handles kept in the prescribed position. In case it becomes necessary for the leading locomotive to give up control of the train short of the destination of the train, a test of the brakes must be made to see that the brakes are operative from the automatic brake valve of the locomotive taking control of the train.

(b) The electro-pneumatic brake valve on all motive power units other than that which is handling the train must be cut out, handle of brake valve kept in the prescribed position, and air compressors kept running if practicable.

§ 232.16 Running tests.

When motive power, engine crew or train crew has been changed, angle cocks have been closed except for cutting off one or more cars from the rear end of train or electro-pneumatic brake circuit cables between power units and/or cars have been disconnected, running test of train air brakes on passenger train must be made, as soon as speed of train permits, by use of automatic brake if operating in automatic brake operation or by use of electro-pneumatic brake if operating in electro-pneumatic brake operation. Steam or power must not be shut off unless required and running test must be made by applying train air brakes with sufficient force to ascertain whether or not brakes are operating properly. If air brakes do not properly operate, train must be stopped, cause of failure ascertained and corrected and running test repeated.

§ 232.17 Freight and passenger train car brakes.

(a) *Testing and repairing brakes on cars while on shop or repair tracks.* (1) When a freight car having brake equipment due for periodic attention is on shop or repair tracks where facilities are available for making air brake repairs, brake equipment must be given attention in accordance with the requirements of the currently effective AAR Code of Rules[1] for cars in interchange.

(2) (i) When a freight car having brake equipment not due for periodic attention as indicated by standard stenciling is on shop or repair tracks, brake equipment must be tested by use of single car testing device as prescribed by currently effective AAR Code of Tests,[1] providing such car has not been so tested within the previous 90 days as indicated by stenciling. Piston travel must be adjusted to nominally 7 inches on cars having standard single capacity brake. Piston travel of brake cylinders on freight cars equipped with other than standard single capacity brake, must be adjusted as indicated on badge plate or stenciling on car located in a conspicuous place near brake cylinder. After piston travel has been adjusted and with brakes released, sufficient brake shoe clearance must be provided.

(ii) When a car equipped for use in passenger train service not due for periodical air brake repairs, as indicated by stenciled or recorded cleaning dates, is on shop or repair tracks, brake equipment must be tested by use of single car testing device as prescribed by currently effective AAR Code of Tests.[1] Piston travel of brake cylinders must be adjusted if required, to the standard travel for that type of brake cylinder. After piston travel has been adjusted and with brakes released, sufficient brake shoe clearance must be provided.

(iii) Before a car is released from a shop or repair track, it must be known that brake pipe is securely clamped, angle cocks in proper position with suitable clearance, valves, reservoirs and cylinders tight on supports and supports securely attached to car.

(3) (i) If triple valve, control valves or brake cylinders on a freight car do not meet requirements during single car test as specified by the currently effective AAR Code of Tests,[1] brake equipment must be given attention specified by currently effective AAR approved Code of Rules[1] for cars in interchange.

(ii) If, on passenger equipment cars, triple valves, control valves, brake cylinders, slack adjusters, high speed reducing valves, relay valves, quick service valves, vent valves, brake application valves or conductor's valves do not meet requirements during single car test as prescribed by subparagraph (2) (ii) of this paragraph, and if speed governor control, magnet valves, or wheel slide control does not operate properly when tested by a suitable test device, defective part or parts must be repaired or replaced and new cleaning date must be stenciled or recorded as required.

(4) When cars are on shop or repair tracks hand brakes and connections must be inspected, tested and necessary repairs made to insure they are in a suitable condition for safe and effective operation.

(b) *Periodical repairs.* Brake equipment on cars must be cleaned, repaired, lubricated and tested as often as required to maintain it in a safe and suitable condition for service but not less frequently than as required by currently effective AAR Code of Rules[1] for cars in interchange.

APPENDIX—SPECIFICATIONS AND REQUIREMENTS FOR POWER BRAKES AND APPLIANCES FOR OPERATING POWER-BRAKE SYSTEMS FOR FREIGHT SERVICE

PURPOSE

The purpose of this specification is to define and prescribe requirements for power brakes and appliances for operating power-brake systems.

DEFINITIONS

For purposes of this specification, terms used herein are defined as follows:

1. *Power brake.* A combination of parts operated by compressed air and controlled manually, pneumatically or electrically, by means of which the motion of a car or locomotive is retarded or arrested.

2. *Power-brake system.* The power brakes on locomotives and cars of a train so interconnected that they can be operated together

[1] Available at Association of American Railroads.

and by means of which the motion of the train is retarded or arrested.

3. *Brake valve.* The valve of the locomotive equipment by means of which operation of the power-brake system is controlled.

4. *Equalizing reservoir.* The small reservoir connected to the brake valve only, the pressure of which is reduced by the engineer for making service applications.

5. *Brake pipe.* The line of pipe and hose extending throughout the length of the train by means of which compressed air is supplied to the brake devices on the several cars and the pressures so controlled as to effect the application and release of the brakes.

6. *Operating valve.* Device on each car, the operation of which result in: (a) Admission of air to brake cylinder, (b) release of air from brake cylinder, and (c) charging of one or more reservoirs.

7. *Sevice reduction.* A decrease in brake-pipe pressure, usually of from 5 to 25 pounds, at a rate sufficiently rapid to move the operating valve to service position, but at a rate not rapid enough to operate the valve to emergency position. Quick service is that feature of the operating valve which provides for local reduction of brake-pipe pressure.

8. *Service application.* A brake application which results from one or more service reductions.

9. *Full service reduction.* A service reduction sufficient in amount to cause equalization of pressure in brake cylinder with pressure in the reservoir from which compressed air is supplied to brake cylinder.

10. *Full service application.* A brake application which results from one or more brake-pipe reductions sufficient in amount to cause a full service reduction.

11. *Emergency reduction.* A depletion of brake-pipe pressure at a rate sufficiently rapid to move the operating valve to emergency position.

12. *Emergency application.* A brake application which results from an emergency reduction.

13. *Emergency brake-cylinder pressure.* The force per square inch exerted upon piston in brake cylinder by compressed air which is admitted to brake cylinder as a result of an emergency reduction. Effective emergency brake-cylinder pressure is a pressure not less than 15 percent nor more than 20 percent greater than the brake-cylinder pressure obtained from a full service reduction on the same car and from the same initial pressures.

SPECIFICATIONS

General Requirements

14. The design of the operating valve shall be such as will insure efficient and reliable operation, both in its application and release functions and when intermingled with other types of power brakes. It shall be so constructed that the rate of brake-cylinder pressure development may be adjusted to meet such changes in train operating conditions as may develop in the future.

15. The design of the service and emergency valves shall be such as to permit their removal for cleaning and repair without disturbing pipe joints.

16. The portions of the car brake which control the brake application and release, and also the brake cylinder, shall be adequately protected against the entrance of foreign matter.

17. The apparatus conforming to the requirements of these specifications shall be so constructed, installed and maintained as to be safe and suitable for service.

Service Requirements

The apparatus shall be so designed and constructed that: (based upon 70 pounds brake-pipe pressure and train length of 150 cars)

18. With a service reduction of 5 pounds in the equalizing reservoir at the brake valve all brakes will apply.

19. An initial 5-pound equalizing-reservoir reduction at the brake valve will produce substantially 10 pounds brake-cylinder pressure throughout the train, including brakes having piston travel in excess of 8 inches.

20. With an equalizing-reservoir reduction of 10 pounds, the difference in time of obtaining substantially 10 pounds pressure in the brake cylinder of the first and one hundred and fiftieth brakes will be nominally 20 seconds or less.

21. A brake-pipe reduction of 10 pounds will result in pressure in each brake cylinder of not less than 15 pounds nor more than 25 pounds.

22. A total brake-pipe reduction of 25 pounds will result in equalization of brake-cylinder pressure with pressure in the reservoir from which compressed air is supplied to the brake cylinder, and brake-cylinder pressure of not less than 48 pounds nor more than 52 pounds will be obtained.

23. Quick service activity of the train brakes will cease when the initial quick service action has been completed.

24. The quick service feature of the brake will produce substantially uniform time of quick service transmission regardless of the unavoidable variations in frictional resistance of the parts.

25. The brake will so function as to prevent a degree of wave action in brake-pipe pressure sufficient to cause undesired release of any brake while the brakes are being applied.

26. The degree of stability will be sufficient to prevent undesired service application occurring as a result of unavoidable minor fluctuations of brake-pipe pressure.

27. The brake-cylinder pressure increase resulting from quick service operation will be less when the brake is reapplied with pressure retained in the brake cylinder than with applications made when the brake-cylinder pressure is zero.

28. Undesired quick action will not result with any rate of change in brake-pipe pressure which may occur during service application or release of the brake.

29. In the normal release of train brakes, individual car brake will not start recharging from the brake pipe until brake-pipe pressure has increased sufficiently to have accomplished the release of adjacent valves.

30. The recharge of auxiliary reservoirs in the forward portion of the train will be automatically retarded while full release position of the brake valve is being used to initiate the release of train brakes.

31. After a 15-pound service reduction has been made and brake-valve exhaust has closed, in a release operation in which brake valve is moved to release position and after 15 seconds is moved to running position, all operating valves will move to release position within 40 seconds after brake valve is placed in release position.

32. After a 15-pound service reduction has been made and brake-valve exhaust has closed, in a release operation in which brake valve is moved to release position and after 15 seconds is moved to running position, brake-pipe pressure at car 150 will be increased 5 pounds within 1½ minutes after brake valve is placed in release position.

33. The rate of release of pressure from the brake cylinder will be nominally 23 seconds from 50 pounds to 5 pounds.

Emergency Requirements

The apparatus shall be so designed and constructed that: (based on 70 pounds brake-pipe pressure and train length of 150 cars).

34. Emergency application operation will always be available irrespective of the existing state or stage or brake application or release.

35. Emergency application initiated during a release of previous brake application will produce a material increase in brake-cylinder pressure over that which would result from a full service application made under the same conditions.

36. When operating valve acts in emergency it will so function as to develop nominally 15 pounds brake-cylinder pressure in not more than 1½ seconds and maximum pressure in nominally 10 seconds.

37. With an emergency reduction of brake-pipe pressure all brakes, including the one hundred and fiftieth, will start to apply within 8.2 seconds and develop not less than 15 percent nor more than 20 percent in excess of 50 pounds brake-cylinder pressure within 18.2 seconds from the movement of the brake valve to emergency position.

38. The operating valve will so function that, when an emergency application is made subsequent to a service application which has produced not less than 30 pounds brake-cylinder pressure, the maximum brake-cylinder pressure will be attained in nominally 4 seconds from the beginning of the emergency action of the valve.

39. Emergency application will produce from a charged system between 15 and 20 percent increase in brake-cylinder pressure over that which results from a full service application and irrespective of any degree of prior service application.

40. With any group of three consecutive brakes cut out, an emergency reduction made with the brake valve will cause the remainder of the brakes to operate in emergency and produce normal emergency pressures in the same time as when all brakes are cut in.

41. The brake will so function as to accomplish the release of an emergency application with the same degree of certainty secured in the release of service applications.

42. When releasing brakes following an emergency application, each brake will so function as to decrease the auxiliary-reservoir pressure prior to the actual release.

43. Both service and emergency brake applications will be released when the brake-pipe pressure is increased to not more than 1¾ pounds above that of the auxiliary reservoir and irrespective of the increased frictional resistance to release movement of the piston and slide valves after a period of operation in train service.

NOTE: Order 13528, as amended, 17 F.R. 8653, Sept. 30, 1952, provides as follows: That said order of September 21, 1945, as amended, be, and it is hereby, further amended so as to require that all said non-interchange cars that may be used in transporting revenue freight and all cabooses shall be so equipped on or before December 31, 1953, and that all other said non-interchange cars shall be so equipped on or before December 31, 1954.

Order 13528 was further amended, 17 F. R. 8957, Oct. 7, 1952, as follows: That the order heretofore entered herein on September 21, 1945, as amended, requiring respondents to install power brakes and appliances on their cars used in freight service be, and it is hereby, further amended so as not to require the installation of such brakes and appliances on cars that are used exclusively in switching operations and are not used in train movements within the meaning of the Safety Appliance Acts (45 U. S. C., secs. 1 to 16, inclusive).

Order 13528 was further amended, 17 F. R. 10738, Nov. 26, 1952, as follows: That the order heretofore entered on September 21, 1945, as amended, requiring respondents to install power brakes and appliances on their cars used in interchange freight service on or before December 31, 1952, be, and it is hereby, further amended so as—

To require that all such interchange cars be so equipped on or before June 30, 1953, except as indicated hereinafter:

To prohibit the movement by any respondent after June 30, 1953, of any car in interchange service, other than tank cars (including the cars of private carline companies), not so equipped except that such cars may be so moved prior to October 1, 1953, if routed to owner; and

To prohibit the movement by respondents after October 1, 1953, of any tank car in interchange service (including the tank cars of private car-line companies) not so equipped except that such tank cars may be so moved prior to January 1, 1954, if routed to owner.

That the term "interchange service" means the movement of any car that is engaged in freight service, irrespective of ownership, that is interchanged between or among two or more respondent railroads.

Order 13528 was further amended, 18 F. R. 6942, Nov. 3, 1953, as follows: That the order heretofore entered herein on September 21, 1945, as amended, requiring respondents to install power brakes and appliances on their cars used in freight service be, and it is hereby, further amended so as not to require the installation of such brakes and appliances on

a. Locomotives;

b. Scale test weight cars;

c. Locomotive cranes, steam shovels, pile drivers and similar construction and maintenance machines built prior to September 21, 1945;

d. Export, industrial, and other than railroad owned cars which are not to be used in service by respondents, except for movement as shipments on their own wheels to given destinations, provided that any such car so moved shall be properly identified by a card attached to each side of car, signed by shipper, stating that such movement is being made under authority of this order; and

e. Industrial and other than railroad owned cars which are not to be used in service by respondents except for movement within the limits of a single switching district.

And, that the effective date of said order of September 21, 1945, as amended, be, and it is hereby, extended until further order of the FRA, insofar as it applies to:

f. Narrow-gauge cars, and

g. Cars being returned from Canada or Mexico to owners in the United States, provided each such car being returned is routed directly to owner and is properly identified by a card attached to each side of car, signed by shipper, stating that the movement is being made under authority of this order.

PART 233—SIGNAL, INTERLOCKING, TRAIN-CONTROL, AND TRAIN-ORDER STATISTICS

Sec.

233.0 Periodical reports required.

233.1 Instruction and report forms.

AUTHORITY: The provisions of this Part 233 issued under secs. 12 and 20, 24 Stat. 383, 386, as amended, sec. 441, 41 Stat. 498, as amended, sec. 6 (e) and (f), 80 Stat. 939; 49 U.S.C. 12, 20, 26, 1655.

§ 233.0 Periodical reports required.

The information called for below must be furnished the Federal Railroad Administration by all carriers by rail subject to the Section 26 of Title 49 of the United States Code not later than January 15 of each year, namely:

A statement as of January 1, of each year showing railroad lines or parts of lines operated under the block system, number and types of interlocking, information concerning automatic train-stop, train-control, and cab-signal systems, and methods of train operation, and train-communication systems, as set forth in the instructions, definitions, and report forms as set forth in § 233.1.

§ 233.1 Instructions and report forms.

Form No. 1. Block signal systems, annual report.

Form No. 2. Train operation by signal indications (without train orders), annual report.

Form No. 3. Train operation by timetable and train orders only, annual report.

Form No. 4. Interlocking and controlled points, annual report.

Form No. 5. Automatic train-stop, train-control, and cab-signal systems, annual report.

Form No. 6. Train communication systems, annual report.

PART 234—SIGNAL FAILURE REPORTS

Sec.

234.0 Monthly and telegraphic reports required.

234.1 List of forms.

§ 234.0 Monthly and telegraphic reports required.

(a) All carriers subject to section 26 of Title 49 of the United States Code shall report monthly, within 30 days after the end of each month, all failures of block signal systems, interlocking, automatic train stop, train control and cab signal devices, and other similar appliances, methods and systems to indicate or function as intended.

(b) The accompanying forms entitled "Signal Failure Report" and the method embodied in the instructions therein set forth are adopted and prescribed; and all carriers subject to said section of said act are hereby notified to use and follow the said prescribed forms and method in making the reports herein prescribed.

(c) In case of accident resulting from failure of any of said systems, devices or appliances to indicate or function as intended, which accident is reportable under the rules of the Federal Railroad Administration, report of such accident and of such failure shall be made forthwith by telegraph by the general manager, superintendent or other proper officer of the carrier on whose line said accident occurred, to the Director, Bureau of Railroad Safety, Federal Railroad Administration, Washington, D.C. 20591.

(Sec. 12, 24 Stat. 383, sec. 441, 41 Stat. 498, sec. 6, 80 Stat. 939, 940; 49 U.S.C. 12, 26, 1655.)

§ 234.1 List of forms.

1. Signal failure report.[1]
2. Instructions.

PART 236—INSTALLATION, INSPECTION, MAINTENANCE, AND REPAIR OF SYSTEMS, DEVICES AND APPLIANCES

Sec.

236.0 Applicability of this part.

[1] Filed with the Office of the Federal Register as part of the original document.

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AUTHORITY: The provisions of this Part 236 issued under sec. 12, 24 Stat. 383, sec. 441, 41 Stat. 498, sec. 6, 80 Stat. 939, 940; 49 U.S.C. 12, 26, 1655.

§ 236.0 Applicability of this part.

The following rules, standards, and instructions are hereby approved and prescribed for observance by each common carrier subject to the provisions of section 26 of Title 49 of United States Code.

Subpart A—Rules and Instructions: All Systems

GENERAL

§ 236.1 Plans, where kept.

Track layout plan, circuit plan, and where mechanical locking is used, locking sheet and dog chart, shall be kept at each interlocking and circuit plan shall be kept at each controlled point in traffic control systems; circuit plan for each automatic signal shall be available at the headquarters of the employee directly responsible for the maintenance of such signal; copies of all of the foregoing plans, and profile plan, drawn to scale, showing locations of signals, grades and alinement, for the sections of railroad under the jurisdiction of a divisional signal supervisory officer shall be kept at his headquarters; copies of plans pertaining to signal and interlocking facilities under the jurisdiction of general, regional or system signal officers shall be kept at their offices. All plans shall be correct and legible and available for use by the Federal Railroad Administration (FRA) representatives.

§ 236.2 Grounds.

Each circuit, the functioning of which affects the safety of train operations, shall be kept free of any ground or combination of grounds which will permit a flow of current equal to or in excess of 75 percent of the release value of any relay or other electromagnetic device in the circuit, except circuits which include any track rail and except the common return wires of single-wire, single-break, signal control circuits using a grounded common, and alternating current power distribution circuits which are grounded in the interest of safety.

§ 236.3 Locking of instrument cases and interlocking machine cabinets.

Outdoor signal and instrument cases shall be locked, except signal mechanism housings at interlockings where maintenance forces are continuously on duty. Power interlocking machine cabinets, time releases, and electric locks exposed on interlocking machines shall be locked or sealed.

§ 236.4 Interference with normal functioning of device.

The normal functioning of any device shall not be interfered with in testing or otherwise without first taking measures for insuring safety of train operation which depends on normal functioning of such device.

§ 236.5 Design of control circuits on closed circuit principle.

All control circuits the functioning of which affects safety of train operation shall be designed on the closed circuit principle, except circuits for roadway equipment of intermittent automatic train stop system.

§ 236.6 Hand-operated switch equipped with switch circuit controller.

Hand-operated switch equipped with switch circuit controller connected to the point, or with facing-point lock and circuit controller, shall be so maintained that when point is open one-fourth inch or more on facing-point switch and three-eighths inch or more on trailing-point switch, track or control circuits will be opened or shunted or both, and if equipped with facing-point lock with circuit controller, switch cannot be locked. On such hand-operated switch, switch circuit controllers, facing-point locks, switch-and-lock movements, and their connections shall be securely fastened in place, and contacts maintained with an opening of not less than one-sixteenth inch when open.

§ 236.7 Circuit controller operated by switch-and-lock movement.

Circuit controller operated by switch-and-lock movement shall be maintained so that normally open contacts will remain closed and normally closed contacts will remain open until the switch is locked.

§ 236.8 Operating characteristics of electromagnetic apparatus.

Operating characteristics of electromagnetic apparatus shall be maintained

in accordance with the limits within which such apparatus is designed to operate.

§ 236.9 Selection of circuits through indicating or annunciating instruments.

Signal control and electric locking circuits shall not be selected through the contacts of instruments designed primarily for indicating or annunciating purposes in which an indicating element attached to the armature is arranged so that it can in itself cause improper operation of the armature.

§ 236.10 Electric locks, force drop type; where required.

Electric locks on new installations and new electric locks applied to existing installations shall be of the forced drop type.

§ 236.11 Adjustment, repair, or replacement of component.

When any component of a system or interlocking, the proper functioning of which is essential to the safety of train operation, fails to perform its intended signalling function, it shall be adjusted, repaired or replaced without undue delay.

§ 236.12 Spring switch signal protection; where required.

Signal protection shall be provided for facing and trailing movements through spring switch within interlocking limits, and through spring switch hereafter installed in automatic block signal, train stop, train control or cab signal territory where train movements over the switch are made at a speed exceeding 20 miles per hour, except that signal protection shall be required only with the current of traffic on track signaled for movement in only one direction.

§ 236.13 Spring switch; selection of signal control circuits through circuit controller.

The control circuits of signals governing facing movements over a main track spring switch shall be selected through the contacts of a switch circuit controller, or through the contacts of relay repeating the position of such circuit controller, which, when normally closed switch point is open one-fourth inch or more, will cause such signals to display their most restrictive aspects, except that where a separate aspect is displayed for facing movements over the switch in the reverse position the signal shall display its most restrictive aspect when the switch points are open one-fourth inch or more from either the normal or reverse position.

§ 236.14 Spring switch signal protection; requirements.

(a) The indication of signal governing movements from siding to main track with the current of traffic on track signaled for movements in only one direction through a spring switch in automatic block signal territory shall be not less restrictive than "Proceed at Restricted Speed" when the block, into which movements are governed by the signal, is occupied, and shall be "Stop" when the main track is occupied by a train approaching the switch within at least 1,500 feet in approach of the approach signal located stopping distance from the main track signal governing trailing movements over switch, except that the indication may be caused to be less restrictive if approach or time locking is used.

(b) The indication of signal governing movements against the current of traffic from the reverse main of main tracks to a single track, or signal governing movements from a siding to a main track signaled for movements in either direction, through a spring switch, in automatic block signal territory, shall be not less restrictive than "Proceed at Restricted Speed" when the block, into which movements are governed by the signal, is occupied by a preceding train, and shall be "Stop" when the block on the single track into which the signal governs is occupied by an opposing train.

(c) The indication of signal governing movements against the current of traffic from the reverse main of main tracks to a single track or signal governing movements from a siding to a main track signaled for movements in either direction through a spring switch in automatic block signal territory shall be "Stop" when the normal direction main track of the double track or the single track signaled for movements in both directions is occupied by a train approaching the switch within at least 1,500 feet in approach of the approach signal located stopping distance from the main track signal governing trailing movements over switch, except that indication may be caused to be less restrictive if approach or time locking is used.

§ 236.15 Timetable instructions.

Automatic block, traffic control, train stop, train control and cab signal territory shall be designated in timetable instructions.

§ 236.16 Relief.

Relief from the requirements of this part will be granted upon an adequate showing by an individual carrier. Relief heretofore granted to any carrier by order of the Federal Railroad Administration (FRA) shall constitute relief to the same extent from the requirements of this part.

ROADWAY SIGNALS AND CAB SIGNALS

§ 236.21 Location of roadway signals.

Each roadway signal hereafter installed shall be located over or to the right of the track it governs.

§ 236.22 Semaphore signal arm; clearance to other objects.

At least one-half inch clearance shall be provided between semaphore signal arm, and any object that may interfere with its operation.

§ 236.23 Aspects and indications.

(a) Aspects shall be shown by the position of semaphore blades, color of lights, position of lights, flashing of lights, or any combination thereof. They may be qualified by marker plate, number plate, letter plate, marker light, shape and color of semaphore blades or any combination thereof, subject to the following conditions:

(1) Night aspects of roadway signals, except qualifying appurtenances, shall be shown by lights; day aspects by lights or semaphore arms. A single white light shall not be used.

(2) Reflector lenses or buttons or other devices which depend for visibility upon reflected light from an external source shall not be used in night aspects, except qualifying appurtenances.

(b) The aspects of cab signals shall be shown by lights or by illuminated letters.

(c) Each aspect displayed by a signal shall be identified by a name and shall indicate action to be taken. Only one name and indication shall apply to those aspects indicating the same action to be taken; the same aspect shall not be used with any other name and indication.

(d) The fundamental indications of signal aspects shall conform to the following:

(1) A red light, a series of horizontal lights or a semaphore blade in a horizontal position shall be used to indicate stop.

(2) A yellow light, a lunar light, or a series of lights or a semaphore blade in the upper or lower quadrant at an angle of approximately 45 degrees to the vertical, shall be used to indicate that speed is to be restricted and stop may be required.

(3) A green light, a series of vertical lights, or a semaphore blade in a vertical position in the upper quadrant or 60° or 90° in the lower quadrant shall be used to indicate proceed at authorized speed.

(e) The names, indications and aspects of roadway signals and cab signals shall be defined in Block Signal and Interlocking Rules in effect on each railroad subject to these rules, standards and instructions. Copy of such Block Signal and Interlocking Rules shall be filed with the Federal Railroad Administration within six months after the date of this order and copy of subsequent modifications shall be filed with said FRA within thirty days after such modifications become effective. Such rules and any modifications thereof shall remain in effect until otherwise ordered by the FRA.

§ 236.24 Spacing of roadway signals.

Each roadway signal shall be located with respect to the next signal or signals in advance which govern train movements in the same direction so that the indication of a signal displaying a restrictive aspect can be complied with by means of a brake application, other than an emergency application, initiated at such signal, either by stopping at the signal where a stop is required, or by a reduction in speed to the rate prescribed by the next signal in advance where reduced speed is required.

§ 236.25 False restrictive position of semaphore signal arm or failure of lamp in light signal.

If an arm of a semaphore signal assumes a false restrictive position or if a lamp in a light signal fails the signal shall not display a less restrictive aspect than intended.

§ 236.26 Buffing device, maintenance.

Buffing device shall be maintained so as not to cause the signal to display a less restrictive aspect than intended.

§ 236.27 Phantom signal aspect.

Measures shall be taken to prevent recurrence of a phantom signal aspect.

TRACK CIRCUITS

§ 236.51 Track circuit requirements.

Track relay shall be in deenergized position whenever any of the following conditions exists, and the track circuit of an automatic train-stop, train-control, or cab-signal system shall be deenergized in the rear of the point where any of the following conditions exists:

(a) When a rail is broken or a rail or switch-frog is removed except when a rail is broken or removed in the shunt fouling circuit of a turnout or crossover, provided, however, that shunt fouling circuit may not be used in a turnout through which permissible speed is greater than 45 miles per hour. It shall not be a violation of this requirement if a track circuit is energized: (1) When a break occurs between the end of rail and track circuit connector; within the limits of rail-joint bond, appliance or other protective device, which provides a by-path for the electric current, or (2) as result of leakage current or foreign current in the rear of a point where a break occurs or a rail is removed.

(b) When a train, locomotive, or car occupies any part of a track circuit, including fouling section of turnout except turnouts of hand-operated main track crossover. It shall not be a violation of this requirement where the presence of sand, rust, dirt, grease, or other foreign matter prevents effective shunting, except that where such conditions are known to exist adequate measures to safeguard train operation must be taken.

(c) Where switch shunting circuit is used:

(1) Switch point is not closed in normal position.

(2) A switch is not locked where facing-point lock with circuit controller is used.

(3) An independently operated fouling-point derail equipped with switch circuit controller is not in derailing position.

§ 236.52 Relayed cut-section.

Where relayed cut-section is used in territory where noncoded direct-current track circuits are in use the energy circuit to the adjoining track shall be open and the track circuit shunted when the track relay at such cut-section is in deenergized position.

§ 236.53 Track circuit feed at grade crossing.

At grade crossing with an electric railroad where foreign current is present, the electric energy for noncoded direct current track circuit shall feed away from the crossing.

§ 236.54 Minimum length of truck circuit.

The length of any track circuit, except trap circuit or special circuit not used for control of signaling facilities, shall be greater than maximum inner wheel base of any locomotive or car.

§ 236.55 Dead section; maximum length.

Where dead section exceeds 35 feet, special circuit shall be installed. Where shortest outer wheel base of a locomotive operating over such dead section is less than 35 feet, the maximum length of the dead section shall not exceed the length of the outer wheel base of such locomotive unless special circuit is used.

§ 236.56 Shunting sensitivty.

Track circuit shall be so maintained that track relay will be in deenergized position if, when track circuit is dry, a shunt of 0.06 ohm resistance is connected across the track rails of the circuit, including fouling sections of turnouts.

§ 236.57 Shunt wires.

Shunt wires and fouling wires, except shunt wires to switch circuit controller through which signal control circuits are controlled and track circuits are shunted, shall consist of at least two conductors and each shall be of sufficient conductivity and maintained in such condition that the track relay will be in deenergized position when the circuit is shunted.

§ 236.58 Turnout, fouling section.

Fouling section of turnout shall extend to clearance point.

§ 236.59 Insulated rail joints.

Insulated rail joints shall be maintained in condition to prevent sufficient track circuit current from flowing between the rails separated by the insulation to cause a failure of any track circuit involved.

WIRES AND CABLES

§ 236.71 Signal wires on pole lines.

Signal wires carried on pole lines shall be securely tied in on insulators.

§ 236.72 Clearance of overhead signal wires and cables.

Where men are permitted to be on top of cars, the clear space between the lowest overhead signal line conductor and the top of track rails shall be not less than 27 feet at 60° F., no wind. The distance may be reduced to 25 feet for guys and for cables carried on messengers.

§ 236.73 Open-wire transmission line; clearance to other circuits.

Open-wire transmission line operating at voltage of 750 volts or more shall be placed not less than 4 feet above the nearest crossarm carrying signal or communication circuits.

§ 236.74 Protection of insulated wire; splice in underground wire.

Insulated wire shall be protected from mechanical injury. The insulation shall not be punctured for test purposes. Splice in underground wire shall have insulation resistance at least equal to the wire spliced.

§ 236.75 Insulated wires and cables; supports.

Insulated wires and cables used aerially shall be supported on insulators or by messengers.

§ 236.76 Interference of wires with operating parts of mechanisms.

Wires shall not interfere with operating parts of mechanisms.

§ 236.77 Tagging of wires.

Each wire shall be tagged or otherwise marked so it can be identified at each terminal. Nomenclature shall correspond to that of the circuit plan. Tags or other marks of identification in instrument cases and apparatus housings shall be made of insulating material and shall not interfere with moving parts or apparatus.

§ 236.78 Lightning arrester.

Lightning arrester shall be properly connected and ground maintained with resistance to ground preferably not more than 25 ohms.

INSPECTIONS AND TESTS; ALL SYSTEMS

§ 236.101 Purpose of inspections and tests; removal from service of relay failing to meet test requirements.

The following inspections and tests shall be made in accordance with specifications of the carrier subject to approval of the FRA to determine if the apparatus and/or equipment is maintained in condition to perform its intended function. Relay or other electromagnetic device which fails to meet the requirements of specified tests shall be removed from service, and shall not be restored to service until its operating characteristics are in accordance with the limits within which such relay or electromagnetic device is designed to operate.

§ 236.102 Signal mechanism.

Signal mechanism shall be inspected at least once every six months, and tests of the operating characteristics of all parts shall be made at least once every two years.

§ 236.103 Switch circuit controller.

Switch circuit controller shall be inspected and tested at least once every three months.

§ 236.104 Shunt fouling circuit.

Shunt fouling circuit shall be inspected and tested at least once every three months.

§ 236.105 Electric lock.

Electric lock, except forced-drop type, shall be tested at least once every two years.

§ 236.106 Relays.

Relay in service, except locomotive relay, shall be tested at least once every two years.

§ 236.107 Lightning arresters.

Gas and vacuum type lightning arresters shall be tested at least once a year.

§ 236.108 Insulation resistance tests.

Insulation resistance tests shall be made when wires, cables, and insulation are dry. Wires and cables, except wires connected directly to track rails, shall be tested in accordance with the following schedule. Conductors shall be promptly repaired or renewed when insulation resistance is below the following values:

Description	Period	Minimum allowable resistance
Low voltage (660 volts or less) wires and cables with insulation and protective outer covering not specifically designed for underground use, any part of which is underground or in trunking.	5 years	1 megohm.
Low voltage (660 volts or less) wires and cables with insulation and protective outer covering not specifically designed for underground use, no part of which is underground or in trunking.	8 years	Do.
Low voltage (660 volts or less) wires and cables with insulation and protective outer covering designed specifically for underground use, or in underground conduit, or as submarine cables.	8 years	Do.
Local signal wiring	do	Do.
Lead covered signal power cable	do	100 megohms between sectionalizing switches.
Underground signal power lines not lead sheathed	5 years	40 megohms for voltages up to and including 660 volts for section tested. 100 megohms between sectionalizing switches for voltages exceeding 660.

§ 236.109 Records of results of tests; forms for keeping records; where filed.

Results of tests made in compliance with §§ 236.102 to 236.108 inclusive, §§ 236.376 to 236.387, inclusive, and §§ 236.576, 236.577, 236.586, 236.588, and 236.589 shall be recorded on forms provided by the railroad. Such forms shall show name of railroad, place and date, equipment tested, repairs, replacements, adjustments made, and condition in which apparatus was left, and signature of employee making the test. Each form shall be filed in the office of a divisional officer of the division on which the tests were made.

Subpart B—Automatic Block Signal Systems

STANDARDS

§ 236.201 Track-circuit control of signals.

The control circuits for home signal aspects with indications more favorable than "proceed at restricted speed" shall be controlled automatically by track circuits extending through the entire block.

§ 236.202 Signal governing movements over hand-operated switch.

Signal governing movements over hand-operated switch in the facing direction shall display its most restrictive aspect when the points are open one-fourth inch or more and, in the trailing direction, three-eighths inch or more, except that where a separate aspect is displayed for facing movements over the switch in the normal and in the reverse position, the signal shall display its most restrictive aspect when the switch points are open one-fourth inch or more from either the normal or reverse position.

§ 236.203 Hand operated crossover between main tracks; protection.

At hand-operated crossover between main tracks, protection shall be provided by one of the following: (a) An arrangement of one or more track circuits and switch circuit controllers, (b) facing point locks on both switches of the crossover, with both locks operated by a single lever, or (c) electric locking of the switches of the crossover. Signals governing movements over either switch shall display their most restrictive aspect when any of the following conditions exist:

(1) Where protection is provided by one or more track circuits and switch circuit controllers, and either switch is open or the crossover is occupied by a train, locomotive or car in such a manner as to foul the main track. It shall not be a violation of this requirement where the presence of sand, rust, dirt, grease or other foreign matter on the rail prevents effective shunting;

(2) Where facing point locks with a single lever are provided, and either switch is unlocked;

(3) Where the switches are electrically locked, before the electric locking releases.

§ 236.204 Track signaled for movements in both directions, requirements.

On track signaled for movements in both directions, a train shall cause one or more opposing signals immediately ahead of it to display the most restrictive aspect, the indication of which shall be not more favorable than "proceed at restricted speed." Signals shall be so arranged and controlled that if opposing trains can simultaneously pass signals displaying proceed aspects and the next signal in advance of each such signal then displays an aspect requiring a stop, or its most restrictive aspect, the distance between opposing signals displaying such aspects shall be not less than the aggregate of the stopping distances for movements in each direction. Where such opposing signals are spaced stopping distance apart for movements in one direction only, signals arranged to display restrictive aspects shall be provided in approach to at least one of the signals. Where such opposing signals are spaced less than stopping distance apart for movements in one direction, signals arranged to display restrictive aspects shall be provided in approach to both such signals. In absolute permissive block signaling when a train passes a head block signal it shall cause the opposing head block signal to display an aspect requiring a stop.

§ 236.205 Signal control circuits; requirements.

The circuits shall be so installed that each signal governing train movements into a block will display its most restrictive aspect when any of the following conditions obtain within the block; (a) occupancy by a train, locomotive, or car, (b) when points of a switch are not closed in proper position, (c) when an independently operated fouling point derail equipped with switch circuit controller is not in derailing position, (d) when a track relay is in deenergized position; or when signal control circuit is deenergized.

§ 236.206 Battery or power supply with respect to relay; location.

The battery or power supply for each signal control relay circuit, where an open-wire circuit or a common return circuit is used, shall be located at the end of the circuit farthest from the relay.

§ 236.207 Electric lock on hand-operated switch; control.

Electric lock on hand-operated switch shall be controlled so that it cannot be unlocked until control circuits of signals protecting such switch have been opened. Approach or time locking shall be provided.

Subpart C—Interlocking

STANDARDS

§ 236.301 Where signals shall be provided.

Signals shall be provided to govern train movements into and through interlocking limits, except that a signal shall not be required to govern movements over a hand-operated switch into interlocking limits if the switch is provided with an electric lock and a derail at the clearance point, either pipe-connected to the switch or independently locked, electrically. Electric locks installed under this rule must conform to the time and approach locking requirements of Rule 314 (without reference to the 20-mile exceptions), and those of either Rule 760 or Rule 768, as may be appropriate.

§ 236.302 Track circuit and route locking.

Track circuits and route locking shall be provided. Route locking shall be effective when the first pair of wheels of a locomotive or car passes a point not more than 13 feet in advance of the signal governing its movement.

NOTE 1: Existing installations on each railroad, which do not conform to the requirements of this section shall be brought into conformity on or before December 31, 1970.

§ 236.303 Control circuits for signals, selection through circuit controller operated by switch points or by switch locking mechanism.

The control circuit for each aspect with indication more favorable than "proceed at restricted speed" of power operated signal governing movements over switches, movable-point frogs and derails shall be selected through circuit controller operated directly by switch points or by switch locking mechanism, or through relay controlled by such circuit controller, for each switch, movable-point frog, and derail in the routes governed by such signal. Circuits shall be arranged so that such signal can display an aspect more favorable than "proceed at restricted speed," only when each switch, movable-point frog, and derail in the route is in proper position.

NOTE: Existing installations on each railroad, which do not conform to the requirements of the section shall be brought into conformity on or before December 31, 1970.

§ 236.304 Mechanical locking or same protection effected by circuits.

Mechanical locking, or the same protection effected by means of circuits, shall be provided.

§ 236.305 Approach or time locking.

Approach or time locking shall be provided in connection with signals displaying aspects with indications more favorable than "proceed at restricted speed."

§ 236.306 Facing point lock or switch-and-lock movement.

Facing point lock or switch-and-lock movement shall be provided for mechanically operated switch, movable-point frog, or split-point derail.

§ 236.307 Indication locking.

Indication locking shall be provided for operative approach signals of the semaphore type, power-operated home signals, power-operated switches, movable-point frogs and derails, and for all approach signals hereafter installed, except light signals all aspects of which are controlled by coded track circuits or by double wire line circuits.

§ 236.308 Mechanical or electric locking or electric circuits; requisites.

Mechanical or electric locking or electric circuits shall be installed to prevent signals from displaying aspects which permit conflicting movements except that opposing signals may display an aspect indicating proceed at restricted speed at the same time on a track used for switching movements only, by one train at a time. Manual interlocking in service as of the date of this part at which opposing signals on the same track are permitted simultaneously to display aspects authorizing conflicting movements when interlocking is unattended, may be continued, provided that simultaneous train movements in opposite directions on the same track between stations on either side of the interlocking are not permitted.

NOTE: Relief from the requirement of this section will be granted upon an adequate showing by an individual carrier to allow opposing signals on the same track simultaneously to display aspects to proceed through an interlocking which is unattended, provided that train movements in opposite directions on the same track between stations on either site of the interlocking are not permitted at the same time.

§ 236.309 Loss of shunt at automatic interlocking.

At automatic interlocking, a loss of shunt of 5 seconds or less shall not permit an established route to be changed.

§ 236.310 Signal governing approach to home signal.

A signal shall be provided on main track to govern the approach with the current of traffic to any home signal except where the home signal is the first signal encountered when leaving yards or stations and authorized speed approaching such signal is not higher than slow speed. When authorized speed between home signals on route governed is 20 miles per hour or less, an inoperative signal displaying an aspect indicating "approach next signal prepared to stop" may be used to govern the approach to the home signal.

§ 236.311 Signal control circuits, selection through track relays, and through signal mechanism contacts and time releases at automatic interlocking.

The control circuits for aspects with indications more favorable than "proceed at restricted speed" shall be selected through track relays for all track circuits in the route governed, or through repeating relays for such track relays. At automatic interlocking, signal control circuit shall be selected (a) through track relays for all track circuits in the route governed and in all conflicting routes within interlocking limits or through repeating relays for such track relays; (b) through signal mechanism contacts or relay contacts closed when signals for such conflicting routes display stop aspects; and (c) through normal contacts of time releases for such conflicting routes or contacts of relays repeating the normal position of Contacts on such time releases.

[31 F.R. 2381, Feb. 4, 1966]

§ 236.312 Movable bridge, interlocking of signal appliances with bridge devices.

When movable bridge is protected by interlocking the signal appliances shall be so interlocked with bridge devices that before a signal governing movements over the bridge can display an aspect to proceed the bridge must be locked and the track alined, with the bridge locking members within one inch of their proper positions and with the track rail on the movable span within three-eighths inch of correct surface and alinement with rail seating device on bridge abutment or fixed span.

§ 236.313 Pipe for operating connections; requirements.

Steel or wrought-iron pipe one inch or larger, or members of equal strength shall be used for operating connections for switches, derails, movable-point frogs, facing point locks, rail-locking devices of movable bridge protected by interlocking, and mechanically operated signals, except up-and-down rod which may be three-fourths inch pipe or solid rod. Pipes shall be fully screwed into coupling and both ends of each pipe shall be riveted to pipe plug with 2 rivets. Pipeline shall not be out of alinement sufficiently to interfere with the proper operation of the interlocking, shall be properly compensated for temperature changes, and supported on carriers spaced not more than 8 feet apart on tangent and curve of less than 2° and not more than 7 feet apart on curve of 2° or more. With lever in any position, couplings in pipe line shall not foul carriers.

§ 236.314 Electric lock for hand-operated switch or derail.

Electric lock shall be provided for each hand-operated switch or derail within interlocking limits, except where train movements are made at not exceeding 20 miles per hour. At manually operated interlocking it shall be controlled by operator of the machine and shall be unlocked only after signals governing movements over such switch or derail display aspects indicating stop. Approach or time locking shall be provided.

RULES AND INSTRUCTIONS

§ 236.326 Mechanical locking removed or disarranged; requirement for permitting train movements through interlocking.

When mechanical locking of interlocking machine is being changed or is removed from the machine, or locking becomes disarranged or broken, unless protection equivalent to mechanical locking is provided by electric locking or electric circuits, train movements through the interlocking shall not be permitted until each switch, movable-point frog or derail in the route is spiked, clamped or blocked in proper position so that it cannot be moved by its controlling lever, and then train movements shall not exceed restricted speed until the interlocking is restored to normal operation. It will not be necessary to comply with this requirement at interlockings where protection is in service in accordance with section 303, provided that the signal controls are arranged so that the signals cannot display an aspect the indication of which is less restrictive than "proceed at restricted speed."

§ 236.327 Switch, movable-point frog or split-point derail.

Switch, movable-point frog or split-point derail shall be maintained so that it cannot be locked if the switch point is prevented by an obstruction from closing to within three-eighths inch.

§ 236.328 **Plunger of facing-point lock.**

Plunger of lever operated facing-point lock shall have at least 8-inch stroke. When lock lever is in unlocked position the end of the plunger shall clear the lock rod not more than one inch.

§ 236.329 **Bolt lock.**

Bolt lock shall be so maintained that signal governing movements over switch or derail and displaying an aspect indicating stop cannot be operated to display a less restrictive aspect while derail is in derailing position, or when switch point is open one-half inch or more.

§ 236.330 **Locking dog of switch-and-lock movement.**

Locking dog of switch-and-lock movement shall extend through lock rod one-half inch or more in either normal or reverse position.

§ 236.331 **Repairs to switch and signal valves and cylinders.**

Repairs to switch and signal valves and cylinders shall not be made while they are in service.

§ 236.332 **Air distribution system; draining condensation.**

Provision shall be made for draining condensation out of air distribution system at low points. Condensers, tanks, reservoirs, and air distribution lines shall be drained frequently enough to avoid overflow of condensation into branch lines and apparatus.

§ 236.333 **Pole changer on electric switch operating mechanism.**

Pole changer on electric switch operating mechanism shall be maintained so that movement of switch mechanism follows movement of controlling lever.

§ 236.334 **Point detector.**

Point detector shall be maintained so that when switch mechanism is locked in normal or reverse position, contacts cannot be opened by manually applying force at the closed switch point. Point detector circuit controller shall be maintained so that the contacts will not assume the position corresponding to switch point closure if the switch point is prevented by an obstruction, from closing to within one-fourth inch where latch-out device is not used, and to within three-eighths inch where latch-out device is used.

§ 236.335 **Dogs, stops and trunnions of mechanical locking.**

Driving pieces, dogs, stops and trunnions shall be rigidly secured to locking bars. Swing dogs shall have full and free movement. Top plates shall be maintained securely in place.

§ 236.336 **Locking bed.**

The various parts of the locking bed, locking bed supports, and tappet stop rail shall be rigidly secured in place and alined to permit free operation of locking.

§ 236.337 **Locking faces of mechanical locking; fit.**

Locking faces shall fit squarely against each other with a minimum engagement when locked of at least one-half the designed locking face.

§ 236.338 **Mechanical locking required in accordance with locking sheet and dog chart.**

Mechanical locking shall be in accordance with locking sheet and dog chart currently in effect.

§ 236.339 **Mechanical locking, maintenance requirements.**

Locking and connections shall be maintained so that, when a lever or latch is mechanically locked the following will be prevented:

(a) *Mechanical machine.* (1) Latch-operated locking. Raising lever latch block so that bottom thereof is within three-eighths inch of top of quadrant.

(2) Lever-operated locking. Moving lever latch block more than three-eighths inch on top of quadrant.

(b) *Electromechanical machine.* (1) Lever moving in horizontal plant. Moving lever more than five-sixteenths inch when in normal position or more than nine-sixteenths inch when in reverse position.

(2) Lever moving in arc. Moving lever more than 5 degrees.

(c) *Power machine.* (1) Latch-operated locking. Raising lever latch block to that bottom thereof is within seven thirty-seconds inch of top of quadrant.

(2) Lever moving in horizontal plane. Moving lever more than five-sixteenths inch when in normal position or more than nine-sixteenths inch when in reverse position.

(3) Lever moving in arc. Moving lever more than 5 degrees.

§ 236.340 **Electromechanical interlocking machine; locking between electrical and mechanical levers.**

In electro-mechanical interlocking machine, locking between electric and mechanical levers shall be maintained so that mechanical lever cannot be operated except when released by electric lever.

§ 236.341 **Latch shoes, rocker, links, and quadrants.**

Latch shoes, rocker links, and quadrants of Saxby and farmer machines shall be maintained so that locking will not release if a downward force not exceeding a man's weight is exerted on the rocker while the lever is in the mid-stroke position.

§ 236.342 **Switch circuit controller.**

Switch circuit controller connected at the point to switch, derail, or movable-point frog, shall be maintained so that its contacts will not be in position corresponding to switch point closure when switch point is open one-fourth inch or more.

INSPECTION AND TESTS

§ 236.376 **Mechanical locking.**

Mechanical locking in interlocking machine shall be tested when new locking is placed in service or change in locking is made. Complete test shall be made at least once every 4 years.

§ 236.377 **Approach locking.**

Approach locking shall be tested at least once a year.

§ 236.378 **Time locking.**

Time locking shall be tested at least once a year.

§ 236.379 **Route locking.**

Route or other type of switch locking shall be tested at least once every three months.

§ 236.380 **Indication locking.**

Indication locking for semaphore signals and for switch or lock levers shall be tested at least once a year and for light signals at least once every two years.

§ 236.381 **Traffic locking.**

Traffic locking shall be tested at least once a year.

§ 236.382 **Switch obstruction test.**

Switch obstruction test shall be made at least once a month.

§ 236.383 **Valve locks and valve magnets.**

Valve locks on valves of the non-cut-off type, valves, and valve magnets shall be tested at least once every three months.

§ 236.384 **Cross protection.**

Cross protection shall be tested at least once every three months.

§ 236.385 **Time releases and timing relays.**

Time releases and timing relays shall be tested at least once every three months. The timing shall be maintained at not less than 90 percent of the predetermined time interval, which shall be shown on the plans or marked on the time release or relay.

§ 236.386 **Restoring feature on power switches.**

Restoring feature on power switches shall be tested at least once every three months.

§ 236.387 **Movable bridge locking.**

Movable bridge locking shall be tested at least once a year.

Subpart D—Traffic Control Systems

STANDARDS

§ 236.401 **Automatic block signal system and interlocking standards applicable to traffic control systems.**

The standards prescribed in §§ 236.201 to 236.203, inclusive, §§ 236.205, 236.206, 236.303, 236.307, 236.310 and 236.311 shall apply to traffic control systems.

§ 236.402 **Signals controlled by track circuits and control operator.**

The control circuits for home signal aspects with indications more favorable than "proceed at restricted speed" shall be controlled by track circuits extending through entire block. Also in addition, at controlled point they may be controlled by control operator, and, at manually operated interlocking, they shall be

controlled manually in cooperation with control operator.

§ 236.403 Signals at controlled point.

Signals at a controlled point shall be so interconnected that aspects to proceed cannot be displayed simultaneously for conflicting movements.

§ 236.404 Signals at adjacent control points.

Signals at adjacent controlled points shall be so interconnected that aspects to proceed on tracks signaled for movements at greater than restricted speed cannot be displayed simultaneously for conflicting movements.

§ 236.405 Track signaled for movements in both directions, change of direction of traffic.

On track signaled for movements in both directions, occupancy of the track between opposing signals at adjacent controlled points shall prevent changing the direction of traffic from that which obtained at the time the track became occupied, except that when a train having left one controlled point reaches a section of track immediately adjacent to the next controlled point at which switching is to be performed, an aspect permitting movement at not exceeding restricted speed may be displayed into the occupied block.

§ 236.406 Indication of track circuit occupancy at controlled points.

Occupancy of track circuits at controlled points shall be automatically indicated at the control station.

§ 236.407 Approach or time locking; where required.

Approach or time locking shall be provided for all controlled signals.

§ 236.408 Route locking.

Route locking shall be provided where switches are power operated. Route locking shall be effective when the first pair of wheels of a locomotive or car passes a point not more than 13 feet in advance of the signal governing its movement.

NOTE 1.—Existing installations on each railroad, which do not conform to the requirements of the last sentence of this section shall be brought into conformity on or before December 31, 1970.

§ 236.409 Control machine; indication of switch operation.

It shall be indicated on the control machine when power-operated switch has completed its movement and is locked.

§ 236.410 Locking, hand-operated switch.

(a) Each hand-operated switch in main track shall be locked either electrically or mechanically in normal position, except where:

(1) Train speeds over switch do not exceed 20 miles per hour; or

(2) Trains are not permitted to clear the main track at such switch; or

(3) Both switch and traffic-control system were installed prior to October 1, 1950.

(b) Approach or time locking shall be provided and locking may be released either automatically, or by the control operator, but only after the control circuits of signals governing movement in either direction over the switch and which display aspects with indications more favorable than "proceed at restricted speed" have been opened directly or by shunting of track circuit.

NOTE 1: Each carrier subject to this rule is hereby authorized to remove electrical or mechanical locks now installed within the purview of Section 236.410 when either exception (1) or (2) of the present rule is satisfied, subject to the condition that the following procedures and actions be accomplished:

1. Each carrier intending to remove a lock under the findings made herein and based on the existence of one or more of the circumstances as set forth in exceptions (1) or (2) as contained in the revised section, shall:

(a) Notify the FRA by letter setting forth the location of the lock involved and the specific exception on which removal is based.

(b) Include in the letter to the FRA an assurance that the excepting circumstance relied upon will not be changed without either reinstallation of the electric or mechanical lock, or approval by the FRA of the changed circumstances.

(c) Publish in its Time Table the not-to-exceed 20 miles per hour speed limit covering the area of the switch, when that is the exception relied upon; or, where exception (2) is relied upon, publish either in the Special Instructions part of its Time Table or in separate printed Special Instructions the location of each hand-operated switch where electric or mechanical lock is removed and, where train movements are made in excess of twenty (20) miles per hour, concurrently issuing specific instructions, by stating therein, that trains are not to be permitted to clear the main track at such switch.

2. Following the foregoing, and upon acknowledgment of the letter to the FRA, such acknowledgment to be made promptly as an administrative action by the FRA's Bureau of Railroad Safety, and such acknowledging letter to be retained by the carrier as authority for the removal and as a record of the exception on which relied, the lock may then be removed.

RULES AND INSTRUCTIONS

§ 236.426 Interlocking rules and instructions applicable to traffic control systems.

The rules and instructions prescribed in §§ 236.327 and 236.328, 236.330 to 236.334, inclusive, and 236.342 shall apply to traffic control systems.

INSPECTION AND TESTS

§ 236.476 Interlocking inspections and tests applicable to traffic control systems.

The inspections and tests prescribed in §§ 236.377 to 236.380, inclusive, and 236.382, 236.383, 236.385, and 236.386 shall apply to traffic control systems.

Subpart E—Automatic Train Stop, Train Control and Cab Signal Systems

STANDARDS

§ 236.501 Forestalling device and speed control.

(a) An automatic train stop system may include a device by means of which the automatic application of the brakes can be forestalled.

(b) Automatic train control system shall include one or more of the following features:

(1) Low-speed restriction, requiring the train to proceed under slow speed after it has either been stopped by an automatic application of the brakes, or under control of the engineman, its speed has been reduced to slow speed, until the apparatus is automatically restored to normal because the condition which caused the restriction no longer affects the movement of the train.

(2) Medium-speed restriction, requiring the train to proceed under medium speed after passing a signal displaying an approach aspect or when approaching a signal requiring a stop, or a stop indication point, in order to prevent an automatic application of the brakes.

NOTE: Relief from the requirements of subparagraphs (1) and (2) of this paragraph will be granted, insofar as speed limits fixed by definitions of Slow and Medium speeds are concerned, upon an adequate showing by an individual carrier where automatic train control systems now in service enforce speed restrictions higher than those required by definitions in §§ 236.700 to 236.838 inclusive.

(3) Maximum-speed restriction, effecting an automatic brake application whenever the predetermined maximum speed limit is exceeded.

§ 236.502 Automatic brake application, initiation by restrictive block conditions stopping distance in advance.

An automatic train-stop or train-control system shall operate to initiate an automatic brake application at least stopping distance from the entrance to a block, wherein any condition described in § 236.205 obtains, and at each main track signal requiring a reduction in speed.

§ 236.503 Automatic brake application; initiation when predetermined rate of speed exceeded.

An automatic train control system shall operate to initiate an automatic brake application when the speed of the train exceeds the predetermined rate as required by the setting of the speed control mechanism.

§ 236.504 Operation interconnected with automatic block-signal system.

An automatic train-stop or train-control system shall operate in connection with an automatic block-signal system and shall be so interconnected with the signal system as to perform its intended

function in event of failure of the engineman to obey a main track signal requiring a reduction in speed.

§ 236.505 Proper operative relation between parts along roadway and parts on locomotive.

Proper operative relation between the parts along the roadway and the parts on the locomotive shall obtain under all conditions of speed, weather, wear, oscillation, and shock.

§ 236.506 Release of brakes after automatic application.

The automatic train stop or train control apparatus shall prevent release of the brakes after automatic application until a reset device has been operated, or the speed of the train has been reduced to a predetermined rate, or the condition that caused the brake application no longer affects the movement of the train. If reset device is used it shall be arranged so that the brakes cannot be released until the train has been stopped, or it shall be located so that it cannot be operated by engineman without leaving his accustomed position in the cab.

§ 236.507 Brake application; full service.

The automatic train stop or train control apparatus shall, when operated, cause a full service application of the brakes.

§ 236.508 Interference with application of brakes by means of brake valve.

The automatic train stop, train control or cab signal apparatus shall be arranged so as not to interfere with the application of the brakes by means of the brake valves and not to impair the efficiency of the air brake system.

§ 236.509 Two or more locomotives coupled.

The automatic train stop, train control or cab signal apparatus shall be arranged so that when two or more locomotives are coupled, or a pushing or helping locomotive is used, it can be made operative only on the locomotive from which the brakes are controlled.

§ 236.510 Conformance with established clearances.

The automatic train stop, train control and cab signal apparatus shall be arranged so as to conform to carriers' established clearances for equipment and structures.

§ 236.511 Cab signals controlled in accordance with block conditions stopping distance in advance.

The automatic cab signal system shall be arranged so that cab signals will be continuously controlled in accordance with conditions described in § 236.205 that obtain at least stopping distance in advance.

§ 236.512 Cab signal indication when locomotive enters block where restrictive conditions obtain.

The automatic cab signal system shall be arranged so that when a locomotive enters or is within a block, wherein any condition described in § 236.205 obtains, the cab signals shall indicate "Proceed at Restricted Speed."

§ 236.513 Audible indicator.

The automatic cab signal system shall be arranged so that when the cab signal changes to display a more restrictive aspect, an audible indicator will sound continuously until silenced by manual operation of an acknowledging device.

§ 236.514 Interconnection of cab signal system with roadway signal system.

The automatic cab signal system shall be interconnected with the roadway-signal system so that the cab signal indication will not authorize operation of the train at a speed higher than that authorized by the indication of the roadway signal that governed the movement of a train into a block except when conditions affecting movement of trains in the block change after the train passes the signal.

§ 236.515 Visibility of cab signals.

The cab signals shall be plainly visible to members of the locomotive crew from their stations in the cab.

§ 236.516 Cab indicator; requirements.

The cab indicator shall have a distinctive sound which will be clearly audible throughout the cab under all operating conditions.

RULES AND INSTRUCTIONS; ROADWAY

§ 236.526 Roadway element not functioning properly.

When a roadway element except track circuit of automatic train stop, train control or cab signal system is not functioning as intended, the signal associated with such roadway element shall be caused manually to display its most restrictive aspect until such element has been restored to normal operative condition.

§ 236.527 Roadway element insulation resistance.

Insulation resistance between roadway inductor or magnet winding and ground shall be maintained at not less than 10,000 ohms.

§ 236.528 Restrictive condition resulting from open hand-operated switch; requirement.

When a facing point hand-operated switch is open one-fourth inch or more, a trailing point hand-operated switch three-eighths inch or more, or hand-operated switch is not locked where facing point lock with circuit controller is used, the resultant restrictive condition of an automatic train stop or train control device of the continuous type or the resultant restrictive cab signal indication of an automatic cab signal device on an approaching locomotive shall be maintained to within 300 feet of the points of the switch.

§ 236.529 Roadway element inductor; height and distance from rail.

Inductor of the inert roadway element type shall be maintained with the inductor pole faces at a height above the plane of the tops of the rails, and with its inner edge at a horizontal distance from the gage side of the nearest running rail, in accordance with specifications of the carrier on file with the FRA.

§ 236.530 Ramp; height and distance from rail.

Ramp of automatic train stop device shall be maintained with its contact surface at its highest point at a height above the plane of the tops of the rails, and with its center line at a horizontal distance from the gage side of the nearest running rail, in accordance with specifications of the carrier on file with the FRA.

§ 236.531 Trip arm; height and distance from rail.

Trip arm of automatic train stop device when in stop position shall be maintained at a height above the plane of the tops of the rails, and at a horizontal distance from its center line to gage side of the running rail, in accordance with specifications of the carrier on file with the FRA.

§ 236.532 Strap iron inductor; use restricted.

No railroad shall use strap iron inductor, short ramp, or other roadway element with characteristics differing from its standard type, on track where speed higher than restricted speed is permitted.

§ 236.533 Track magnet; height.

Track magnet located between the rails of a track shall not extend above the plane of the tops of the rails.

§ 236.534 Entrance to equipped territory; requirements.

Where trains are not required to stop at the entrance to equipped territory, except when leaving yards and stations and speed until entering equipped territory does not exceed restricted speed, the automatic train stop, train control, or cab signal device shall be operative at least stopping distance from the entrance to such territory except where the approach thereto is governed by automatic approach signal.

RULES AND INSTRUCTIONS; LOCOMOTIVES

§ 236.551 Power supply voltage; requirement.

The voltage of power supply shall be maintained within 10 percent of rated voltage.

§ 236.552 Insulation resistance; requirement.

Insulation resistance between wiring and ground shall be not less than the following:

Continuous inductive automatic train stop, train control, and cab signal systems—250,000 ohms.

Intermittent inductive automatic train stop systems—20,000 ohms.

§ 236.553 Seal, where required.

Seal shall be maintained on any device other than brake-pipe cut-out cock (double-heading cock), by means of

which the operation of the pneumatic portion of automatic train-stop or train-control apparatus can be cut out.

§ 236.554 Rate of pressure reduction; equalizing reservoir or brake pipe.

The equalizing-reservoir pressure or brake-pipe pressure reduction during an automatic brake application shall be at a rate not less than that which results from a manual service application.

§ 236.555 Repaired or rewound receiver coil.

Receiver coil which has been repaired or rewound shall have the same operating characteristics which it possessed originally or as currently specified for new equipment.

§ 236.556 Adjustment of relay.

Change in adjustment of relay shall be made only in a shop equipped for that purpose except when receiver coils, electro-pneumatic valve, or other essential part of the equipment is replaced. Irregularities in power-supply voltage or other variable factors in the circuit shall not be compensated for by adjustment of the relay.

§ 236.557 Receiver, intermittent inductive; location with respect to rail.

Receiver of intermittent inductive automatic train stop device of the inert roadway element type shall be maintained with bottom of the receiver at a height above the plane of the tops of the rails, and with its outer edge at a horizontal distance from the gage side of the nearest rail, in accordance with specifications of the carrier on file wth the FRA.

§ 236.558 Contact shoe; location with respect to rail.

Contact face of shoe of automatic train stop and train control device shall be maintained at a height above the plane of the tops of the rails, and with center line of shoe at a horizontal distance from the gage side of the nearest rail, in accordance with specifications of the carrier on file with the FRA.

§ 236.559 Receiver, intermittent magnetic; location with respect to rail.

Receiver of intermittent magnetic inductive automatic train stop device shall be maintained with lower surface of receiver at a height above the plane of the tops of the rails, in accordance with specifications of the carrier on file with the FRA.

§ 236.560 Contact element, mechanical trip type; location with respect to rail.

Contact element of automatic train stop device of the mechanical trip type shall be maintained at a height above the plane of the tops of the rails, and a horizontal distance from the gage side of the rail, in accordance with specifications of the carrier on file with the FRA.

§ 236.561 Safety chain or safety hanger.

Safety chain or safety hanger provided for receiver of continuous inductive automatic train stop, train control or cab signal device shall clear receiver core one inch or more.

§ 236.562 Minimum rail current required.

The minimum rail current required to restore the locomotive equipment of continuous inductive automatic train stop or train control device to normal condition or to obtain a proceed indication of automatic cab signal device (pick-up) shall be in accordance with specifications of the carrier on file with the FRA.

§ 236.563 Delay time.

Delay time of automatic train stop or train control system shall not exceed 8 seconds and the spacing of signals to meet the requirements of § 236.24 shall take into consideration the delay time.

§ 236.564 Acknowledging time.

Acknowledging time of intermittent automatic train-stop device shall be not more than 30 seconds.

§ 236.565 Provision made for preventing operation of pneumatic brake-applying apparatus by double-heading cock; requirement.

Where provision is made for preventing the operation of the pneumatic brake-applying appartus of an automatic train stop or train control device when the double-heading cock is placed in double-heading position, the automatic train stop or train control device shall not be cut out before communication is closed between the engineman's automatic brake valve and the brake pipe, when operating double-heading cock toward double-heading position.

§ 236.566 Locomotive of each train operating in train stop, train control or cab signal territory; equipped.

The locomotive from which brakes are controlled, of each train operating in automatic train stop, train control, or cab signal territory shall be equipped with apparatus responsive to the roadway equipment installed on all or any part of the route traversed, and such apparatus shall be in operative condition.

§ 236.567 Restrictions imposed when device fails and/or is cut out enroute.

Where an automatic train stop, train control, or cab signal device fails and/or is cut out enroute, train may proceed at restricted speed or if an automatic block signal system is in operation according to signal indication but not to exceed medium speed, to the next available point of communication where report must be made to a designated officer. Where no automatic block signal system is in use train shall be permitted to proceed at restricted speed or where automatic block signal system is in operation according to signal indication but not to exceed medium speed to a point where absolute block can be established. Where an absolute block is established in advance of the train on which the device is inoperative train may proceed at not to exceed 79 miles per hour.

§ 236.568 Difference between speeds authorized by roadway signal and cab signal; action required.

If for any reason a cab signal authorizes a speed different from that authorized by a roadway signal, when a train enters the block governed by such roadway signal, the lower speed shall not be exceeded.

INSPECTION AND TESTS; ROADWAY

§ 236.576 Roadway element.

Roadway elements, except track circuits, including those for test purposes, shall be gaged monthly for height and alinement, and shall be tested at least every 6 months.

§ 236.577 Test, acknowledgment and cut-in circuits.

Test, acknowledgment and cut-in circuits shall be tested at least once every six months.

INSPECTION AND TESTS; LOCOMOTIVE

§ 236.586 Daily or after trip test.

The automatic train stop, train control, or cab signal apparatus on each locomotive operating in equipped territory shall be inspected and tested either once every 24 hours or within 24 hours before departure upon each trip, except that such inspection and tests of the automatic train stop, train control or cab signal equipment on Diesel-electric and electric locomotives shall not be required provided that periodic tests be made on such locomotives each 6,000 miles, or at intervals of not more than 2 months whichever shall occur first.

§ 236.587 Departure test.

A test of the automatic train-stop, train-control, or cab-signal apparatus on each locomotive, except locomotives and multiple-unit cars equipped with mechanical trip stop only, shall be made over track elements or test circuits or with portable test equipment, either on departure of locomotive from its initial terminal or, if locomotive apparatus is cut out between initial terminal and equipped territory, prior to entering equipped territory, to determine if such apparatus is in service and is functioning properly. If a locomotive makes more than one trip in any 24-hour period only one departure test shall be required in such 24-hour period. If departure test is made by an employee other than engineman, the engineman shall be informed of the results of such test and a record kept thereof.

§ 236.588 Periodic test.

Except as provided in § 236.586, periodic tests of the automatic train stop, train control or cab signal apparatus shall be made at least once every three months, and on multiple-unit cars as specified by the carrier, subject to approval by the FRA.

§ 236.589 Relays.

At least once every 4 years each relay shall be removed from service, subjected to thorough test, necessary repairs and

adjustment made, and shall not be replaced in service unless its operating characteristics are in accordance with the limits within which such relay is designated to operate.

§ 236.590 Pneumatic apparatus.

Automatic train stop, train control, or cab signal pneumatic apparatus shall be inspected and cleaned at least once every six months.

Subpart F—Dragging Equipment and Slide Detectors and Other Similar Protective Devices

STANDARDS

§ 236.601 Signals controlled by devices; location.

Signals controlled by devices used to provide protection against unusual contingencies, such as landslides, dragging equipment, burned bridges or trestles and washouts shall be located so that stopping distance will be provided between the signal and the point where it is necessary to stop the train.

Subpart G—Definitions

§ 236.700 Definitions.

For the purpose of these rules, standards, and instructions, the following definitions will apply.

§ 236.701 Application, brake; full service.

An application of the brakes resulting from a continuous or a split reduction in brake pipe pressure at a service rate until maximum brake cylinder pressure is developed. As applied to an automatic or electro-pneumatic brake with speed governor control, an application other than emergency which develops the maximum brake cylinder pressure, as determined by the design of the brake equipment for the speed at which the train is operating.

§ 236.702 Arm, semaphore.

The part of a semaphore signal displaying an aspect. It consists of a blade fastened to a spectacle.

§ 236.703 Aspect.

The appearance of a roadway signal conveying an indication as viewed from the direction of an approaching train; the appearance of a cab signal conveying an indication as viewed by an observer in the cab.

§ 236.704 Aspect, phantom signal.

An aspect displayed by a light signal, different from the aspect intended, caused by light from an external source being reflected by the optical system of the signal.

§ 236.705 Bar, locking.

A bar in an interlocking machine to which the locking dogs are attached.

§ 236.706 Bed, locking.

That part of an interlocking machine that contains or holds the tappets, locking bars, crosslocking, dogs and other apparatus used to interlock the levers.

§ 236.707 Blade, semaphore.

The extended part of a semaphore arm which shows the position of the arm.

§ 236.708 Block.

A length of track of defined limits, the use of which by trains is governed by block signals, cab signals, or both.

§ 236.709 Block, absolute.

A block in which no train is permitted to enter while it is occupied by another train.

§ 236.710 Block, latch.

The lower extremity of a latch rod which engages with a square shoulder of the segment or quadrant to hold the lever in position.

§ 236.711 Bond, rail joint.

A metallic connection attached to adjoining rails to insure electrical conductivity.

§ 236.712 Brake pipe.

A pipe running from the engineman's brake valve through the train, used for the transmission of air under pressure to charge and actuate the automatic brake equipment and charge the reservoirs of the electro-pneumatic brake equipment on each vehicle of the train.

§ 236.713 Bridge, movable.

That section of a structure bridging a navigable waterway so designed that it may be displaced to permit passage of traffic on the waterway.

§ 236.714 Cab.

The compartment of a locomotive from which the propelling power and power brakes of the train are manually controlled.

§ 236.715 Chain safety.

A chain provided for the purpose of preventing the receiver of a continuous inductive automatic train stop, train control or cab signal device from falling should it become detached from its normal support.

§ 236.716 Changer, pole.

A device by which the direction of current flow in an electrical circuit may be changed.

§ 236.717 Characteristics, operating.

As applied to electrical apparatus, the measure of the electrical values at which the apparatus operates. (Drop-away, pick-up, working value, etc.)

§ 236.718 Chart, dog.

A diagrammatic representation of the mechanical locking of an interlocking machine, used as a working plan in making up, assembling and fitting the locking.

§ 236.719 Circuit, acknowledgment.

A circuit consisting of wire or other conducting material installed between the track rails at each signal in territory where an automatic train stop system or cab signal system of the continuous inductive type with 2-indication cab signals is in service, to enforce acknowledgment by the engineman at each signal displaying an aspect requiring a stop.

§ 236.720 Circuit, common return.

A term applied where one wire is used for the return of more than one electric circuit.

§ 236.721 Circuit, control.

An electrical circuit between a source of electric energy and a device which it operates.

§ 236.722 Circuit, cut-in.

A roadway circuit at the entrance to automatic train stop, train control or cab signal territory by means of which locomotive equipment of the continuous inductive type is actuated so as to be in operative condition.

§ 236.723 Circuit, double wire; line.

An electric circuit not employing a common return wire; a circuit formed by individual wires throughout.

§ 236.724 Circuit, shunt fouling.

The track circuit in the fouling section of a turnout, connected in multiple with the track circuit in the main track.

§ 236.725 Circuit, switch shunting.

A shunting circuit which is closed through contacts of a switch circuit controller.

§ 236.726 Circuit, track.

An electrical circuit of which the rails of the track form a part.

§ 236.727 Circuit, track; coded.

A track circuit in which the energy is varied or interrupted periodically.

§ 236.728 Circuit, trap.

A term applied to a circuit used where it is desirable to provide a track circuit but where it is impracticable to maintain a track circuit.

§ 236.729 Cock, double heading.

A manually operated valve by means of which the control of brake operation is transferred to the leading locomotive.

§ 236.730 Coil, receiver.

Concentric layers of insulated wire wound around the core of a receiver of an automatic train stop, train control or cab signal device on a locomotive.

§ 236.731 Controller, circuit.

A device for opening and closing electric circuits.

§ 236.732 Controller, circuit; switch.

A device for opening and closing electric circuits, operated by a rod connected to a switch, derail or movable-point frog.

§ 236.733 Current, foreign.

A term applied to stray electric currents which may affect a signaling system, but which are not a part of the system.

§ 236.734 Current of traffic.

The movement of trains on a specified track in a designated direction.

§ 236.735 Current, leakage.

A stray electric current of relatively small value which flows through or across the surface of insulation when a voltage is impressed across the insulation.

§ 236.736 Cut-section.

A location other than a signal location where two adjoining track circuits end within a block.

§ 236.737 Cut-section, relayed.

A cut-section where the energy for one track circuit is supplied through front contacts or through front and polar contacts of the track relay for the adjoining track circuit.

§ 236.738 Detector, point.

A circuit controller which is part of the switch operating mechanism and operated by a rod connected to a switch, derail or movable point frog to indicate that the point is within a specified distance of the stock rail.

§ 236.739 Device, acknowledging.

A manually operated electric switch or pneumatic valve by means of which, on a locomotive equipped with an automatic train stop or train control device, an automatic brake application can be forestalled, or by means of which, on a locomotive equipped with an automatic cab signal device, the sounding of the cab indicator can be silenced.

§ 236.740 Device, reset.

A device whereby the brakes may be released after an automatic train control brake application.

§ 236.741 Distance, stopping.

The maximum distance on any portion of any railroad which any train operating on such portion of railroad at its maximum authorized speed, will travel during a full service application of the brakes, between the point where such application is initiated and the point where the train comes to a stop.

§ 236.742 Dog, locking.

A steel block attached to a locking bar or tappet of an interlocking machine, by means of which locking between levers is accomplished.

§ 236.743 Dog, swing.

A locking dog mounted in such a manner that it is free to rotate on a trunnion which is riveted to a locking bar.

CROSS REFERENCE: Element, contact. See receiver.

§ 236.744 Element, roadway.

That portion of the roadway apparatus of automatic train stop, train control or cab signal system, such as electric circuit, inductor, magnet, ramp or trip arm to which the locomotive apparatus of such system is directly responsive.

§ 236.745 Face, locking.

The locking surface of a locking dog, tappet or cross locking of an interlocking machine.

§ 236.746 Feature, restoring.

An arrangement on a power operated switch movement by means of which power is applied to restore the switch movement to full normal or to full reverse position, before the driving bar creeps sufficiently to unlock the switch, with control lever in normal or reverse position.

§ 236.747 Forestall.

As applied to an automatic train stop or train control device, to prevent an automatic brake application by operation of an acknowledging device or by manual control of the speed of the train.

§ 236.748 Hanger, safety.

A rigid member provided for the purpose of preventing the receiver of a continuous inductive automatic train stop, train control or cab signal device from falling should it become detached from its normal support.

§ 236.749 Indication.

The information conveyed by the aspect of a signal.

CROSS REFERENCE: Inductor, see § 236.744.

§ 236.750 Interlocking, automatic.

An arrangement of signals, with or without other signal appliances, which functions through the exercise of inherent powers as distinguished from those whose functions are controlled manually, and which are so interconnected by means of electric circuits that their movements must succeed each other in proper sequence, train movements over all routes being governed by signal indication.

§ 236.751 Interlocking, manual.

An arrangement of signals and signal appliances operated from an interlocking machine and so interconnected by means of mechanical and/or electric locking that their movements must succeed each other in proper sequence, train movements over all routes being governed by signal indication.

§ 236.752 Joint, rail, insulated.

A joint in which electrical insulation is provided between adjoining rails.

§ 236.753 Limits, interlocking.

The tracks between the opposing home signals of an interlocking.

§ 236.754 Line, open wire.

An overhead wire line consisting of single conductors as opposed to multiple-conductor cables.

§ 236.755 Link, rocker.

That portion of an interlocking machine which transmits motion between the latch and the universal link.

§ 236.756 Lock, bolt.

A mechanical lock so arranged that if a switch, derail or movable-point frog is not in the proper position for a train movement, the signal governing that movement cannot display an aspect to proceed; and that will prevent a movement of the switch, derail or movable-point frog unless the signal displays its most restrictive aspect.

§ 236.757 Lock, electric.

A device to prevent or restrict the movement of a lever, a switch or a movable bridge, unless the locking member is withdrawn by an electrical device, such as an electromagnet, solenoid or motor.

§ 236.758 Lock, electric, forced drop.

An electric lock in which the locking member is mechanically forced down to the locked position.

§ 236.759 Lock, facing point.

A mechanical lock for a switch, derail, or movable-point frog, comprising a plunger stand and a plunger which engages a lock rod attached to the switch point to lock the operated unit.

§ 236.760 Locking, approach.

Electric locking effective while a train is approaching, within a specified distance, a signal displaying an aspect to proceed, and which prevents, until after the expiration of a predetermined time interval after such signal has been caused to display its most restrictive aspect, the movement of any interlocked or electrically locked switch, movable-point frog, or derail in the route governed by the signal, and which prevents an aspect to proceed from being displayed for any conflicting route.

§ 236.761 Locking, electric.

The combination of one or more electric locks and controlling circuits by means of which levers of an interlocking machine, or switches or other units operated in connection with signaling and interlocking, are secured against operation under certain conditions.

§ 236.762 Locking, indication.

Electric locking which prevents manipulation of levers that would result in an unsafe condition for a train movement if a signal, switch, or other operative unit fails to make a movement corresponding to that of its controlling lever, or which directly prevents the operation of a signal, switch, or other operative unit, in case another unit which should operate first fails to make the required movement.

§ 236.763 Locking, latch operated.

The mechanical locking of an interlocking machine which is actuated by means of the lever latch.

§ 236.764 Locking, lever operated.

The mechanical locking of an interlocking machine which is actuated by means of the lever.

§ 236.765 Locking, mechanical.

An arrangement of locking bars, dogs, tappets, cross locking and other apparatus by means of which interlocking is effected between the levers of an interlocking machine and so interconnected that their movements must succeed each other in a predetermined order.

§ 236.766 **Locking, movable bridge.**

The rail locks, bridge locks, bolt locks, circuit controllers, and electric locks used in providing interlocking protection at a movable bridge.

§ 236.767 **Locking, route.**

Electric locking, effective when a train passes a signal displaying an aspect for it to proceed, which prevents the movement of any switch, movable-point frog, or derail in advance of the train within the route entered. It may be so arranged that as a train clears a track section of the route, the locking affecting that section is released.

§ 236.768 **Locking, time.**

A method of locking, either mechanical or electrical, which, after a signal has been caused to display an aspect to proceed, prevents, until after the expiration of a predetermined time interval after such signal has been caused to display its most restrictive aspect, the operation of any interlocked or electrically locked switch, movable-point frog, or derail in the route governed by that signal, and which prevents an aspect to proceed from being displayed for any conflicting route.

§ 236.769 **Locking, traffic.**

Electric locking which prevents the manipulation of levers or other devices for changing the direction of traffic on a section of track while that section is occupied or while a signal displays an aspect for a movement to proceed into that section.

§ 236.770 **Locomotive.**

A self-propelled unit of equipment which can be used in train service.

§ 236.771 **Machine, control.**

An assemblage of manually operated devices for controlling the functions of a traffic control system; it may include a track diagram with indication lights.

§ 236.772 **Machine, interlocking.**

An assemblage of manually operated levers or other devices for the control of signals, switches or other units.

CROSS REFERENCE: Magnet, track, see § 236.744.

§ 236.773 **Movements, conflicting.**

Movements over conflicting routes.

§ 236.774 **Movement, facing.**

The movement of a train over the points of a switch which face in a direction opposite to that in which the train is moving.

§ 236.775 **Movement, switch-and-lock.**

A device, the complete operation of which performs the three functions of unlocking, operating and locking a switch, movable-point frog or derail.

§ 236.776 **Movement, trailing.**

The movement of a train over the points of a switch which face in the direction in which the train is moving.

§ 236.777 **Operator, control.**

An employee assigned to operate the control machine of a traffic control system.

§ 236.778 **Piece, driving.**

A crank secured to a locking shaft by means of which horizontal movement is imparted to a longitudinal locking bar.

§ 236.779 **Plate, top.**

A metal plate secured to a locking bracket to prevent the cross locking from being forced out of the bracket.

§ 236.780 **Plunger, facing point lock.**

That part of a facing point lock which secures the lock rod to the plunger stand when the switch is locked.

§ 236.781 **Point, clearance.**

The location on a turnout at which the carrier's specified clearance is provided between tracks.

§ 236.782 **Point, controlled.**

A location where signals and/or other functions of a traffic control system are controlled from the control machine.

§ 236.783 **Point, stop-indication.**

As applied to an automatic train stop or train control system without the use of roadway signals, a point where a signal displaying an aspect requiring a stop would be located.

§ 236.784 **Position, deenergized.**

The position assumed by the moving member of an electromagnetic device when the device is deprived of its operating current.

§ 236.785 **Position, false restrictive.**

A position of a semaphore arm that is more restrictive than it should be.

§ 236.786 **Principle, closed circuit.**

The principle of circuit design where a normally energized electric circuit which, on being interrupted or deenergized, will cause the controlled function to assume its most restrictive condition.

§ 236.787 **Protection, cross.**

An arrangement to prevent the improper operation of a signal, switch, movable-point frog, or derail as the result of a cross in electrical circuits.

CROSS REFERENCE: Ramp, see § 236.744.

§ 236.788 **Receiver.**

A device on a locomotive, so placed that it is in position to be influenced inductively or actuated by an automatic train stop, train control or cab signal roadway element.

§ 236.789 **Relay, timing.**

A relay which will not close its front contacts or open its back contacts, or both, until the expiration of a definite time intervals after the relay has been energized.

§ 236.790 **Release, time.**

A device used to prevent the operation of an operative unit until after the expiration of a predetermined time interval after the device has been actuated.

§ 236.791 **Release, value.**

The electrical value at which the movable member of an electromagnetic device will move to its deenergized position.

§ 236.792 **Reservoir, equalizing.**

An air reservoir connected with and adding volume to the top portion of the equalizing piston chamber of the automatic brake valve, to provide uniform service reductions in brake pipe pressure regardless of the length of the train.

CROSS REFERENCE: Rocker, see § 236.755.

§ 236.793 **Rod, lock.**

A rod, attached to the front rod or lug of a switch, movable-point frog or derail, through which a locking plunger may extend when the switch points or derail are in the normal or reverse position.

§ 236.794 **Rod, up-and-down.**

A rod used for connecting the semaphore arm to the operating mechanism of a signal.

§ 236.795 **Route.**

The course or way which is, or is to be, traveled.

§ 236.796 **Routes, conflicting.**

Two or more routes, opposing, converging or intersecting, over which movements cannot be made simultaneously without possibility of collision.

§ 236.797 **Route, interlocked.**

A route within interlocking limits.

§ 236.798 **Section, dead.**

A section of track, either within a track circuit or between two track circuits, the rails of which are not part of a track circuit.

§ 236.799 **Section, fouling.**

The section of track between the switch points and the clearance point in a turnout.

§ 236.800 **Sheet, locking.**

A description in tabular form of the locking operations in an interlocking machine.

CROSS REFERENCE: Shoe, see § 236.788.

§ 236.801 **Shoe, latch.**

The casting by means of which the latch rod and the latch block are held to a lever of a mechanical interlocking machine.

§ 236.802 **Shunt.**

A by-path in an electrical circuit.

§ 236.802a **Siding.**

An auxiliary track for meeting or passing trains.

§ 236.803 **Signal, approach.**

A roadway signal used to govern the approach to another signal and if opera-

tive so controlled that its indication furnishes advance information of the indication of the next signal.

§ 236.804 Signal, lock.

A roadway signal operated either automatically or manually at the entrance to a block.

§ 236.805 Signal, cab.

A signal located in engineman's compartment or cab, indicating a condition affecting the movement of a train and used in conjunction with interlocking signals and in conjunction with or in lieu of block signals.

§ 236.806 Signal, home.

A roadway signal at the entrance to a route or block to govern trains in entering and using that route or block.

§ 236.807 Signal, interlocking.

A roadway signal which governs movements into or within interlocking limits.

§ 236.808 Signals, opposing.

Roadway signals which govern movements in opposite directions on the same track.

§ 236.809 Signal, slotted mechanical.

A mechanically operated signal with an electromagnetic device inserted in its operating connection to provide a means of controlling the signal electrically, as well as mechanically.

§ 236.810 Spectacle, semaphore arm.

That part of a semaphore arm which holds the roundels and to which the blade is fastened.

§ 236.811 Speed, medium.

A speed not exceeding 40 miles per hour.

§ 236.812 Speed, restricted.

A speed that will permit stopping short of another train or obstruction, but not exceeding 20 miles per hour.

§ 236.813 Speed, slow.

A speed not exceeding 20 miles per hour.

§ 236.814 Station, control.

The place where the control machine of a traffic control system is located.

§ 236.815 Stop.

As applied to mechanical locking, a device secured to a locking bar to limit its movement.

§ 236.816 Superiority of trains.

The precedence conferred upon one train over other trains by train order or by reason of its class or the direction of its movement.

§ 236.817 Switch, electro-pneumatic.

A switch operated by an electro-pneumatic switch-and-lock movement.

§ 236.818 Switch, facing point.

A switch, the points of which face traffic approaching in the direction for which the track is signaled.

§ 236.819 Switch, hand operated.

A non-interlocked switch which can only be operated manually.

§ 236.820 Switch, interlocked.

A switch within the interlocking limits, the control of which is interlocked with other functions of the interlocking.

§ 236.821 Switch, sectionalizing.

A switch for disconnecting a section of a power line from the source of energy.

§ 236.822 Switch, spring.

A switch equipped with a spring device which forces the points to their original position after being trailed through and holds them under spring compression.

§ 236.823 Switch, trailing point.

A switch, the points of which face away from traffic approaching in the direction for which the track is signaled.

§ 236.824 System, automatic block signal.

A block signal system wherein the use of each block is governed by an automatic block signal, cab signal, or both.

§ 236.825 System, automatic train control.

A system so arranged that its operation will automatically result in the following:

(a) A full service application of the brakes which will continue either until the train is brought to a stop, or, under control of the engineman, its speed is reduced to a predetermined rate.

(b) When operating under a speed restriction, an application of the brakes when the speed of the train exceeds the predetermined rate and which will continue until the speed is reduced to that rate.

§ 236.826 System, automatic train stop.

A system so arranged that its operation will automatically result in the application of the brakes until the train has been brought to a stop.

§ 236.827 System, block signal.

A method of governing the movement of trains into or within one or more blocks by block signals or cab signals.

§ 236.828 System, traffic control.

A block signal system under which train movements are authorized by block signals whose indications supersede the superiority of trains for both opposing and following movements on the same track.

§ 236.829 Terminal, initial.

The starting point of a locomotive for a trip.

§ 236.830 Time, acknowledging.

As applied to an intermittent automatic train stop system, a predetermined time within which an automatic brake application may be forestalled by means of the acknowledging device.

§ 236.831 Time, delay.

As applied to an automatic train stop or train control system the time which elapses after an automatic brake application is initiated until the brakes start to apply.

§ 236.831a Track, main.

A track, other than auxiliary track, extending through yards and between stations, upon which trains are operated by timetable or train orders, or both, or the use of which is governed by block signals.

§ 236.832 Train.

A locomotive or more than one locomotive coupled, with or without cars.

§ 236.833 Train, opposing.

A train, the movement of which is in a direction opposite to and toward another train on the same track.

§ 236.834 Trip.

A movement of a locomotive over all or any portion of automatic train stop, train control or cab signal territory between the terminals for that locomotive; a movement in one direction.

CROSS REFERENCE: Trip-arm, see § 236.744.

§ 236.835 Trunking.

A casing used to protect electrical conductors.

§ 236.836 Trunnion.

A cylindrical projection supporting a revolving part.

§ 236.837 Valve, electro-pneumatic.

A valve electrically operated which, when operated, will permit or prevent passage of air.

§ 236.838 Wire, shunt.

A wire forming part of a shunt circuit.

PART 240—ADMINISTRATION OF ALASKA RAILROADS

Sec.

240.1 General responsibility for railroad.
240.2 Rates; Secretary of Transportation.
240.3 Rates; Interstate Commerce Commission.

AUTHORITY: The provisions of this Part 240 issued under 38 Stat. 305, 80 Stat. 937, 49 U.S.C. 1655.

NOTE: This Part 240 is a codification of E.O. 11107 which was issued under the authority of 38 Stat. 305, as amended by the Department of Transportation Act, 80 Stat. 937, 49 U.S.C. 1655.

§ 240.1 General responsibility for railroad.

The Secretary of Transportation (hereinafter referred to as the Secretary) is authorized to operate the railroad or railroads, branch lines, feeders and telegraph and telephone lines incident thereto, constructed or acquired under the Act of March 12, 1914, or Acts supplemental thereto, except that the authority of the Secretary under this order "to fix, change, or modify rates for the transportation of passengers, and property" shall be subject to the authority of

the Interstate Commerce Commission under § 240.3.

§ 240.2 **Secretary of Transportation.**

In connection with carrying out the authority under the Alaska Railroad Act "to fix, change, or modify rates for the transportation of passengers and property," the Secretary from time to time:

(a) Shall allocate to the national public purposes which to a substantial extent prompted the construction, expansion, maintenance, and improvement of the railroad, the proper portion of the capital investment of the railroad.

(b) Shall fix, change, or modify the rates with due regard for the actions of the Interstate Commerce Commission authorized under this part.

(c) Shall post the rates for public inspection and file them with the Interstate Commerce Commission.

§ 240.3 **Rates; Interstate Commerce Commission.**

(a) In respect of rates filed with the Interstate Commerce Commission pursuant to the provisions of this part, the Commission may act, to the extent practicable, and subject to the limitations provided in paragraph (b) of this section, in the same manner as though the railroad were subject to Sections 1(1)(a), 1(4), 1(5), 1(5½), 1(6), 6(3), 6(6), 6(9), 13(1), 13(2) (to the extent that it relates to action by the Interstate Commerce Commission on its own motion), 15 (except 15(12) and 15(14)), 15a, 202(c)(1), and 202(c)(2) of the Interstate Commerce Act, as amended.

(b) When determining the justness and reasonableness of rates or charges maintained, or from time to time proposed to be maintained by the railroad, the Interstate Commerce Commission shall exclude for valuation and cost finding purposes the portion of capital investment allocated to national public purposes by the Secretary under § 240.2(a), and such rates and charges shall not be deemed to be unjust or unreasonable by reason of failure to yield sufficient revenues to cover any amounts for taxes not actually required by law to be paid or provide a return on capital investment.

[F. R. Doc. 68-15286; Filed, Dec. 24, 1968; 8:45 a.m.]

Chapter III—Federal Highway Administration, Department of Transportation

ESTABLISHMENT OF CHAPTER

A new Chapter III is added to Title 49 of the Code of Federal Regulations. The purpose of this amendment is to organize the regulations of the Department of Transportation under the jurisdiction of the Federal Highway Administration.

The regulations of the Federal Highway Administration in Title 49 and in Chapter II of Title 23 are redesignated and transferred as set forth in the following redesignation table:

New part No.	*Old part No.*
351	23 CFR 209
353	23 CFR 216
355	23 CFR 217
371	23 CFR 255
388	277c
389	289
390	290
391	291
392	292
393	293
394	294
395	295
396	296
397	297
398	298

Since this amendment merely reorganizes existing regulatory material and makes minor nonsubstantive corrections therein, notice and public procedure thereon are unnecessary and good cause exists for making it effective in less than 30 days notice.

Issued at Washington, D.C., on December 20, 1968.

JOHN R. JAMIESON,
Acting Federal Highway Administrator.

Subchapter A—Motor Vehicle Safety Regulations

Part
351 Procedural rules.
353 Rule-making procedures: motor vehicle safety standards.
355 Application for temporary exemptions from motor vehicle safety standards for limited production motor vehicles.
371 Federal motor vehicle safety standards.

Subchapter B—Motor Carrier Safety Regulations

388 Cooperative agreements with States.
389 Rule-making procedures—motor carrier safety regulations.
390 Motor carrier safety regulations: General.
391 Qualifications of drivers.
392 Driving of motor vehicles.
393 Parts and accessories necessary for safe operation.
394 Recording and reporting of accidents.
395 Hours of service of drivers.
396 Inspection and maintenance.
397 Transportation of explosives and other dangerous articles by motor vehicles.
398 Transportation of migrant workers.

SUBCHAPTER A—MOTOR VEHICLE SAFETY REGULATIONS

PART 351—PROCEDURAL RULES

Subpart A—General

Sec.
351.1 Scope.

Subpart B—[Reserved]

Subpart C—Submittal in Writing

351.31 Form of communications.
351.33 Address of communications.
351.35 Subscription of communications.
351.37 Language of communications.

Subpart D—Service of Process; Agents

351.41 [Reserved]
351.43 [Reserved]
351.45 Service of process on foreign manufacturers and importers.

AUTHORITY: The provisions of this Part 351 issued under secs. 110(e), 119, 80 Stat. 719, 728; 15 U.S.C. 1399, 1407, 23 U.S.C. 315, 401–404; Delegation of Authority, 31 F.R. 13952, 32 F.R. 5606.

Subpart A—General

§ 351.1 Scope.

This part contains rules of procedure generally applicable to the transaction of official business under the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966. These rules apply in addition to the rules governing specific proceedings. In case of inconsistency with these general rules, the specific rules prevail.

Subpart B—[Reserved]

Subpart C—Submittals in Writing

§ 351.31 Form of communications.

Any communication in writing relating to official business (including formal documents) shall be on opaque and durable paper not larger than 9 by 14 inches in size. Tables, charts, or originals of other documents that are attached to communications shall be folded to this size, if possible. The left margin of communications shall be at least 1½ inches wide, and if a communication is bound, it shall be bound on the left side. All copies submitted shall be legible.

§ 351.33 Address of communication.

Unless otherwise specified communications shall be addressed to the Administrator, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591. They may be marked as intended for the attention of the Director or Deputy Director of the National Highway Safety Bureau. They may not be addressed to a staff member's private address.

§ 351.35 Subscription of communications.

Each communication shall be signed in ink and shall disclose the full legal name and the address of the person signing it and, if he is an agent, of his principal.

§ 351.37 Language of communications.

Communications and attachments thereto shall be in English. Any matter written in a foreign language will be considered only if accompanied by a translation into English. A translation shall bear a certificate by the translator certifying that he is qualified to make the translation; that the translation is complete except as otherwise clearly indicated; and that it is accurate to the best of the translator's knowledge and belief. The translator shall sign the certificate in ink and state his full legal name, occupation, and address.

Subpart D—Service of Process; Agents

§ 351.41 [Reserved]

§ 351.43 [Reserved]

§ 351.45 Service of process on foreign manufacturers and importers.

(a) *Designation of agent for service.* Any manufacturer, assembler, or importer of motor vehicles or motor vehicle equipment (hereinafter called manufacturer) before offering a motor vehicle or item of motor vehicle equipment for importation into the United States, shall designate a permanent resident of the United States as his agent upon whom service of all processes, notices, orders, decisions, and requirements may be made for him and on his behalf as provided in section 110(e) of the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718) and in this section. The agent may be an individual, a firm, or a domestic corporation. Any number of manufacturers may designate the same person as agent.

(b) *Form and contents of designation.* The designation shall be addressed to the Administrator, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591. They may be marked as intended for the attention of the Director or Deputy Director of the National Highway Safety Bureau. It shall be in writing and dated; all signatures shall be in ink. The designation shall be made in legal form required to make it valid, and binding on the manufacturer, under the laws, corporate bylaws, or other requirements governing the making of the designation by the manufacturer at the place and time where it is made, and the person or persons signing the designation shall certify that it is so made. The designation shall disclose the full legal name, principal place of business, and mailing address of the manufacturer. If any of the products of the manufacturer do not bear his legal name, the marks, trade names, or other designations of origin

which these products bear shall be stated in the designation. The designation of agent shall provide that it remains in effect until withdrawn or replaced by the manufacturer. The designation shall bear a declaration of acceptance duly signed by the designated agent. The full legal name and mailing address of the agent shall be stated. Designations are binding on the manufacturer even when not in compliance with all the requirements of this section, until rejected by the Administrator. The designated agent may not assign performance of his functions under the designation to another person.

(c) *Method of service.* Service of any process, notice, order, requirement, or decision specified in section 110(e) of the National Traffic and Motor Vehicle Safety Act of 1966 may be made by registered or certified mail addressed to the agent, with return receipt requested, or in any other manner authorized by law. If service cannot be effected because the agent has died (or, if a firm or a corporation ceased to exist) or moved, or otherwise does not receive correctly addressed mail, service may be made by posting as provided in section 110(e).

PART 353—RULE-MAKING PROCEDURES: MOTOR VEHICLE SAFETY STANDARDS

Subpart A—General

Sec.

353.1 Applicability.
353.3 Definitions.
353.5 Regulatory docket.
353.7 Records.

Subpart B—Procedures for Adoption of Rules Under Sections 103 and 119 of the Act

353.11 General.
353.13 Initiation of rule making.
353.15 Contents of notices of proposed rule making.
353.17 Participation of interested persons.
353.19 Petitions for extension of time to comment.
353.21 Contents of written comments.
353.23 Consideration of comments received.
353.25 Additional rule-making proceedings.
353.27 Hearings.
353.29 Adoption of final rules.
353.31 Petitions for rule making.
353.33 Processing of petitions.
353.35 Petitions for reconsideration.
353.37 Proceedings on petitions for reconsideration.

AUTHORITY: The provisions of this Part 353 issued under secs. 103 and 119, 80 Stat. 728; 15 U.S.C. 1407; Delegation of Authority, Oct. 14, 1967, 32 F.R. 14277.

Subpart A—General

§ 353.1 Applicability.

The part prescribes rule-making procedures that apply to the issue, amendment, and revocation of rules under sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966.

§ 353.3 Definitions.

"Act" means the National Traffic and Motor Vehicle Safety Act of 1966, P.L. 89-563, 15 U.S.C. 1391, et seq.

"Administrator" means the Administrator of the Federal Highway Administration or a person to whom he has delegated final authority in the matter concerned.

"Rule" includes any order, regulation, or Federal motor vehicle safety standard issued under the Act.

§ 353.5 Regulatory docket.

(a) Information and data deemed relevant by the Administrator of the Federal Highway Administration relating to rule-making actions, including notices of proposed rule making; comments received in response to notices; petitions for rule making and reconsideration; denials of petitions for rule making and reconsideration; records of additional rule-making proceedings under § 353.25; and final rules are maintained in the Central File Room—Room 401, Federal Highway Administration, Donohoe Building, Sixth and D Streets SW., Washington, D.C. 20591.

(b) Any person may examine any docketed material at the Central File Room at any time during regular business hours after the docket is established, except material ordered withheld from the public under sections 112 and 113 of the Act (15 U.S.C. 1401, 1402) and section 552(b) of Title 5 of the United States Code, and may obtain a copy of it upon payment of a fee.

§ 353.7 Records.

Records of the Federal Highway Administration relating to rule-making proceedings are available for inspection as provided in section 552(b) of Title 5 of the United States Code and Part 7 of the Regulations of the Secretary of Transportation (49 CFR Part 7; 32 F.R. 9284, et seq.).

Subpart B—Procedures for Adoption of Rules Under Sections 103 and 119 of the Act

§ 353.11 General.

Unless the Administrator, for good cause, finds that notice is impracticable, unnecessary, or contrary to the public interest, and incorporates that finding and a brief statement of the reasons for it in the rule, a notice of proposed rule making is issued and interested persons are invited to participate in the rule-making proceedings involving rules under sections 103 and 119 of the Act.

§ 353.13 Initiation of rule making.

The Administrator initiates rule making on his own motion. However, in so doing, he may, in his discretion, consider the recommendations of other agencies of the United States or of other interested persons.

§ 353.15 Contents of notices of proposed rule making.

(a) Each notice of proposed rule making is published in the FEDERAL REGISTER, unless all persons subject to it are named and are personally served with a copy of it.

(b) Each notice, whether published in the FEDERAL REGISTER or personally served, includes—

(1) A statement of the time, place, and nature of the proposed rule-making proceeding;

(2) A reference to the authority under which it is issued;

(3) A description of the subjects and issues involved or the substance and terms of the proposed rule;

(4) A statement of the time within which written comments must be submitted; and

(5) A statement of how and to what extent interested persons may participate in the proceeding.

§ 353.17 Participation by interested persons.

(a) Any interested person may participate in rule-making proceeding by submitting comments in writing containing information, views or arguments.

(b) In his discretion, the Administrator may invite any interested person to participate in the rule-making procedures described in § 353.25.

§ 353.19 Petitions for extension of time to comment.

A petition for extension of the time to submit comments must be received in duplicate not later than three (3) days before expiration of the time stated in the notice. The filing of the petition does not automatically extend the time for petitioner's comments. Such a petition is granted only if the petitioner shows good cause for the extension, and if the extension is consistent with the public interest. If an extension is granted, it is granted to all persons, and it is published in the FEDERAL REGISTER.

§ 353.21 Contents of written comments.

All written comments must be in English and submitted in twenty (20) legible copies, unless fewer copies are specified in the notice. Any interested person must submit as part of his written comments all the material that he considers relevant to any statement of fact made by him. Incorporation of material by reference is to be avoided. However, if such incorporation is necessary, the incorporated material shall be identified with respect to document and page.

§ 353.23 Consideration of comments received.

All timely comments are considered before final action is taken on a rule-making proposal. Late filed comments may be considered as far as practicable.

§ 353.25 Additional rule-making proceedings.

The Administrator may initiate any further rule-making proceedings that he finds necessary or desirable. For example, interested persons may be invited to make oral arguments, to participate in conferences between the Administrator or his representative and interested persons at which minutes of the conference are kept, to appear at informal hearings presided over by officials desig-

nated by the Administrator at which a transcript or minutes are kept, or participate in any other proceeding to assure informed administrative action and to protect the public interest.

§ 353.27 Hearings.

(a) Sections 556 and 557 of Title 5, United States Code, do not apply to hearings held under this part. Unless otherwise specified, hearings held under this part are informal, nonadversary, fact finding proceedings, at which there are no formal pleadings or adverse parties. Any rule issued in a case in which an informal hearing is held is not necessarily based exclusively on the record of the hearing.

(b) The Administrator designates a representative to conduct any hearing held under this part. The Chief Counsel of the Federal Highway Administration designates a member of his staff to serve as legal officer at the hearing.

§ 353.29 Adoption of final rules.

Final rules are prepared by representatives of the office concerned and the Office of the Chief Counsel. The rule is then submitted to the Administrator for his consideration. If the Administrator adopts the rule, it is published in the FEDERAL REGISTER, unless all persons subject to it are named and are personally served with a copy of it.

§ 353.31 Petitions for rule making.

(a) Any interested person may petition the Administrator to establish, amend, or repeal a rule.

(b) Each petition filed under this section must—

(1) Be submitted in duplicate to the Docket Clerk, Central File Room—Room 401, Federal Highway Administration, Donohoe Building, Sixth and D Streets SW., Washington, D.C. 20591;

(2) Set forth the text or substance of the rule or amendment proposed, or specify the rule that the petitioner seeks to have repealed, as the case may be;

(3) Explain the interest of the petitioner in the action requested;

(4) Contain any information and arguments available to the petitioner to support the action sought.

§ 353.33 Processing of petition.

(a) *General.* Each petition received under § 353.31 is referred to the Director of the Bureau. Unless the Administrator otherwise specifies, no public hearing, argument, or other proceeding is held directly on a petition before its disposition under this section.

(b) *Grants.* If the Administrator determines that the petition contains adequate justification, he initiates rulemaking action under this Subpart B.

(c) *Denials.* If the Administrator determines that the petition does not justify rule making, he denies the petition.

(d) *Notification.* Whenever the Administrator determines that a petition should be granted or denied, the Office of the Chief Counsel prepares a notice of that grant or denial for issuance to the petitioner, and the Administrator issues it to the petitioner.

§ 353.35 Petitions for reconsideration.

(a) Any interested person may petition the Administrator for reconsideration of any rule issued under this part. The petition must be submitted in twenty (20) legible copies to the Docket Clerk, Central File Room—Room 401, Federal Highway Administration, Donohoe Building, Sixth and D Streets SW., Washington, D.C. 20591, and received not later than thirty (30) days after publication of the rule in the FEDERAL REGISTER. Petitions filed after that time will be considered as petitions filed under § 353.31. The petition must contain a brief statement of the complaint and an explanation as to why compliance with the rule is not practicable, is unreasonable, or is not in the public interest.

(b) If the petitioner requests the consideration of additional facts, he must state the reason they were not presented to the Administrator within the prescribed time.

(c) The Administrator does not consider repetitious petitions.

(d) Unless the Administrator otherwise provides, the filing of a petition under this section does not stay the effectiveness of the rule.

§ 353.37 Proceedings on petitions for reconsideration.

The Administrator may grant or deny, in whole or in part, any petition for reconsideration without further proceedings. In the event he determines to reconsider any rule, he may issue a final decision on reconsideration without further proceedings, or he may provide such opportunity to submit comment or information and data as he deems appropriate. Whenever the Administrator determines that a petition should be granted or denied, he prepares a notice of the grant or denial of a petition for reconsideration, for issuance to the petitioner, and issues it to the petitioner. The Administrator may consolidate petitions relating to the same rule.

PART 355—APPLICATION FOR TEMPORARY EXEMPTIONS FROM MOTOR VEHICLE SAFETY STANDARDS FOR LIMITED PRODUCTION MOTOR VEHICLES

Sec.
355.1 Applicability.
355.3 Definitions.
355.5 Petition for exemption.
355.7 Information regarding officers and directors of petitioner.
355.9 Basis for petition.
355.11 Grant or denial of exemption.
355.13 Label requirements.
355.15 Requests for informal appearance.
355.17 Docket.
355.19 Termination of temporary exemptions.

AUTHORITY: The provisions of this Part 355 issued under sec. 119, 80 Stat. 728; 15 U.S.C. 1407; Delegation of Authority, 32 F.R. 5606.

§ 355.1 Applicability.

This part applies to the issue, amendment, and revocation of temporary exemptions from Federal motor vehicle safety standards for motor vehicles produced by manufacturers whose total motor vehicle production, as determined by the Administrator, does not exceed five hundred vehicles annually.

§ 355.3 Definitions.

"Act" means the National Traffic and Motor Vehicle Safety Act of 1966, as amended (15 U.S.C. 1381 et seq.).

"Affiliate" means any concern which, either directly or indirectly, controls, has the power to control, or is controlled by, another concern, or which another concern has the power to control. In determining whether a concern is independently owned and operated and whether or not it is an affiliate, consideration is given to all appropriate factors, including but not limited to common ownership, common management, and contractual relationships.

"Concern" means any business entity including but not limited to an individual, partnership, corporation, joint venture, association, or cooperative, whether or not organized for profit.

"Temporary exemption" means an exemption from any Federal motor vehicle safety standard which terminates 3 years after the date it is originally granted, or which, by its terms, terminates sooner, or which is sooner terminated for cause.

§ 355.5 Petition for exemption.

(a) Any manufacturer of limited production motor vehicles may petition the Federal Highway Administrator for a temporary exemption from any Federal motor vehicle safety standard.

(b) Each petition filed under this part must—

(1) Be submitted in duplicate to the Administrator, Federal Highway Administration, Washington, D.C. 20591;

(2) Set forth the full name and address of the applicant, the nature of its organization (individual, partnership, corporation, etc.) and the name of the State or country under the laws of which it is organized;

(3) Set forth the number, title, and text or substance of the standard from which the exemption is sought;

(4) State the total motor vehicle production for the 12-month period before the date of the petition and certify that the production will not exceed 500 vehicles for any 12-month period for which the exemption is sought;

(5) Set forth the name of each affiliate and describe its principal business activity;

(6) In the case of an affiliate engaged in the manufacture of motor vehicles, state with respect to that affiliate the motor vehicle production for the 12-month period before the date of petition and estimate the motor vehicle production for any 12-month period for which the exemption is sought;

(7) Set forth the information specified in § 355.7, if appropriate;

(8) Set forth the information required by § 355.9 (a) or (b);

(9) Set forth any information, views, or arguments available to the petitioner to support the exemption and the reasons why the granting of the petition would be consistent with the public interest and the objectives of the Act;

(10) Set forth the level of safety that will be provided as compared to the level of safety required by the standard from which the exemption is sought;

(11) With respect to each standard for which temporary exemption is sought, set forth (i) the length of time desired for such exemption, not to exceed 3 years, and the reasons therefor, (ii) any steps to be taken, while the exemption is in effect, to achieve full compliance, and (iii) the estimated date that full compliance will be achieved;

(12) Specify any part of the information and data submitted which petitioner requests be withheld from public disclosure and the reason for the request;

(13) Be signed by an officer of the petitioner and state his authority and area of responsibility.

§ 355.7 Information regarding officers and directors of petitioner.

The petitioner shall list the name of each officer and each director who owns or possesses shares of stock or any other interest, together with the number of shares or other degree of interest owned or possessed, in any concern the principal business of which is either—

(a) Manufacturing motor vehicles other than those manufactured by the petitioner; or

(b) Holding stock in or control of any manufacturer of motor vehicles other than those manufactured by the petitioner.

§ 355.9 Basis for petition.

(a) If the basis for the petition is substantial economic hardship, the petitioner must submit appropriate financial and engineering data describing in detail in what manner compliance with any Federal motor vehicle safety standard would cause substantial economic hardship.

(b) If the basis for the petition is facilitation of the development of motor vehicles using a propulsion system other than or supplementing an internal combustion engine, the petitioner must submit appropriate engineering drawings and data describing the system, particularly the manner in which the system differs from an internal combustion engine, and how the exemption sought will facilitate the development of vehicles using a propulsion system other than or supplementing an internal combustion engine.

§ 355.11 Grant or denial of exemption.

(a) No public hearing, argument or other formal proceeding is held directly on a petition filed under this part before its disposition by the Federal Highway Administration.

(b) The Federal Highway Administrator may grant or deny any petition for exemption.

(c) Whenever a petition for exemption is granted or denied, the Administrator notifies the petitioner in writing of the action taken.

§ 355.13 Label requirements.

(a) Each manufacturer to whom a temporary exemption has been granted shall permanently affix to each exempt limited production motor vehicle a label or tag, in the English language and in not less than 12 point type, which includes—

(1) Name of manufacturer;

(2) Place of manufacture;

(3) Vehicle identification number;

(4) Month and year of manufacture;

(5) Type of motor vehicle as defined in § 371.3(b) of the Federal motor vehicle safety standards (§ 371.3(b) of this chapter), such as passenger car, multipurpose passenger vehicle, truck, and so on; and

(6) The following statement:

The manufacturer certifies that this motor vehicle meets applicable Federal motor vehicle safety standards, as of the date of manufacture, except for (list the standards for which an exemption has been obtained) from which an exemption was obtained under FHWA Exemption No. _____.

The label or tag required by this paragraph must be located on the hinge pillar or the latch post of the driver's entry door.

(b) Each manufacturer to whom a temporary exemption has been granted shall submit the following information to the Director, National Highway Safety Bureau, within 30 days after receiving notification that the temporary exemption has been granted:

(1) The location on the motor vehicle at which the label or tag will be placed.

(2) A sample of the label or tag.

(3) The means by which the label or tag will be attached, e.g., weld, rivet, or adhesive.

(c) Each manufacturer to whom a temporary exemption has been granted shall affix securely to the windshield or side window of each exempt limited production motor vehicle a label in the English language containing the information required by paragraph (a) of this section. The label may not be removed until after the first purchase of the vehicle for purposes other than resale.

§ 355.15 Requests for informal appearance.

(a) A petitioner may request in writing to appear informally before an appropriate official of the National Highway Safety Bureau to discuss a petition for exemption or the denial of a petition. If the request is granted, a transcript or minutes of the meeting is made and kept.

(b) Each request for an appearance under this section shall be sent in writing to the Director, National Highway Safety Bureau, Washington, D.C. 20591.

§ 355.17 Docket.

(a) Information and data considered relevant to an exemption, including a petition for exemption, request for informal appearances, minutes or transcripts of an informal meeting, or a grant or denial of an exemption, are maintained in the Docket File Room, Room 512, Federal Highway Administration, D.C. 20591.
Sixth and D Streets SW., Washington,

(b) Records contained in the docket are available for inspection, except material ordered withheld from the public under sections 112 and 113 of the Act (15 U.S.C. 1401, 1402) and section 552(b) of Title 5 of the United States Code, and copies thereof may be obtained, upon payment of a fee, as provided in Part 7 of the regulations of the Office of the Secretary of Transportation (49 CFR Part 7). Any person may examine any docket material at the Docket File Room at any time during regular business hours.

§ 355.19 Termination of temporary exemptions.

The Federal Highway Administrator may terminate a temporary exemption if he determines—

(a) The temporary exemption is not consistent with the public interest and objectives of the Act; or

(b) The temporary exemption was granted on the basis of false, fraudulent, or misleading representations and information.

PART 371—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

Subpart A—General

Sec.
371.1 Scope.
371.3 Definitions.
371.5 Matter incorporated by reference.
371.7 Applicability.
371.9 Separability.
371.11 Equivalent demonstration procedure.
371.13 Labeling of chassis-cabs.

Subpart B—Standards

371.21 Federal Motor Vehicle Safety Standards.

AUTHORITY: The provisions of this Part 371 issued under secs. 103, 119, 80 Stat. 719, 728; 15 U.S.C. 1392, 1407.

Subpart A—General

§ 371.1 Scope.

This part contains the Federal Motor Vehicle Safety Standards for motor vehicles and motor vehicle equipment established under section 103 of the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718).

§ 371.3 Definitions.

(a) *Statutory definitions.* All terms defined in section 102 of the Act are used in their statutory meaning.

(b) *Other definitions.* As used in this part—

"Act" means the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718).

"Approved," unless used with reference to another person, means approved by the Secretary.

"Boat trailer" means a trailer designed with cradle-type mountings to transport a boat and configured to permit launching of the boat from the rear of the trailer.

"Bus" means a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons.

"Chassis-cab" means a vehicle consisting of a chassis upon which is mounted a cab, capable of being driven, drawn, or self-propelled, or readily convertible to such capability by the addition of wheels or other items of running gear, that lacks a body (such as passenger or cargo-carrying structures) or work-performing or load-drawing structures and that with the addition of such structure will become a multipurpose passenger vehicle, truck, or bus.

"Curb weight" means the weight of a motor vehicle with standard equipment; maximum capacity of engine fuel, oil, and coolant; and, if so equipped, air conditioning and additional weight optional engine.

"Designated seating capacity" means the number of designated seating positions provided.

"Designated seating position" means any plan view lateral location intended by the manufacturer to provide seating accommodation for a person at least as large as a 5th percentile adult female, except auxiliary seating accommodations such as temporary or folding jump seats.

"Driver" means the occupant of a motor vehicle seated immediately behind the steering control system.

"Emergency brake" means a mechanism designed to stop a motor vehicle after a failure of the service brake system.

"5th percentile adult female" means a person possessing the dimensions and weight of the 5th percentile adult female specified for the total age group in Public Health Service Publication No. 1000, Series 11, No. 8, "Weight, Height, and Selected Body Dimensions of Adults."

"Forward control" means a configuration in which more than half of the engine length is rearward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length.

"H point" means the mechanically hinged hip point of a manikin which simulates the actual pivot center of the human torso and thigh, described in SAE Recommended Practice J826, "Manikins for Use in Defining Vehicle Seating Accommodations," November 1962.

"Head impact area" means all nonglazed surfaces of the interior of a vehicle that are statically contactable by a 6.5-inch diameter spherical head form of a measuring device having a pivot point to "top-of-head" dimension infinitely adjustable from 29 to 33 inches in accordance with the following procedure, or its graphic equivalent:

(a) At each designated seating position, place the pivot point of the measuring device—

(1) For seats that are adjustable fore and aft, at—

(i) The seating reference point; and

(ii) A point 5 inches horizontally forward of the seating reference point and vertically above the seating reference point an amount equal to the rise which results from a 5-inch forward adjustment of the seat or 0.75 inch; and

(2) For seats that are not adjustable fore and aft, at the seating reference point.

(b) With the pivot point to "top-of-head" dimension at each value allowed by the device and the interior dimensions of the vehicle, determine all contact points above the lower windshield glass line and forward of the seating reference point.

(c) With the head form at each contact point, and with the device in a vertical position if no contact point exists for a particular adjusted length, pivot the measuring device forward and downward through all arcs in vertical planes to 90° each side of the vertical longitudinal plane through the seating reference point, until the head form contacts an interior surface or until it is tangent to a horizontal plane 1 inch above the seating reference point, whichever occurs first.

"Interior compartment door" means any door in the interior of the vehicle installed by the manufacturer as a cover for storage space normally used for personal effects.

"Motorcycle" means a motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground.

"Motor-driven cycle" means a motorcycle with a motor that produces 5-brake horsepower or less.

"Multipurpose passenger vehicle" means a motor vehicle with motive power, except a trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation.

"Occupant" means a person or manikin seated in the vehicle, and, unless otherwise specified in an individual standard, having the dimensions and weight of the 95th percentile adult male.

"Parking brake" means a mechanism designed to prevent the movement of a stationary motor vehicle.

"Passenger car" means a motor vehicle with motive power, except a multipurpose passenger vehicle, motorcycle, or trailer, designed for carrying 10 persons or less.

"Pelvic impact area" means that area of the door or body side panel adjacent to any outboard designated seating position which is bounded by horizontal planes 7 inches above and 4 inches below the seating reference point and vertical transverse planes 8 inches forward and 2 inches rearward of the seating reference point.

"Pole trailer" means a motor vehicle without motive power designed to be drawn by another motor vehicle and attached to the towing vehicle by means of a reach or pole, or by being boomed or otherwise secured to the towing vehicle, for transporting long or irregularly shaped loads such as poles, pipes, or structural members capable generally of sustaining themselves as beams between the supporting connections.

"School bus" means a bus designed primarily to carry children to and from school, but not including buses operated by common carriers in urban transportation of school children.

"Seating reference point" means the manufacturer's design reference point which—

(a) Establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle;

(b) Has coordinates established relative to the designed vehicle structure;

(c) Simulates the position of the pivot center of the human torso and thigh; and

(d) Is the reference point employed to position the two dimensional templates described in SAE Recommended Practice J826, "Manikins for Use in Defining Vehicle Seating Accommodations," November 1962.

"Semitrailer" means a trailer, except a pole trailer, so constructed that a substantial part of its weight rests upon or is carried by another motor vehicle.

"Service brake" means the primary mechanism designed to stop a motor vehicle.

"Torso line" means the line connecting the "H" point and the shoulder reference point as defined in SAE Recommended Practice J787g, "Motor Vehicle Seat Belt Anchorage," September 1966.

"Trailer" means a motor vehicle with or without motive power, designed for carrying persons or property and for being drawn by another motor vehicle.

"Trailer converter dolly" means a trailer chassis equipped with one or more axles, a lower half of a fifth wheel and a drawbar.

"Truck" means a motor vehicle with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment.

"Truck tractor" means a truck designed primarily for drawing other motor vehicles and not so constructed as to carry a load other than a part of the weight of the vehicle and the load so drawn.

"95th percentile adult male" means a person possessing the dimensions and weight of the 95th percentile adult male specified in Public Health Service Publication No. 1000, Series 11, No. 8, "Weight, Height, and Selected Body Dimensions of Adults."

§ 371.5 Matter incorporated by reference.

(a) *Incorporation.* There are hereby incorporated, by reference, into this part, all materials referred to in any standard in Subpart B of this part that are not set forth in full in the standard. These materials are thereby made part of this regulation. Materials subject to change are incorporated as they are in effect on the date of adoption of this part, unless the reference to them provides otherwise.

(b) *Availability.* The materials incorporated by reference, other than acts

of Congress and matter published elsewhere in the FEDERAL REGISTER, are available as follows:

(1) *Standards of the Society of Automotive Engineers (SAE).* They are published by the Society of Automotive Engineers, Inc. Information and copies may be obtained by writing to: Society of Automotive Engineers, Inc., 2 Pennsylvania Plaza, New York, N.Y. 10001.

(2) *Standards of the American Society for Testing and Materials.* They are published by the American Society for Testing and Materials. Information on copies may be obtained by writing to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.

(3) *Standards of the United States of America Standards Institute.* They are published by the United States of America Standards Institute. Information and copies may be obtained by writing the United States of America Standards Institute, 10 East 40th Street, New York, N.Y. 10016.

(4) *Data from the National Health Survey, Public Health Publication No. 1000, Series 11, No. 8.* This is published by the U.S. Department of Health, Education, and Welfare. Copies may be obtained for a price of 35 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

All incorporated materials are available for inspection at the Federal Highway Administration, Room 512, 400 Sixth Street, S.W., Washington, D.C. 20591.

§ 371.7 Applicability.

(a) *General.* Except as provided in paragraphs (b) through (d) of this section, each standard set forth in Subpart B applies according to its terms to motorcycles and trailers regardless of weight and to all other motor vehicles over 1,000 pounds curb weight, or items of motor vehicle equipment, the manufacture of which is completed on or after the effective date of the standard.

(b) *Chassis-cabs.* Chassis-cabs, as defined in § 371.3(b), manufactured on or after January 1, 1968, shall meet all standards in effect on the date of manufacture of the chassis-cab as are applicable to the principal end use intended by its manufacturer except that where the chassis-cab is equipped with only part and not all of the items of lighting equipment referred to in Standard No. 108, it need not meet such standards.

(c) *Military vehicles.* No standard applies to a vehicle or item of equipment manufactured for, and sold directly to, the Armed Forces of the United States in conformity with contractual specifications.

(d) *Export.* No standard applies to a vehicle or item of equipment in the circumstances provided in section 108(b)(5) of the Act (15 U.S.C. 1397(b)(5)).

§ 371.9 Separability.

If any standard established in this part or its application to any person or circumstance is held invalid, the remainder of the part and the application of that standard to other persons or circumstances is not affected thereby.

§ 371.11 Equivalent demonstration procedure.

An approved equivalent may be substituted for any required destructive demonstration procedure.

§ 371.13 Labeling of chassis-cabs.

Each chassis-cab manufactured on or after January 1, 1968, shall, at the time of sale, conspicuously display a label affixed by its manufacturer that—

(a) Identifies it as a chassis-cab and shows the date of manufacture;

(b) Identifies the Federal motor vehicle safety standards with which its manufacturer states the chassis-cab fully complied for the principal end uses of such vehicle; and

(c) States in substance that the chassis-cab may be used on the public highways for the purpose of transit between its manufacturer and subsequent manufacturers (including distribution incidental thereto) and for no other purpose, until such time as the chassis-cab complies with all Federal motor vehicle safety standards applicable to any end use of such vehicle. This provision does not relieve the manufacturer or shipper from any applicable requirement imposed upon such chassis-cabs by Federal, State, or local authority.

Because the Motor Vehicle Safety Standards issued pursuant to the National Traffic and Motor Vehicle Safety Act of 1966 become effective January 1, 1968, it is found for good cause that this regulation becomes effective upon issuance.

Subpart B—Standards

§ 371.21 Federal Motor Vehicle Safety Standards.

The Federal Motor Vehicle Safety Standards are set forth in this subpart.

Motor vehicle safety standard numbers and titles

101 Control Location and Identification—Passenger Cars
102 Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
103 Windshield Defrosting and Defogging Systems; Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
104 Windshield Wiping and Washing Systems; Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
105 Hydraulic Service Brake, Emergency Brake, and Parking Brake Systems—Passenger Cars
106 Hydraulic Brake Hoses—Passenger Cars and Multipurpose Passenger Vehicles
107 Reflecting Surfaces—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
108 Lamps, Reflective Devices Multipurpose Passenger Vehicles, Trucks, Trailers, and Buses
109 New Pneumatic Tires
110 Tire Selection and Rims—Passenger Cars
111 Rearview Mirrors—Passenger Cars and Multipurpose Passenger Vehicles
112 Headlamp Concealment Devices; Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses and Motorcycles
113 Hood Latch Systems, Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
114 Theft Protection; Passenger Cars
115 Vehicle Identification Number; Passenger Cars
201 Occupant Protection in Interior Impact—Passenger Cars
202 Head Restraints—Passenger Cars
203 Impact Protection for the Driver From the Steering Control System—Passenger Cars
204 Steering Control Rearward Displacement—Passenger Cars
205 Glazing Materials—Passenger Cars, Multipurpose Passenger Vehicles, Motorcycles, Trucks, and Buses
206 Door Latches, Hinges, and Locks; Passenger Cars
207 Anchorage of Seats—Passenger Cars
208 Seat Belt Installations—Passenger Cars
209 Seat Belt Assemblies—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
210 Seat Belt Assembly Anchorages—Passenger Cars
211 Wheel Nuts, Wheel Discs, and Hub Caps—Passenger Cars and Multipurpose Passenger Vehicles
212 Windshield Mounting—Passenger Cars
301 Fuel Tanks, Fuel Tank Filler Pipes, and Fuel Tank Connections—Passenger Cars

MOTOR VEHICLE SAFETY STANDARD No. 101

CONTROL LOCATION AND IDENTIFICATION—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies the requirements for location and identification of certain controls to facilitate their selection and ensure their accessibility.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 *Location.* Control of the following shall be provided within operational reach of a person seated at the controls, restrained by a Type 2 seat belt system with a reasonable degree of slack in the upper torso portion of the belt assembly—

(a) Steering;
(b) Horn;
(c) Transmission, except transfer case;
(d) Ignition;
(e) Headlamps;
(f) Turn signal;
(g) Windshield wiping system;
(h) Windshield washing system;
(i) Choke (if manual); and,
(j) Driver's sun visor.

S3.2 *Identification.* The following controls, when mounted on the instrument panel, shall be identified to permit recognition—

(a) Headlamps;
(b) Windshield wiping system;
(c) Windshield washing system;
(d) Windshield defrosting and defogging system; and,
(e) Choke (if manual).

MOTOR VEHICLE SAFETY STANDARD No. 102

TRANSMISSION SHIFT LEVER SEQUENCE, STARTER INTERLOCK, AND TRANSMISSION BRAKING EFFECT—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard specifies the requirements for the transmission shift lever sequence, a starter interlock, and for a braking effect of automatic transmissions, to reduce the likelihood of shifting errors, starter engagement with vehicle in drive position, and to provide supplemental braking at speeds below 25 miles per hour.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. *Requirements.*

S3.1 *Automatic transmissions.*

S3.1.1 *Location of transmission shift lever positions on passenger cars.* A neutral position shall be located between forward drive and reverse drive positions. If a steering-column-mounted transmission shift lever is used, movement from neutral position to forward drive position shall be clockwise. If the transmission shift lever sequence includes a park position, it shall be located at the end, adjacent to the reverse drive position.

S3.1.2 *Transmission braking effect.* In vehicles having more than one forward transmission gear ratio, one forward drive position shall provide a greater degree of engine braking than the highest speed transmission ratio at vehicle speeds below 25 miles per hour.

S3.1.3 *Starter interlock.* The engine starter shall be inoperative when the transmission shift lever is in a forward or reverse drive position.

S3.2 *Automatic and manual transmissions.* Identification of shift lever positions of automatic transmissions and of the shift lever pattern of manual transmissions, except three forward speed manual transmissions having the standard "H" pattern, shall be permanently displayed in view of the driver.

MOTOR VEHICLE SAFETY STANDARD NO. 103

WINDSHIELD DEFROSTING AND DEFOGGING SYSTEMS; PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. *Scope.* This standard specifies requirements for windshield defrosting and defogging systems.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses, manufactured for sale in the continental United States.

S3. *Definitions.* "Road load" means the power output required to move a given motor vehicle at curb weight plus 400 pounds on level, clean, dry, smooth Portland cement concrete pavement (or other surface with equivalent coefficient of surface friction) at a specified speed through still air at 68° F. and standard barometric pressure (29.92" of Hg.) and includes driveline friction, rolling friction, and air resistance.

S4. *Requirements.*

S4.1 Each vehicle shall have a windshield defrosting and defogging system.

S4.2 Each passenger car windshield defrosting and defogging system shall meet the requirements of section 3 of SAE Recommended Practice J902, "Passenger Car Windshield Defrosting Systems," August 1964, when tested in accordance with S4.3, except that "the critical area" specified in paragraph 3.1 of SAE Recommended Practice J902 shall be that established as Area C in accordance with Motor Vehicle Safety Standard No. 104, "Windshield Wiping and Washing Systems," and "the entire windshield" specified in paragraph 3.3 of SAE Recommended Practice J902 shall be that established as Area A in accordance with Motor Vehicle Safety Standard No. 104.

S4.3 *Demonstration procedure.* The passenger car windshield defrosting and defogging system shall be tested in accordance with the portions of paragraphs 4.1 through 4.4.7 of SAE Recommended Practice J902, August 1964, or SAE Recommended Practice J902a, March 1967, applicable to that system, except that—

(a) During the first 5 minutes of the test, the engine speed or speeds may be those which the manufacturer recommends as the warmup procedure for cold weather starting;

(b) During the last 35 minutes of the test period (or the entire test period if the 5-minute warmup procedure is not used), either—

(i) The engine speed shall not exceed 1,500 r.p.m. in neutral gear; or

(ii) The engine speed and load shall not exceed the speed and load at 25 m.p.h. in the manufacturer's recommended gear with road load;

(c) A room air change of 90 times per hour is not required;

(d) The windshield wipers may be used during the test if they are operated without manual assist;

(e) One or two windows may be open a total of 1 inch;

(f) The defroster blower may be turned on at any time; and

(g) The wind velocity may not exceed 5 m.p.h.

MOTOR VEHICLE SAFETY STANDARD No. 104

WINDSHIELD WIPING AND WASHING SYSTEMS; PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. *Scope.* This standard specifies requirements for windshield wiping and washing systems.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. *Definitions.*

The term "seating reference point" is substituted for the terms "manikin H point" and "H point" wherever either of those terms appears in any SAE Standard or SAE Recommended Practice referred to in this standard.

"Daylight opening" means the maximum unobstructed opening through the glazing surface, as defined in paragraph 2.3.12 of section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

"Glazing surface reference line" means the line resulting from the intersection of the glazing surface and a horizontal plane 25 inches above the seating reference point, as shown in Figure 1 of SAE Recommended Practice J903a, "Passenger Car Windshield Wiper Systems," May 1966.

"Overall width" means the maximum overall body width dimension "W116", as defined in section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

"Plan view reference line" means—

(a) For vehicles with bench-type seats, a line parallel to the vehicle longitudinal centerline outboard of the steering wheel centerline 0.15 times the difference between one-half of the shoulder room dimension and the steering wheel centerline-to-car-centerline dimension as shown in Figure 2 of SAE Recommended Practice J903a, May 1966; or

(b) For vehicles with individual-type seats, either—

(i) A line parallel to the vehicle longitudinal centerline which passes through the center of the driver's designated seating position; or

(ii) A line parallel to the vehicle longitudinal centerline located so that the geometric center of the 95 percent eye range contour is positioned on the longitudinal centerline of the driver's designated seating position.

"Shoulder room dimension" means the front shoulder room dimension "W3" as defined in section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

"95 percent eye range contour" means the 95th percentile tangential cutoff specified in SAE Recommended Practice J941, "Passenger Car Driver's Eye Range," November 1965.

S4. *Requirements.*

S4.1 *Windshield wiping system.* Each vehicle shall have a power-driven windshield wiping system that meets the requirements of S4.1.1.

S4.1.1 *Frequency.*

S4.1.1.1 Each windshield wiping system shall have at least two frequencies or speeds.

S4.1.1.2 One frequency or speed shall be at least 45 cycles per minute regardless of engine load and engine speed.

S4.1.1.3 Regardless of engine speed and engine load, the highest and one lower frequency or speed shall differ by at least 15 cycles per minute. Such lower frequency or speed shall be at least 20 cycles per minute regardless of engine speed and engine load.

S4.1.1.4 Compliance with subparagraphs S4.1.1.2 and S4.1.1.3 may be demonstrated by testing under the conditions specified in sections 4.1.1 and 4.1.2 of SAE Recommended Practice J903a, May 1966.

S4.1.2 *Wiped area.* When tested wet in accordance with SAE Recommended Practice J903a, May 1966, each passenger car windshield wiping system shall wipe the percentage of Areas A, B, and C of the windshield (established in ac-

cordance with S4.1.2.1) that (1) is specified in column 2 of the applicable table following subparagraph S4.1.2.1; and (2) is within the area bounded by a perimeter line on the glazing surface 1 inch from the edge of the daylight opening.

S4.1.2.1 Areas A, B, and C shall be established as shown in Figures 1 and 2 of SAE Recommended Practice J903a, May 1966, using the angles specified in Columns 3 through 6 of Table I, II, III, or IV, as applicable.

S4.2 *Windshield washing system.*

S4.2.1 Each passenger car shall have a windshield washing system that meets the requirements of SAE Recommended Practice J942, "Passenger Car Windshield Washer Systems," November 1965, except that the reference to "the effective wipe pattern defined in SAE J903, paragraph 3.1.2" in paragraph 3.1 of SAE Recommended Practice J942 shall be deleted and "the areas established in accordance with subparagraph S4.1.2.1 of Motor Vehicle Safety Standard No. 104" shall be inserted in lieu thereof.

S4.2.2 Each multipurpose passenger vehicle, truck, and bus shall have a windshield washing system that meets the requirements of SAE Recommended Practice J942, November 1965, except that the reference to "the effective wipe pattern defined in SAE J903, paragraph 3.1.2" in paragraph 3.1 of SAE Recommended Practice J942 shall be deleted and "the pattern designed by the manufacturer for the windshield wiping system on the exterior surface of the windshield glazing" shall be inserted in lieu thereof.

TABLE I—PASSENGER CARS OF LESS THAN 60 INCHES IN OVERALL WIDTH

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Area	Minimum percent to be wiped	Angles in degrees			
		Left	Right	Up	Down
A	80	16	49	7	5
B	94	13	46	4	3
C	99	7	15	3	1

TABLE II—PASSENGER CARS OF 60 OR MORE BUT LESS THAN 64 INCHES IN OVERALL WIDTH

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Area	Minimum percent to be wiped	Angles in degrees			
		Left	Right	Up	Down
A	80	17	51	8	5
B	94	13	49	4	3
C	99	7	15	3	1

TABLE III.—PASSENGER CARS OF 64 OR MORE BUT LESS THAN 68 INCHES IN OVERALL WIDTH

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Area	Minimum percent to be wiped	Angles in degrees			
		Left	Right	Up	Down
A	80	17	53	9	5
B	94	14	51	5	3
C	99	8	15	4	1

TABLE IV.—PASSENGER CARS OF 68 OR MORE INCHES IN OVERALL WIDTH

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Area	Minimum percent to be wiped	Angles in degrees			
		Left	Right	Up	Down
A	80	18	56	10	5
B	94	14	53	5	3
C	99	10	15	5	1

MOTOR VEHICLE SAFETY STANDARD NO. 105

HYDRAULIC SERVICE BRAKE, EMERGENCY BRAKE, AND PARKING BRAKE SYSTEMS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for hydraulic service brake, emergency brake, and parking brake systems intended to ensure adequate braking performance under normal and emergency conditions.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.* "Pressure component" means any internal component of the brake master cylinder or master control unit, wheel brake cylinder, brake line, brake hose, or equivalent, except vacuum assist components.

S4. *Requirements.*

S4.1 *Service brake system.* The performance ability of the fully operational service brake system for passenger cars shall be not less than that described in section D of Society of Automotive Engineers Recommended Practice J937, "Service Brake System Performance Requirements—Passenger Car," June 1966, and tested in accordance with SAE Recommended Practice J843a, "Brake System Road Test Code—Passenger Car," June 1966.

S4.2 *Emergency brake system.* Rupture or leakage-type failure of any single pressure component of the service brake system, except structural failures of the brake master cylinder body or effectiveness indicator body, shall not result in complete loss of function of the vehicle brakes when force on the brake pedal is continued.

S4.2.1 *Emergency System Performance.* If failure of a pressure component or insufficient hydraulic fluid in the system causes loss of pressure in any part of the brake system, the remaining portion of the brake system shall provide a stop of the vehicle loaded in accordance with SAE Recommended Practice J843a, June 1966, from a speed of 60 m.p.h., in not more than 646 feet, without pulling or swerving to the extent that would cause the vehicle to leave a level, 12-foot wide lane on a clean, dry, smooth, Portland cement concrete pavement (or other surface with equivalent coefficient of surface friction).

S4.2.2 *Emergency brake system effectiveness indication.* An electrically operated red light, mounted on the instrument panel in view of the driver, shall illuminate before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system. The indicator light shall have sufficient luminous intensity to be plainly visible in daylight and shall include a means for testing by the vehicle operator to ensure that the bulb is operable. No single failure in the internal components of the system effectiveness indicator, except the body of the device, shall permit the total loss of effectiveness of the braking system.

S4.3 *Parking brake system.* A parking brake system of a friction type with a solely mechanical means to retain engagement shall be provided that will hold the vehicle loaded in accordance with SAE Recommended Practice J843a, June 1966, to the limit of traction of the braked wheels in both forward and reverse directions on clean, dry, smooth, Portland cement concrete pavement (or other surface with equivalent coefficient of surface friction) of a 30 percent grade.

[32 F.R. 2408, Feb. 3, 1967, as amended at 32 F.R. 10072, July 8, 1967]

MOTOR VEHICLE SAFETY STANDARD NO. 106

HYDRAULIC BRAKE HOSES—PASSENGER CARS AND MULTIPURPOSE PASSENGER VEHICLES

S1. *Purpose and scope.* This standard specifies requirements for hydraulic brake hoses that will reduce brake failures due to fluid leakage.

S2. *Application.* This standard applies to hydraulic brake hoses for use in passenger cars and multipurpose passenger vehicles.

S3. *Requirements.* Hydraulic brake hoses shall meet the requirements of Society of Automotive Engineers Standard J40b, "Automotive Brake Hoses," July 1966, except as follows:

(a) Delete "Water Absorption Test."

(b) Add "viscose" and "polyester" to acceptable braid materials.

(c) Specify the following dates for referenced ASTM tests:

(1) ASTM D 571—1955; and

(2) ASTM B 117—1964.

(d) Revise "End Connections" paragraph to read: "Exposed steel or brass end connections of the hose assembly shall be protected against rust or corrosion."

MOTOR VEHICLE SAFETY STANDARD NO. 107

REFLECTING SURFACES—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard specifies reflecting surface requirements for certain vehicle components in the driver's field of view.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. *Definitions.*

"Field of view" means the area forward of a lateral vertical plane which is located tangent to the rearmost boundary of the SAE 99th percentile eye range contour of SAE Recommended Practice J941, November 1965. "Specular gloss" means the luminous fractional reflectance of a specimen at the specular direction.

S4. *Requirements.* The specular gloss of the surface of the materials used for the following bright metal components in the driver's field of view shall not exceed 40 units when measured by the 20° method of ASTM Standard D523–62T, June 1962—

(a) Windshield wiper arms and blades;

(b) Inside windshield mouldings;

(c) Horn ring and hub of steering wheel assembly; and

(d) Inside rearview mirror frame and mounting bracket.

MOTOR VEHICLE SAFETY STANDARD NO. 108

LAMPS, REFLECTIVE DEVICES, AND ASSOCIATED EQUIPMENT—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, BUSES, TRAILERS, AND MOTORCYCLES

S1. *Purpose and scope.* This standard specifies requirements for lamps, reflective devices, and associated equipment, for signalling and to enable safe operation in darkness and other conditions of reduced visibility.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles, except pole trailers and trailer converter dollies.

S3. *Requirements.*

S3.1 *Equipment.*

S3.1.1 Except as provided in S3.1.1.1 through S3.1.1.11 vehicles shall be equipped with lamps, reflective devices, and associated equipment, in the numbers of units and designed to conform to the standards specified in—

(a) Table I for multipurpose passenger vehicles, trucks, trailers, and buses, of 80 or more inches overall width; or

(b) Table III for passenger cars; motorcycles; and multipurpose passenger vehicles, trucks, trailers, and buses, of less than 80 inches overall width.

S3.1.1.1 Truck tractors need not be equipped with turn-signal lamps mounted on the rear if the turn-signal lamps at or near the front are so constructed (double-faced) and so located that they are visible to overtaking passing drivers.

S3.1.1.2 Intermediate side-marker lamps and intermediate reflex reflectors are required only on vehicles of 80 or more inches overall width and 30 or more feet overall length.

S3.1.1.3 Reflective material conforming to Federal Specification L–S–300, "Sheeting and Tape, Reflective; Nonexposed Lens, Adhesive Backing", September 7, 1965, may be used in lieu of the side reflex reflectors, provided that this material, as used on the vehicle, meets the performance standards in Table I of SAE Standard J594c, "Reflex Reflectors", February 196..

S3.1.1.4 Truck tractors of less than 80 inches overall width need not be equipped with more than two red class A reflex reflectors (mounted on the rear), nor with any red rear side-marker devices.

S3.1.1.5 Passenger cars manufactured before January 1, 1970, shall be equipped with either two Class B red reflex reflectors or two Class A red reflex reflectors on the rear of the vehicle.

S3.1.1.6 Passenger cars; and multipurpose passenger vehicles, trucks, trailers, and buses, of less than 80 inches overall width manufactured before January 1, 1970, shall be equipped on each side of the vehicle, with at least one of the following combinations:

(a) 1 (red) Class A and 1 (amber) Class A reflex reflector;

(b) 1 red and 1 amber side-marker lamp;

(c) 1 red side-marker lamp and 1 (amber) Class A reflex reflector;

(d) 1 (red) Class A reflex reflector and 1 amber side-marker lamp.

S3.1.1.7 Passenger cars manufactured before January 1, 1970, shall be equipped with turn-signal lamps that provide Class B photometric values and Class B effective projected illuminated areas. Passenger cars manufactured on or after January 1, 1970, shall be equipped with turn-signal lamps that provide Class A photometric values and Class B effective projected illuminated areas. If a multiple compartment lamp or multiple lamps are used to meet this requirement, the effective projected illuminated area of each compartment or lamp shall be not less than that of a Class B lamp, and photometric requirements of Class B, or Class A, as applicable, shall be provided by one or a combination of the compartments or lamps.

S3.1.1.8 Passenger cars; and multipurpose passenger vehicles, trucks, trailers, and buses, of less than 80 inches overall width, and of less than 30 feet overall length, shall be equipped with side-marker lamps conforming to SAE Standard J592b, April 1964, except that the photometric minimum candlepower requirements specified therein may be met for inboard test points at a distance of 15 feet from the vehicle and on a vertical plane that is perpendicular to the longitudinal axis of the vehicle and located midway between the front and rear side-marker lamps.

S3.1.1.9 Boat trailers need not be equipped with front and rear clearance lamps located as specified in Table II, provided amber (to front) and red (to rear) clearance lamps are located on each side at or near the midpoint between front and rear of the trailer and indicate the extreme width of the trailer.

S3.1.1.10 Two or more license plate lamps and two or more backup lamps may be used to fulfill the requirements specified in Tables I and III for a single license plate lamp and a single backup lamp, respectively.

S3.1.1.11 Wedge base type bulb sockets conforming to SAE Recommended Practice J822, "Wedge Base Type Socket", April 1962, may be used in lieu of the bulb sockets specified by SAE Standard J567, "Bulb Sockets", August 1965.

S3.1.2 No additional lamp, reflective device, and associated equipment shall be installed if it impairs the effectiveness of the required equipment.

S3.1.3 *School buses.*

S3.1.3.1 School buses shall be equipped with a system of either:

(a) Four red signal lamps designed to conform to SAE Standard J887, "School Bus Red Signal Lamps", July 1964, and four amber signal lamps designed to conform to that standard, except for color and except the candlepower requirement shall be 2½ times that specified; or

(b) Four red signal lamps designed to conform to SAE Standard J887, "School Bus Red Signal Lamps", July 1964.

S3.1.3.2 The red and amber signal lamp system specified in S3.1.3.1(a) shall be installed in accordance with SAE Standard J887, July 1964, except that:

(a) An amber signal lamp shall be located near each red signal lamp, at the same level, but closer to the vertical centerline of the bus; and

(b) The system of red and amber signal lamps shall be wired so that:

(1) The amber lamps are energized manually; and

(2) The red signal lamps are automatically energized, and the amber signal lamps are automatically deenergized, when the bus entrance door is opened.

S3.1.3.3 The red signal lamp system specified in S3.1.3.1(b) shall be installed in accordance with SAE Standard J887, July 1964.

S3.2 *Location of lamps and reflectors.*

S3.2.1 Except as provided in S3.2.1.1 through S3.2.1.3, lamps, reflective devices and associated equipment required by S3.1 shall be installed in accordance with:

(a) Table II for multipurpose passenger vehicles, trucks, trailers, and buses, of 80 or more inches overall width; or

(b) Table IV for passenger cars; motorcycles; and multipurpose passenger vehicles, trucks, trailers, and buses of less than 80 inches overall width.

S3.2.1.1 On tractor trailer combination vehicles of 80 or more inches overall width, the requirement that intermediate side reflex reflectors and intermediate side-marker lamps be located at or near the midpoint between the forward and aft side reflex reflectors and forward and aft side-marker lamps, respectively, applies only to the trailer.

S3.2.1.2 On truck tractors, the red rear reflex reflectors may be mounted on the back of the cab.

S3.2.1.3 The visibility provision for a backup lamp may be fulfilled by two or more lamps functioning as a system.

S3.2.1.4 On trailers, the amber front side reflex reflectors and amber front side-marker lamps may be located as far forward as practicable exclusive of the trailer tongue.

S3.3 *Lamp combinations and equipment combinations.* Two or more lamps, reflective devices, and items of associated equipment may be combined if the requirements for each lamp, reflective device, and item of associated equipment are met, except that—

(a) No turn-signal lamp may be combined optically with any lamp (other than a stop lamp) that produces more than one-fifth the light intensity of the turn-signal lamp at test points of H–V,

H–5L, H–5R, and 5U–V, nor more than one-third the intensity at any other test point on or above the horizontal.

(b) No turn-signal lamp may be combined optically with a stop lamp unless the stop lamp is extinguished when the turn-signal is flashing; and

(c) No clearance lamp may be combined optically with any taillamp or identification lamp on multipurpose passenger vehicles, trucks, trailers, and buses, of 80 or more inches overall width.

S3.4 *Special wiring requirements.*

S3.4.1 A means for switching between lower and upper headlamp beams shall be provided in accordance with SAE Recommended Practice J564a, "Headlamp Beam Switching", April 1964, or with SAE Recommended Practice J565a, "Semiautomatic Headlamp Beam Switching Devices", April 1964.

S3.4.2 A means for indicating to the driver when the upper beams of headlamps are on shall be provided in accordance with SAE Recommended Practice J564a, April 1964, except that the signal color need not be red.

S3.4.3 As a minimum the taillamps shall be illuminated when the headlamps are illuminated, except when the headlamps are being flashed.

S3.4.4 Except as provided in S3.4.4.1 through S3.4.4.3, stoplamps shall be actuated upon application of any service or emergency brakes.

S3.4.4.1 Stoplamps need not be actuated upon application of the parking brake. If the emergency brake system is used also as a parking brake, the stoplamp need not be actuated when the vehicle is parked.

S3.4.4.2 Stoplamps on a towing vehicle need not be actuated upon application of brakes to the towed vehicle only.

S3.4.4.3 Stoplamps on a towed vehicle need not be actuated if the towed vehicle becomes separated from the towing vehicle.

S3.4.5 The vehicular hazard warning signal operating unit shall operate independently of the ignition or equivalent switch, and when energized, shall cause to flash simultaneously sufficient turn-signal lamps, located in accordance with Table II or Table IV, as applicable, to meet the turn-signal lamp photometric requirements specified in S3.1.1.7.

S3.4.6 On all vehicles required to be equipped with a backup lamp by this standard, the backup lamp shall be illuminated when the ignition or equivalent switch is energized and reverse gear is engaged.

S3.4.7 Except on vehicles using variable load flashers, a means for indicating to the driver that the turn-signal system is energized shall be provided in accordance with SAE Standard J588d, "Turn-Signal Lamps", June 1966.

S3.5 *Lighting display.* When energized, each lamp specified in Tables I and III shall, in normal operation, be steady-burning except turn-signal lamps and hazard warning signal lamps, which shall flash. However, normally steady-burning lamps may be capable of being individually flashed for signaling purposes.

TABLE I—EQUIPMENT

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH

Item	Number and color in accordance with Society of Automotive Engineers Standard J578a, April 1965 required on—			In accordance with SAE standard or recommended practice
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Headlamps	2 white, 7-inch, Type 2 headlamp units; or 2 white, 5¾-inch, Type 1 headlamp units and 2 white, 5¾-inch, Type 2 headlamp units.	----------	Same as trucks and buses.	J580a, June 1966, and J579a, August 1965.
Taillamps	2 red	2 red	2 red	J585c, June 1966.
Stop lamps	2 red or amber	2 red or amber	2 red or amber	J586b, June 1966.
License plate lamp	1 white	1 white	1 white	J587b, April 1964.
Reflex reflectors	4 Class A red; 2 Class A amber.	4 Class A red; 2 Class A amber.	2 Class A red (on rear); 2 Class A amber.	J594c, February 1965.
Side-marker lamps	2 red; 2 amber	2 red; 2 amber	2 amber	J592b, April 1964.
Backup lamp	1 white	----------	1 white	J593b, May 1966.
Turn-signal lamps	2 Class A red or amber; 2 Class A amber.	2 Class A red or amber.	2 Class A red or amber; 2 Class A amber.	J588d, June 1966.
Turn-signal operating unit.	1	----------	1	J589, April 1964.
Turn-signal flasher	1	----------	1	J590b, October 1965.
Vehicular hazard warning signal operating unit.	1	----------	1	J910, January 1966.
Vehicular hazard warning signal flasher.	1	----------	1	J945, February 1966.
Identification lamps.	3 amber and 3 red	3 red	3 amber	J592b, April 1964.
Clearance lamps	2 amber and 2 red	2 amber and 2 red	2 amber	J592b, April 1964.
Intermediate side-marker lamps.	2 amber	2 amber	----------	J592b, April 1964.
Intermediate reflex reflectors.	2 Class A amber	2 Class A amber	----------	J594c, February 1965.

TABLE II—LOCATION OF EQUIPMENT

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH

Item	Location on—			Height above road surface measured from center of item on vehicle at curb weight
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Headlamps	Type 1 headlamps at the same height, 1 on each side of the vertical centerline; Type 2 headlamps at the same height, 1 on each side of the vertical centerline, as far apart as practicable.	----------	Same as trucks and buses.	Not less than 24 inches, nor more than 54 inches.
Taillamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Stop lamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Lense plate lamp	At rear license plate	At rear license plate	At rear license plate.	
Reflex reflectors	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level. 2 red—on sides, 1 on each side as far aft as practicable. 2 amber—on sides, 1 on each side as far forward as practicable.	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level. 2 red—on sides, 1 on each side as far aft as practicable. 2 amber—on sides, 1 on each side as far forward as practicable.	2 red—on rear, 1 on each side of the vertical centerline, as far apart as practicable and at the same level.[1] 2 amber—on sides, 1 on each side as far forward as practicable.	Not less than 15 inches nor more than 60 inches.
Side-marker lamps	On each side: 1 red lamp as far to the rear as practicable and 1 amber lamp as far forward as practicable.	On each side: 1 red lamp as far to the rear as practicable and 1 amber lamp as far forward as practicable.	On each side: 1 amber lamp as far forward as practicable.	Not less than 15 inches.

See footnote at end of table.

TABLE II—LOCATION OF EQUIPMENT—Continued

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH—con.

Item	Location on—			Height above road surface measured from center of item on vehicle at curb weight
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Backup lamp	On rear, so that the optical center of the lens surface is visible from any eye point elevation from 2 feet to 6 feet above the horizontal plane on which the vehicle is standing, and from any position in the area rearward of a vertical plane, perpendicular to the longitudinal axis of the vehicle 3 feet to the rear of the vehicle, and extending 3 feet beyond each side of the vehicle.	----------	On rear, so that the optical center of the lens surface is visible from any eye point elevation from 2 feet to 6 feet above the horizontal plane on which the vehicle is standing, and from any position in the area rearward of a vertical plane, perpendicular to the longitudinal axis of the vehicle 3 feet to the rear of the vehicle, and extending 3 feet beyond each side of the vehicle.	
Turn-signal lamps	At or near the front: 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable. On rear: 1 red or amber on each side of the vertical centerline, at the same level, and as far apart as practicable.	On rear: 1 red or amber on each side of the vertical centerline, at the same level, and as far apart as practicable. ----------	At or near the front: 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable. On rear: 1 red or amber on each side of the vertical centerline, at the same level, and as far apart as practicable.	Not less than 15 inches.
Identification lamps	On front and rear: 3 lamps, amber in front red in rear, grouped in a horizontal row, with lamp centers spaced not less than 6 inches, nor more than 12 inches, apart and mounted as close as practicable to the vertical centerline.	On rear: 3 red lamps grouped in a horizontal row with lamp centers spaced not less than 6 inches, nor more than 12 inches apart and mounted as close as practicable to the vertical centerline.	On front: 3 amber lamps grouped in a horizontal row with lamp centers spaced not less than 6 inches, nor more than 12 inches, apart and mounted as close as practicable to the vertical centerline.	On front only: No part of the lamps or mountings may extend below the top of the vehicle's windshield.
Clearance lamps	On front and rear: 1 amber lamp in front, 1 red lamp in rear, as near as practicable to the upper left and right extreme edges of the vehicle. When the rear identification lamps are mounted at the extreme height of the vehicle, rear clearance lamps may be mounted at optional heights.	On front and rear: 1 amber lamp in front, 1 red lamp in rear, as near as practicable to the upper left and right extreme edges of the vehicle. When the rear identification lamps are mounted at the extreme height of the vehicle, rear clearance lamps may be mounted at optional heights.	On front: 1 amber lamp as near as practicable to the upper left and right extreme edges of the vehicle.	

See footnote at end of table.

TABLE II—LOCATION OF EQUIPMENT—Continued

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH—con.

Item	Location on—			Height above road surface measured from center of item on vehicle at curb weight
	Multipurpose passenger vehicles, trucks (other than truck tractors), and buses	Trailers	Truck tractors	
Intermediate side-marker lamps.	On each side: 1 amber lamp located at or near the midpoint between the forward and aft side marker lamps.	On each side: 1 amber lamp located at or near the midpoint between the forward and aft side marker lamps.	----------	Not less than 15 inches.
Intermediate side reflex reflectors.	On each side: 1 amber located at or near the midpoint between the forward and aft side reflex reflectors.	On each side: 1 amber located at or near the midpoint between the forward and aft side reflex reflectors.	----------	Not less than 15 inches nor more than 60 inches.

[1] See S3.2.1.2.

TABLE III—EQUIPMENT

PASSENGER CARS; MOTORCYCLES; AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH

Item	Number and color in accordance with Society of Automotive Engineers Standard J578a, April 1965 required on—			In accordance with SAE standard or recommended practice
	Passenger cars, multipurpose passenger vehicles, trucks, and buses	Trailers	Motorcycles	
Headlamps	2 white, 7-inch, Type 2 headlamp units; or 2 white, 5¾-inch, Type 1 headlamp units and 2 white, 5¾-inch, Type 2 headlamp units.	----------	----------	J580a, June 1966, and J579a, August 1965.
	----------	----------	1 white	J584, April 1964.
Taillamps	2 red	2 red	1 red	J585c, June 1966.
Stop lamps	2 red or amber	2 red or amber	1 red or amber	J586b, June 1966.
License plate lamp	1 white	1 white	1 white	J587b, April 1964.
Parking lamps	2 amber	----------	----------	J592b, April 1964.
Reflex Reflectors	4 Class A red; 2 Class A amber.[1]	4 Class A red; 2 Class A amber.[1]	3 Class B red; 2 Class B amber.	J594c, February 1965.
Side-marker lamps	2 red; 2 amber [2]	2 red; 2 amber [2]	----------	J592b, April 1964.
Backup lamp	1 white	----------	----------	J593b, May 1966.
Turn-signal lamps	2 Class A red or amber; 2 Class A amber.[3]	2 Class A red or amber.	----------	J588d, June 1966.
Turn-signal operating unit.	1	----------	----------	J589, April 1964.
Turn-signal flasher	1	----------	----------	J590b, October 1965.

See footnotes at end of table.

TABLE III—EQUIPMENT—Continued

PASSENGER CARS; MOTORCYCLES; AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH—continued

Item	Number and color in accordance with Society of Automotive Engineers Standard J578a, April 1965 required on—			In accordance with SAE standard or recommended practice
	Passenger cars, multipurpose passenger vehicles, trucks, and buses	Trailers	Motorcycles	
Vehicular hazard warning signal operating unit.	1			J910, January 1966.
Vehicular hazard warning signal flasher.	1			J945, February 1966.

[1] See S3.1.1.5 and S3.1.1.6.
[2] See S3.1.1.6.
[3] See S3.1.1.7.

TABLE IV—EQUIPMENT LOCATION

PASSENGER CARS; MOTORCYCLES; AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH

Item	Location on—		Height above road surface measured from center of item on vehicle at curb weight
	Passenger cars, multipurpose passenger vehicles, trucks, trailers, and buses	Motorcycles	
Col. 1	Col. 2	Col. 3	Col. 4
Headlamps	Type 1 headlamps at the same height, 1 on each side of the vertical centerline; Type 2 headlamps at the same height, 1 on each side of the vertical centerline, as far apart as practicable.	On front centerline, except that, if two lamps are used, they may be symmetrically disposed about the front centerline.	Not less than 24 inches, nor more than 54 inches.
Taillamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On rear centerline except that, if two lamps are used, they may be symmetrically disposed about the rear centerline.	Not less than 15 inches, nor more than 72 inches.
Stop lamps	On the rear, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.	On rear centerline except that, if two lamps are used, they may be symmetrically disposed about the rear centerline.	Not less than 15 inches, nor more than 72 inches.
License plate lamp	At rear license plate	At rear license plate.	
Parking lamp	On front, 1 on each side of the vertical centerline, at the same level, and as far apart as practicable.		Not less than 15 inches nor more than 72 inches.
Reflex reflectors	2 red—on rear, 1 on each side of the vertical centerline as far apart as practicable and at the same level.[1] 2 red—1 on each side as far aft as practicable.[2] 2 amber—1 on each side as far forward as practicable.[2]	1 red on rear centerline except that, if two reflectors are used on the rear, they may be symmetrically disposed about the centerline. 2 red—1 on each side, as far aft as practicable. 2 amber—1 on each side as far forward as practicable.	Not less than 15 inches nor more than 60 inches.
Backup lamp	On rear, so that the optical center of the lens surface is visible from any eye point elevation from 2 feet to 6 feet above the horizontal plane on which the vehicle is standing, and from any position in the area rearward of a vertical plane, perpendicular to the longitudinal axis of the vehicle 3 feet to the rear of the vehicle, and extending 3 feet beyond each side of the vehicle.		
Turn-signal lamps [3]	At or near the front: 1 amber on each side of the vertical centerline, at the same level, and as far apart as practicable.[4] On rear: 1 red or amber on each side of the vertical centerline, at the same level, and as far apart as practicable.[4]		Not less than 15 inches.
Side-marker lamps	On each side: 1 red lamp as far to the rear as practicable and 1 amber lamp as far forward as practicable.[2]		Not less than 15 inches.

[1] See S3.1.1.5.
[2] See S3.1.1.6.
[3] Front turn signal lamps not required for trailers.
[4] See S3.1.1.7.

MOTOR VEHICLE SAFETY STANDARD NO. 109

NEW PNEUMATIC TIRES—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performance; defines tire load ratings; and specifies labeling requirements.

S2. *Application.* This standard applies to new pneumatic tires for use on passenger cars manufactured after 1948.

S3. *Definitions.*

"Bead" means that part of the tire made of steel wires, wrapped or reinforced by ply cords, that is shaped to fit the rim.

"Bead separation" means a breakdown of bond between components in the bead area.

"Bias ply tire" means a pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90° to the centerline of the tread.

"Carcass" means the tire structure, except tread and sidewall rubber.

"Chunking" means the breaking away of pieces of the tread.

"Cord" means the strands forming the plies in the tire.

"Cord separation" means cords parting away from adjacent rubber compounds.

"Groove" means the space between two adjacent tread ribs.

"Load rating" means the maximum load a tire is rated to carry for a given inflation pressure.

"Maximum permissible inflation pressure" means the maximum cold inflation pressure to which a tire may be inflated.

"Maximum load rating" means the load rating at the maximum permissible inflation pressure for that tire.

"Overall width" means the linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

"Ply" means a layer of rubber-coated parallel cords.

"Ply separation" means a parting of rubber compound between adjacent plies.

"Pneumatic tire" means a mechanical device made of rubber, chemicals, fabric and steel or other materials, which, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

"Radial ply tire" means a pneumatic tire in which the ply cords which extend to the beads are laid at substantially 90° to the centerline of the tread.

"Rim" means a metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

"Section width" means the linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

"Sidewall" means that portion of a tire between the tread and the bead.

"Size factor" means the sum of the section width and the outer diameter of a tire determined on the test rim.

"Test rim" means any rim of the applicable rim width specified in Table I

for a particular tire size designation with the rim dimensions shown in the 1967 Tire and Rim Assocation Year Book, the 1967 Tire and Rim Association Supplementary Service Data Book, the Tyre and Wheel Engineering Data Book dated 1965/1966 of the Society of Motor Manufacturers and Traders Limited (SMMT), the Japan Automobile Tire Manufacturers Association, 1966 edition, the Japanese Industrial Standards (JIS–D4202) dated 1966, the European Tire and Rim Technical Organization practices (E.T.R.T.O.), the Deutsche Industrie Norm (DIN) 7818 dated June 1959, or Deutsche Industrie Norm (DIN) 7817 dated August 1962 or an approved equivalent rim.

"Tread" means that portion of a tire that comes into contact with the road.

"Tread rib" means a tread section running circumferentially around a tire.

"Tread separation" means pulling away of the tread from the tire carcass.

S4. *Requirements.*

S4.1 *Size and Construction.* Each tire shall be designed to fit each rim specified for its size designation in each reference cited in the definition of "test rim" in S.3.

S4.2 *Performance Requirements.*

S4.2.1 *General.* Each tire shall conform to each of the following:

(a) It shall meet the requirements specified in S4.2.2 for its tire size designation, type, and maximum permissible inflation pressure.

(b) Its maximum permissible inflation pressure shall be either 32, 36, or 40 p.s.i.

(c) Its load rating shall be that specified in Table I for its size designation, type, and each appropriate inflation pressure.

(d) If manufactured on or after August 1, 1968, it shall incorporate a tread wear indicator that will provide a visual indication that the tire has worn to a tread depth of 1/16 inch.

S4.2.2 *Test requirements.*

S4.2.2.1 *Test sample.* For each test sample use—

(a) One tire for physical dimensions, resistance to bead unseating, and strength, in sequence;

(b) Another tire for tire endurance; and

(c) A third tire for high speed performance.

S4.2.2.2 *Physical Dimensions.* Each tire, when measured in accordance with S5.1, shall conform to each of the following:

(a) Its actual section width and overall width shall not exceed by more than 7 percent the section width specified in Table I for its size designation and type; and

(b) Its size factor shall be at least as large as that specified in Table I for its size designation and type.

S4.2.2.3 *Tubeless tire resistance to bead unseating.* When tested in accordance with S5.2, the applied force required to unseat the tire bead at the point of contact shall not be less than:

(a) 1,500 pounds for tires with a designated section width of less than six (6) inches;

(b) 2,000 pounds for tires with a designated section width of six (6) inches or more but less than eight (8) inches;

(c) 2,500 pounds for tires with a designated section width of eight (8) inches or more, using the section width specified in Table I for the applicable tire size designation and type.

S4.2.2.4 *Tire strength.* Each tire shall meet the requirements for minimum breaking energy specified in Table II when tested in accordance with S5.3.

S4.2.2.5 *Tire endurance.* After completion of the laboratory test wheel endurance test specified in S5.4, no tire shall have tread, ply, cord, or bead separation; chunking; or broken cords.

S4.2.2.6 *High speed performance.* After completion of the laboratory high speed performance test specified in S5.5, no tire shall have tread, ply, cord, or bead separation; chunking; or broken cords.

S4.3 *Labeling requirements.* Except as provided in S4.3.1, each tire shall be conspicuously labeled on both sidewalls with each of the following permanently molded into or onto the tire:

(a) Size designation.

(b) Maximum permissible inflation pressure.

(c) Maximum load rating.

(d) Identification of manufacturer by—

(1) Name; or

(2) Brand name and an approved code mark.

(e) Composition of the material used in the ply cord.

(f) Actual number of plies in the sidewall and the actual number of plies in the tread area, if different.

(g) The word "tubeless" or "tube type", as applicable.

(h) The word "radial", if a radial ply tire.

(i) An approved recital (or the symbol specified in Figure 1) that the tire conforms to applicable Federal Motor Vehicle Safety Standards.

S4.3.1 Until August 1, 1968, the labeling requirements of S4.3 may be met by affixing to each tire a label or tag that incorporates all specified information not molded into or onto the tire.

S5. *Test procedures.*

S5.1 *Physical Dimensions.* Determine tire physical dimensions under uniform ambient conditions as follows:

(a) Mount the tire on a test rim and inflate it to the applicable pressure specified in Table III.

(b) Condition it at ambient room temperature for at least 24 hours.

(c) Readjust pressure to that specified in (a).

(d) Caliper the section width and overall width at six points approximately equally spaced around the tire circumference.

(e) Record the average of these measurements as the section width and overall width, respectively.

(f) Determine tire outer diameter by measuring the maximum circumference of the tire and dividing this dimension by pi (3.14).

S5.2 *Tubeless tire bead unseating resistance.*

S5.2.1 *Preparation of tire-wheel assembly.*

S5.2.1.1 Wash the tire, dry it at the beads, and mount it without lubrication or adhesives on a clean, painted test rim.

S5.2.1.2 Inflate it to the applicable pressure specified in Table III at ambient room temperature.

S5.2.1.3 Mount the wheel and tire in the fixture shown in Figure 2, and force the standard block shown in Figure 3 against the tire sidewall as required by the geometry of the fixture.

S5.2.2 *Test procedure.*

S5.2.2.1 Apply a load through the block to the tire outer sidewall at the distance specified in Figure 2 for the applicable wheel size at a rate of 2 inches per minute, with the load arm substantially parallel to the tire and rim assembly at the time of engagement.

S5.2.2.2 Increase the load until the bead unseats or the applicable value specified in S4.2.2.3 is reached.

S5.2.2.3 Repeat the test at least four places equally spaced around the tire circumference.

S5.3 *Tire strength.*

S5.3.1 *Preparation of tire.*

S5.3.1.1 Mount the tire on a test rim and inflate it to the applicable pressure specified in Table III;

S5.3.1.2 Condition it at room temperature for at least 3 hours; and

S5.3.1.3 Readjust its pressure to that specified in S5.3.1.1.

S5.3.2 *Test procedure.*

S5.3.2.1 Force a 3/4-inch diameter cylindrical steel plunger with a hemispherical end perpendicularly into the tread rib as near to the centerline as possible, avoiding penetration into the tread groove, at the rate of 2 inches per minute.

S5.3.2.2 Record the force and penetration at five test points equally spaced around the circumference of the tire. If the tire fails to break before the plunger is stopped by reaching the rim, record the force and penetration as the rim is reached and use these values in S5.3.2.3.

S5.3.2.3 Compute the breaking energy for each test point by means of the following formula:

$$W = \frac{F \times P}{2}$$

where

W = Energy, inch-pounds;
F = Force, pounds; and
P = Penetration, inches.

S5.3.2.4 Determine the breaking energy value for the tire by computing the average of the five values obtained in accordance with S5.3.2.3.

S5.4 *Tire endurance.*

S5.4.1 *Preparation of tire.*

S5.4.1.1 Mount a new tire on a test rim and inflate it to the applicable pressure specified in Table III.

S5.4.1.2 Condition the tire assembly to 100±5° F. for at least three hours.

S5.4.1.3 Readjust tire pressure to that specified in S5.4.1.1 immediately before testing.

S5.4.2 *Test procedure.*

S5.4.2.1 Mount the tire and wheel assembly on a test axle and press it against a flat-faced steel test wheel 67.23 inches in diameter and at least as wide

as the section width of the tire to be tested or an approved equivalent test wheel, with the applicable test load specified in Table I for the tire's size designation, type, and maximum permissible inflation pressure.

S5.4.2.2 During the test, the air surrounding the test area shall be 100±5° F.

S5.4.2.3 Conduct the test at 50 miles per hour in accordance with the following schedule without pressure adjustment or other interruptions;

Maximum permissible inflation pressure (p.s.i.)	Load (from table I)—		
	For 4 hours	For 6 hours	For 24 hours
32	24 p.s.i. column.	28 p.s.i. column.	32 p.s.i. column.
36	28 p.s.i. column.	32 p.s.i. column.	36 p.s.i. column.
40	32 p.s.i. column.	36 p.s.i. column.	40 p.s.i. column.

S5.5 *High speed performance.*

S5.5.1 After preparing the tire in accordance with S5.4.1, mount the tire and wheel assembly in accordance with S5.4.2.1, and press it against the test wheel with the load specified in Table I for the tire's size designation and the applicable pressure specified in Column B of the following table:

A *Maximum permissible inflation pressure (p.s.i.)*	*B* *Load from Table I*
32	24 p.s.i. column.
36	28 p.s.i. column.
40	32 p.s.i. column.

S5.5.2 Break in the tire by running it for 2 hours at 50 m.p.h.

S5.5.3 Allow it to cool to 100±5° F. and readjust the inflation pressure to the applicable pressure specified in Table III.

S5.5.4 Without readjusting inflation pressure, test at 75 m.p.h. for 30 minutes, 80 m.p.h. for 30 minutes, and (except deep-tread, winter-type tires) 85 m.p.h. for 30 minutes.

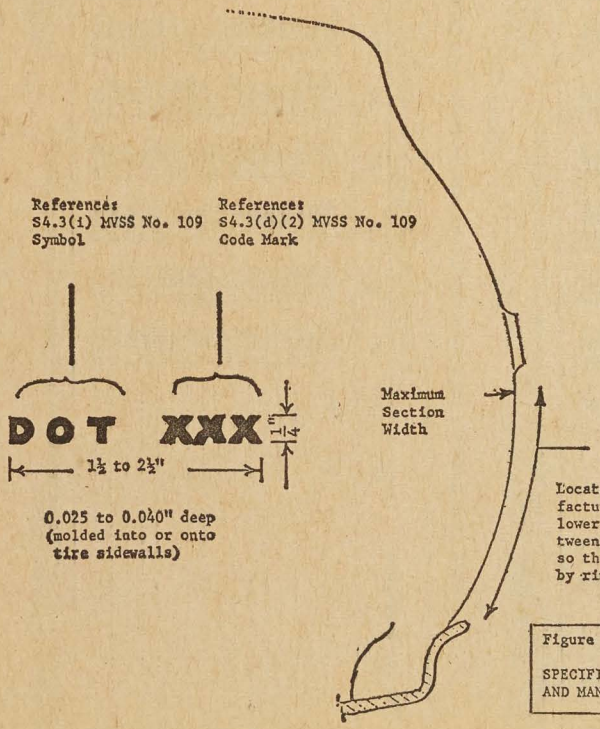
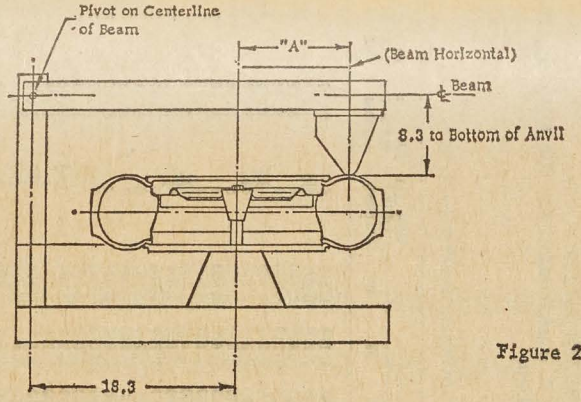


Figure 1 - MVSS No. 109

SPECIFICATIONS FOR APPROVED SYMBOL AND MANUFACTURERS' CODE MARK



Wheel Size	Dim. "A"
17	12.0
16	11.5
15	11.0
14	10.5
13	10.0
12	9.5
11	9.0
10	8.5

Figure 2 - Bead Unseating Fixture
Dimensions in Inches

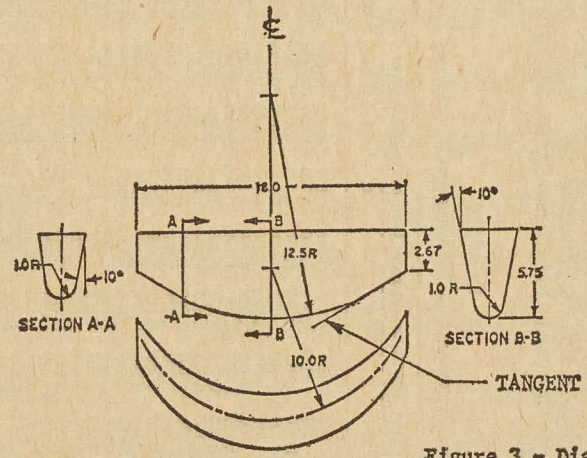
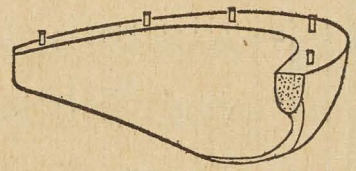


Figure 3 - Diagram of Bead Unseating Block
Dimensions in Inches



MATERIAL: Cast Aluminum #355
T-6 Condition
Finish - 50 Micro Inch

APPENDIX A—FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

The following tables list tire sizes and tire constructions with proper load and inflation values. The tables group tires of related constructions and load/inflation values. Persons requesting the addition of new tire sizes to the tables or the addition of tables for new tire constructions may, when the additions requested are compatible with existent groupings, or when adequate justification for new tables exists, submit five (5) copies of information and data supporting the request to the Secretary of Transportation, Attention: Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

The information should contain but not be limited to the following:

1. The tire size designation and whether the tire is an addition to a category of tires listed in the tables, or a new category for which a table has not been developed.

2. The tire dimensions, including aspect ratio, size factor, section width, overall width and test rim size.

3. The load—inflation schedule of the tire.

4. A statement as to whether the tire size designation and load inflation schedule has been coordinated with an organization such as The Tire and Rim Association, The European Tire and Rim Technical Organization, The Society of Manufacturers and Traders Limited and the Japan Automobile Tire Manufacturers Association, whose purpose is to standardize tire and rim sizes.

5. Copies of test data sheets showing test conditions, results and conclusions obtained for individual tests specified in FMVSS No. 109.

6. Justification for the additional tire sizes.

TABLE I–A

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR CONVENTIONAL AND LOW SECTION HEIGHT BIAS PLY TIRES

Tire size [1] designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section [2] width (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
6.00–13			770	820	860	900	930	970	1,010	1,040	1,080	1,110	1,140	4	29.37	6.00
6.50–13			890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	30.75	6.60
7.00–13			980	1,030	1,080	1,130	1,180	1,230	1,270	1,310	1,360	1,400	1,440	5	31.88	7.10
6.00–14			840	900	930	980	1,020	1,060	1,100	1,130	1,170	1,210	1,240	4	30.64	6.10
6.45–14			860	910	960	1,000	1,040	1,080	1,120	1,160	1,200	1,240	1,270	4½	30.92	6.60
6.50–14			930	990	1,030	1,080	1,130	1,170	1,210	1,250	1,300	1,330	1,370	4½	31.75	6.60
6.95–14			950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,310	1,350	1,390	5	31.96	7.00
7.00–14			1,030	1,100	1,140	1,190	1,240	1,290	1,340	1,380	1,430	1,470	1,520	5	32.88	7.10
7.35–14			1,040	1,100	1,160	1,210	1,260	1,310	1,360	1,400	1,450	1,490	1,540	5	32.92	7.30
7.50–14			1,150	1,230	1,280	1,340	1,390	1,450	1,500	1,550	1,600	1,650	1,700	5½	34.19	7.65
7.75–14			1,150	1,210	1,270	1,330	1,390	1,440	1,500	1,550	1,600	1,650	1,690	5½	34.09	7.75
8.00–14			1,240	1,320	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	35.17	8.10
8.25–14			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	35.11	8.20
8.50–14			1,330	1,420	1,480	1,550	1,610	1,670	1,740	1,790	1,850	1,910	1,960	6	35.91	8.35
8.55–14			1,360	1,430	1,510	1,580	1,640	1,710	1,770	1,830	1,890	1,950	2,000	6	36.06	8.50
8.85–14			1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100	6½	36.82	8.95
9.00–14			1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100	6½	36.91	8.80
9.50–14			1,540	1,640	1,700	1,780	1,850	1,930	2,000	2,060	2,130	2,200	2,260	6½	37.74	9.05
6.00–15			890	940	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4	31.64	6.10
6.50–15			980	1,040	1,080	1,130	1,180	1,230	1,270	1,320	1,360	1,400	1,440	4½	32.75	6.60
6.70–15			1,110	1,190	1,230	1,290	1,340	1,400	1,450	1,500	1,550	1,590	1,640	4½	33.95	7.00
6.85–15			950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,390	5	32.48	6.90
7.00–15	1,170	1,240	1,310	1,380	1,450	1,515	1,580	1,640	1,700	1,760	1,820	1,870	1,930	5	36.02	7.35
7.10–15			1,190	1,270	1,320	1,380	1,440	1,500	1,550	1,600	1,660	1,710	1,760	5	34.89	7.40
7.35–15			1,070	1,130	1,180	1,240	1,290	1,340	1,390	1,440	1,480	1,530	1,570	5½	33.86	7.50
7.60–15			1,310	1,400	1,450	1,520	1,580	1,640	1,710	1,760	1,820	1,880	1,930	5½	36.05	7.90
7.75–15			1,150	1,210	1,270	1,330	1,380	1,440	1,490	1,540	1,590	1,640	1,690	5½	34.53	7.65
8.00–15			1,380	1,470	1,530	1,600	1,670	1,730	1,800	1,860	1,920	1,980	2,040	6	36.84	8.30
8.15–15			1,240	1,300	1,370	1,430	1,490	1,550	1,610	1,660	1,720	1,770	1,820	6	35.50	8.15
8.20–15			1,470	1,570	1,630	1,710	1,780	1,850	1,920	1,980	2,050	2,110	2,170	6	37.50	8.50
8.25–15	1,030	1,190	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	37.57	8.20
8.45–15			1,340	1,410	1,480	1,550	1,620	1,680	1,740	1,800	1,860	1,920	1,970	6	36.37	8.35
8.55–15	1,220	1,290	1,360	1,430	1,510	1,580	1,640	1,710	1,770	1,830	1,890	1,950	2,000	6	36.57	8.45
8.85–15			1,430	1,510	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	37.29	8.80
8.90–15			1,700	1,810	1,880	1,970	2,050	2,130	2,210	2,290	2,360	2,430	2,500	6½	39.54	9.30
9.00–15			1,460	1,540	1,620	1,690	1,760	1,830	1,900	1,970	2,030	2,090	2,150	6	37.45	8.50
9.15–15			1,510	1,600	1,680	1,750	1,830	1,900	1,970	2,030	2,100	2,160	2,230	6½	37.92	9.05
6.00–16			1,075	1,135	1,195	1,250	1,300	1,350	1,400	1,450	1,500			4	34.17	6.25
6.50–16	1,090	1,150	1,215	1,280	1,345	1,405	1,465	1,525	1,580	1,635	1,690	1,740	1,790	4½	35.59	6.80
6.70–16		1,185	1,240	1,300	1,355	1,410	1,465	1,525	1,580	1,635	1,690	1,740	1,795	4½	35.60	7.40
7.00–16			1,365	1,440	1,515	1,585	1,650	1,715	1,780	1,840	1,900			5	37.02	7.35
7.50–16			1,565	1,650	1,735	1,810	1,890	1,960	2,035	2,105	2,175			5½	38.78	8.00
6.50–17		1,215	1,275	1,330	1,390	1,450	1,500	1,560	1,620	1,680	1,740	1,795	1,850	5	37.00	7.60

[1] The letter "H," "S," or "V" may be included in any specified tire size designation adjacent to or in place of the "dash."

[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–B

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "70 SERIES" BIAS PLY TIRES

Tire size [1] designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section [2] width (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
D70–13	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.32	8.00
D70–14			1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.87	7.85
E70–14			1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.45	8.05
F70–14			1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	5½	34.18	8.30
G70–14			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.14	8.75
H70–14			1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.19	9.10
J70–14			1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.91	9.50
L70–14			1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	37.59	9.80
D70–15			1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	33.34	7.75
E70–15			1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	6	34.17	8.10
F70–15			1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.91	8.35
G–70–15			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.68	8.60
H70–15			1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.68	8.95
J70–15			1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	37.34	9.35
K70–15			1,460	1,540	1,620	1,690	1,770	1,830	1,900	1,970	2,030	2,090	2,150	6½	37.62	9.40
L70–15			1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	38.09	9.60

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–C

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR BIAS PLY TIRES

Tire size [1] designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section [2] width (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
"Super Balloon" sizes:																
5.20-10	350	395	440	485	530	555	575	605	625	650	670	695	715	3½	24.84	5.20
5.90-10	385	430	475	515	550	580	605	630	650	675	700	----	----	4	24.00	5.80
5.20-12	395	445	495	545	595	625	655	685	710	735	760	785	810	3½	26.79	5.20
5.60-12	460	520	575	620	670	715	760	795	825	855	885	915	940	4	27.83	5.71
5.90-12	460	505	550	595	640	665	700	730	755	785	810	----	----	4	26.00	5.90
6.20-12	505	555	605	655	705	735	775	805	835	865	895	----	----	4½	27.00	6.30
5.20-13	430	485	540	590	640	670	710	740	765	795	820	850	875	3½	27.72	5.20
5.60-13	495	560	620	675	725	770	810	850	880	910	945	975	1,005	4	28.92	5.71
5.90-13	555	625	695	755	815	860	895	935	970	1,005	1,040	1,075	1,105	4	29.74	5.91
6.20-13	520	580	640	700	750	780	820	850	880	910	945	----	----	4½	28.00	6.30
6.40-13	630	705	785	845	915	945	985	1,025	1,060	1,100	1,140	1,175	1,210	4½	31.26	6.42
6.70-13	690	775	860	935	1,000	1,045	1,090	1,135	1,175	1,220	1,260	1,305	1,340	4½	32.14	6.69
6.90-13	695	745	795	845	915	955	1,005	1,045	1,085	1,120	1,160	----	----	5	30.00	7.20
5.20-14	475	535	595	645	695	735	785	825	855	885	915	945	975	3½	28.89	5.20
5.60-14	530	595	660	715	770	815	855	890	920	955	990	1,020	1,050	4	29.94	5.71
5.90-14	585	660	730	785	850	880	925	970	1,005	1,040	1,080	1,115	1,145	4	30.76	5.91
6.40-14	660	745	825	890	960	1,000	1,050	1,090	1,130	1,170	1,210	1,250	1,290	4½	32.19	6.42
6.45-14	----	----	860	910	960	1,000	1,040	1,080	1,120	----	----	----	----	4½	30.92	6.60
5.20-15	505	570	630	685	740	780	830	870	900	935	965	1,000	1,030	3½	29.75	5.20
5.60-15	555	625	695	755	815	860	895	935	970	1,005	1,040	1,075	1,105	4	30.87	5.71
5.90-15	615	695	770	825	890	935	980	1,015	1,050	1,090	1,130	1,165	1,200	4	31.77	5.91
6.40-15	----	----	875	950	1,010	1,055	1,100	1,150	1,190	1,230	1,260	----	----	4½	33.20	6.42
"Low Section" sizes:																
5.00-12	370	420	465	505	540	565	580	605	625	650	670	695	715	3½	25.62	5.04
5.50-12	415	470	520	560	605	635	665	695	720	745	770	800	820	4	26.93	5.59
6.00-12	485	545	605	655	705	735	785	815	845	875	905	935	965	4½	28.33	6.14
5.00-13	410	460	510	545	585	610	635	660	685	710	735	755	780	3½	26.64	5.04
5.50-13	445	495	550	595	640	670	710	740	765	795	820	850	875	4	27.95	5.59
7.25-13	730	825	915	990	1,070	1,110	1,160	1,200	1,245	1,290	1,335	1,380	1,420	5	32.51	7.24
7.50-13	775	875	970	1,040	1,120	1,180	1,225	1,270	1,315	1,365	1,410	1,460	1,500	5½	33.22	7.48
5.50-15L	505	570	630	675	725	760	800	840	870	900	935	965	995	4	29.97	5.59
6.00-15L	595	665	740	800	860	890	930	970	1,005	1,040	1,080	1,115	1,145	4½	31.29	6.14
6.50-15L	675	755	840	900	970	1,010	1,060	1,105	1,145	1,185	1,230	1,270	1,305	4½	32.68	6.54
7.00-15L	760	855	950	1,025	1,100	1,145	1,190	1,235	1,280	1,325	1,375	1,420	1,460	5	33.85	7.01
"Super Low Section" sizes:																
145-10/5.95-10	380	430	475	515	550	580	605	630	650	675	700	725	745	4	24.76	5.79
125-12/5.35-12	335	380	420	450	485	510	535	550	570	590	610	630	650	3½	24.68	5.00
135-12/5.65-12	370	420	465	505	540	570	590	620	640	665	690	710	730	4	25.53	5.39
145-12/5.95-12	440	495	550	595	640	665	700	730	755	785	810	840	865	4	26.69	5.79
155-12/6.15-12	485	545	605	655	705	735	775	805	835	865	895	925	950	4½	27.36	6.18
135-13/5.65-13	415	470	520	555	595	625	655	685	710	735	760	785	810	4	26.53	5.39
145-13/5.95-13	470	525	585	620	670	705	745	770	800	825	855	885	910	4	27.61	5.79
155-13/6.15-13	515	575	640	700	750	780	820	850	880	910	945	975	1,005	4½	28.44	6.18
165-13/6.45-13	575	645	715	770	825	865	905	935	970	1,005	1,040	1,075	1,105	4½	29.52	6.57
175-13/6.95-13	635	715	795	845	915	955	1,005	1,045	1,085	1,120	1,160	1,200	1,235	5	30.34	7.01
185-13/7.35-13	695	785	870	945	1,010	1,060	1,115	1,160	1,205	1,245	1,290	1,335	1,370	5½	31.41	7.40
135-14/5.65-14	440	495	550	595	640	665	700	730	755	785	810	840	865	4	27.54	5.59
145-14/5.95-14	495	560	620	665	715	750	785	815	845	875	905	935	965	4	28.54	5.79
155-14/6.15-14	540	610	675	730	780	825	860	895	925	960	995	1,030	1,060	4½	29.45	6.18
125-15/5.35-15	395	445	495	535	570	600	625	650	675	700	720	745	770	3½	27.69	5.00
135-15/5.65-15	460	520	575	610	660	690	720	750	775	805	835	860	885	4	28.53	5.39
145-15/5.95-15	520	585	650	710	760	790	830	860	890	925	955	985	1,015	4	29.54	5.79
155-15/6.35-15	585	660	730	780	835	875	915	950	985	1,020	1,055	1,090	1,125	4½	30.45	6.18
175-15/7.15-15	705	795	880	955	1,020	1,070	1,125	1,170	1,215	1,255	1,300	1,345	1,385	5	32.42	7.01
165-14	650	715	770	815	880	925	970	1,000	1,035	1,080	1,115	1,145	1,170	4½	31.22	6.57
175-14	715	780	850	915	980	1,025	1,070	1,115	1,160	1,200	1,235	1,270	1,310	5	32.13	7.01
185-14	805	870	940	1,000	1,080	1,135	1,190	1,235	1,290	1,325	1,370	1,400	1,435	5½	33.15	7.40
195-14	860	950	1,025	1,105	1,180	1,235	1,290	1,345	1,400	1,445	1,490	1,535	1,580	5½	34.18	7.80
105-14	940	1,025	1,115	1,190	1,270	1,335	1,400	1,455	1,510	1,565	1,610	1,655	1,700	6	35.36	8.19
115-14	1,015	1,115	1,200	1,290	1,380	1,445	1,520	1,590	1,640	1,700	1,740	1,785	1,830	6	36.30	8.58
125-14	1,080	1,180	1,280	1,380	1,465	1,540	1,620	1,700	1,750	1,810	1,850	1,915	1,970	6½	37.25	8.98
265-15	685	750	805	860	915	970	1,015	1,060	1,105	1,135	1,180	1,200	1,235	4½	32.16	6.57
285-15	815	905	970	1,050	1,115	1,180	1,235	1,280	1,325	1,370	1,410	1,445	1,490	5½	34.09	7.40
95-15	880	970	1,060	1,135	1,215	1,280	1,335	1,390	1,445	1,450	1,535	1,580	1,620	5½	35.12	7.80
205-15	970	1,060	1,145	1,225	1,300	1,370	1,445	1,500	1,565	1,610	1,665	1,720	1,765	6	36.30	8.19
215-15	1,050	1,145	1,235	1,335	1,435	1,500	1,590	1,640	1,700	1,740	1,800	1,850	1,910	6	37.24	8.58
235-15	1,150	1,295	1,435	1,545	1,660	1,735	1,825	1,895	1,965	2,035	2,110	2,180	2,245	6½	38.26	9.37
5.0-15	460	520	575	610	660	690	720	750	775	805	835	860	885	4	28.53	5.39
5.5-15	520	585	650	710	760	790	830	860	890	925	955	985	1,015	4	29.54	5.79

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–D

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR DASH (—) RADIAL PLY TIRES

Tire size designation [1]	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [2] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
145–10	495	525	545	565	585	605	625	640	655	670	685	700	710	4	24.76	5.79
125–12	405	430	445	465	480	495	505	525	535	550	560	575	580	3½	24.68	5.00
135–12	480	510	530	550	565	585	600	620	635	650	665	675	685	4	25.53	5.39
145–12	570	605	625	650	675	695	715	740	760	775	790	805	815	4	26.69	5.79
155–12	630	670	695	720	745	770	795	820	840	860	875	890	905	4½	27.36	6.18
135–13	515	545	565	590	610	630	650	670	690	705	715	730	740	4	26.53	5.39
145–13	605	640	665	695	720	740	765	790	815	830	845	855	870	4	27.61	5.79
155–13	670	710	735	765	790	815	840	870	895	910	925	940	955	4½	28.44	6.18
165–13	700	750	800	850	890	930	970	1,010	1,050	1,090	1,130	1,170	1,200	4½	29.52	6.57
175–13			810	860	920	980	1,040	1,100	1,150	1,200	1,240	1,300	1,350	4½	30.30	6.75
185–13			870	940	1,010	1,080	1,140	1,210	1,270	1,330	1,390	1,450	1,510	5	31.42	7.25
195–13			970	1,040	1,110	1,180	1,250	1,320	1,400	1,450	1,520	1,580	1,640	5½	32.38	7.70
135–14	555	585	610	635	655	675	695	720	740	750	765	780	790	4	27.54	5.39
145–14	645	680	710	735	760	785	810	840	865	885	905	920	935	4	28.54	5.79
155–14	630	680	720	760	800	840	880	920	950	980	1,010	1,040	1,070	4½	29.45	6.18
165–14	740	790	840	890	940	980	1,020	1,060	1,100	1,140	1,180	1,220	1,250	4½	30.53	6.57
175–14			830	900	960	1,030	1,100	1,160	1,230	1,280	1,350	1,400	1,470	5	31.63	7.00
185–14			920	1,000	1,070	1,140	1,220	1,290	1,360	1,420	1,500	1,560	1,640	5	32.59	7.30
195–14			1,020	1,100	1,180	1,270	1,340	1,420	1,500	1,570	1,650	1,720	1,800	5½	33.69	7.80
205–14			1,100	1,180	1,270	1,380	1,450	1,540	1,620	1,700	1,770	1,860	1,940	6	34.82	8.80
215–14			1,200	1,300	1,390	1,510	1,580	1,670	1,770	1,850	1,920	2,010	2,100	6	35.79	8.60
225–14			1,320	1,420	1,510	1,610	1,710	1,800	1,900	1,970	2,050	2,150	2,230	6½	36.44	8.95
125–15	495	525	545	565	585	605	625	640	655	670	685	700	710	3½	27.69	5.00
135–15	585	620	645	670	695	715	735	755	775	795	810	825	840	4	28.53	5.39
145–15	680	720	750	780	805	830	855	875	895	920	940	960	975	4	29.54	5.79
155–15	740	785	815	850	880	905	930	955	980	1,005	1,025	1,045	1,060	4½	30.45	6.18
165–15	770	820	870	920	970	1,020	1,070	1,110	1,150	1,190	1,230	1,270	1,310	4½	31.45	6.57
175–15			990	1,050	1,100	1,150	1,200	1,250	1,300	1,350	1,400	1,440	1,480	5	32.41	7.00
180–15	925	980	1,020	1,060	1,095	1,130	1,170	1,190	1,230	1,260	1,280	1,305	1,325	4½	32.04	6.62
185–15			1,000	1,070	1,140	1,210	1,280	1,350	1,420	1,480	1,540	1,600	1,660	5½	33.58	7.45
195–15			1,080	1,160	1,240	1,330	1,400	1,470	1,550	1,620	1,680	1,760	1,820	5½	34.22	7.65
205–15			1,190	1,280	1,370	1,450	1,530	1,620	1,700	1,760	1,840	1,920	2,000	6	35.20	8.10
215–15			1,280	1,380	1,480	1,570	1,660	1,760	1,860	1,940	2,020	2,100	2,200	6	36.00	8.35
225–15			1,370	1,470	1,580	1,670	1,780	1,880	1,980	2,060	2,150	2,240	2,340	6½	36.94	8.80
235–15			1,430	1,540	1,640	1,750	1,850	1,960	2,060	2,160	2,250	2,350	2,450	6½	37.75	9.05
185–16			1,140	1,210	1,270	1,330	1,390	1,450	1,500	1,550	1,600	1,650	1,700	5½	34.14	7.40
165–400	800	860	920	980	1,030	1,080	1,130	1,180	1,220	1,260	1,300	1,340	1,380	4.65	32.04	6.62

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–E

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "77 SERIES" BIAS PLY TIRES

Tire size [1] designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width [2] (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
G77–14			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.04	8.45
5.9–10	385	430	475	515	550	580	605	630	660	675	700			4	24.00	5.80
5.9–12	460	505	550	595	640	665	700	730	755	785	810			4	26.00	5.90
6.2–12	485	545	605	655	705	735	775	805	835	865	895	925	950	4	27.21	6.06
6.2–13	515	575	640	700	750	780	820	850	880	910	945	975	1,005	4	28.19	6.06
6.9–13	635	715	795	845	915	955	1,005	1,045	1,085	1,120	1,160			4½	29.92	6.77
6.2–15	585	660	730	780	835	875	915	950	985	1,020	1,055	1,090	1,125	4	30.17	6.06
6.9–15	705	795	880	955	1,020	1,070	1,125	1,170	1,215	1,255	1,300	1,345	1,385	4½	31.93	6.77

[1] The letter "H," "S," or "V" may be included in any specified tire size designation adjacent to or in place of the "dash."

[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–F

TIRE LOAD RATINGS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR DASH (—) RADIAL PLY TIRES

Tire size [1] designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section [2] width (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
5.20–10	435	460	485	510	535	560	585	615	635	660	685	710	735	3½	24.84	5.20
5.00–12	480	495	515	535	555	575	595	615	635	650	670	690	710	3½	25.62	5.04
5.20–12	515	540	565	590	615	640	665	695	715	740	765	790	815	3½	26.79	5.20
5.50–12	520	545	570	595	620	650	670	705	725	750	775	800	825	4	26.93	5.59
5.60–12	600	630	655	685	715	740	770	800	825	850	875	905	930	4	27.83	5.71
5.00–13	535	555	575	590	615	630	650	670	690	705	725	745	765	3½	26.64	5.04
5.20–13	570	595	620	645	670	695	720	750	770	795	820	845	870	3½	27.72	5.20
5.50–13	575	600	625	650	675	695	725	750	775	795	825	850	875	4	27.95	5.59
5.60–13	655	685	710	740	765	795	825	855	880	905	935	960	990	4	28.92	5.71
6.00–13	675	705	735	760	790	815	845	875	900	925	950	975	1,005	4	29.37	6.00
5.90–13	705	780	805	830	860	885	915	940	965	990	1,015	1,045	1,070	4	29.74	5.91
6.40–13	810	840	870	905	940	970	1,005	1,040	1,070	1,100	1,135	1,165	1,200	4½	31.26	6.42
6.50–13	800	830	860	890	925	960	995	1,030	1,060	1,090	1,120	1,150	1,180	4½	30.75	6.60
6.70–13	690	775	860	935	1,000	1,045	1,090	1,135	1,175	1,220	1,260	1,305	1,340	4½	32.14	6.69
7.00–13	870	910	950	985	1,025	1,060	1,100	1,145	1,175	1,215	1,255	1,295	1,335	5	31.88	7.10
7.25–13	940	980	1,020	1,060	1,100	1,135	1,175	1,215	1,255	1,290	1,330	1,370	1,410	5	32.51	7.24
5.20–14	605	640	670	700	730	760	795	830	855	885	915	950	980	3½	28.89	5.20
5.90–14	750	785	815	845	875	905	935	970	995	1,025	1,055	1,085	1,115	4	30.76	5.91
7.00–14	925	960	1,000	1,040	1,075	1,115	1,155	1,195	1,235	1,270	1,320	1,350	1,380	5	32.88	7.10
7.50–14	1,065	1,100	1,140	1,180	1,220	1,260	1,300	1,340	1,380	1,415	1,460	1,500	1,540	5½	34.19	7.65
5.60–15	705	780	805	830	860	885	915	940	965	990	1,015	1,045	1,070	4	30.87	5.71
6.40–15	885	925	965	1,005	1,040	1,080	1,120	1,160	1,200	1,235	1,275	1,310	1,350	4½	33.26	6.42
6.70–15	975	1,015	1,055	1,095	1,130	1,170	1,215	1,255	1,290	1,325	1,365	1,405	1,445	4½	33.95	7.00
7.60–15	1,160	1,200	1,245	1,285	1,325	1,370	1,415	1,465	1,500	1,535	1,575	1,610	1,655	5½	36.00	7.90

[1] The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".
[2] Actual section width and overall width shall not exceed the specified width by more than 7 percent.

TABLE I–G

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "70 SERIES" TYPE "R" RADIAL PLY TIRES

Tire size [1] designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section [2] width (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
DR70-14	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490			5½	32.78	7.90
ER70-14	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580			5½	33.42	8.10
FR70-14	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700			6	34.34	8.55
GR70-14	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830			6	35.12	8.85
HR70-14	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010			6½	36.31	9.40
JR70-14	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100			6½	36.86	9.55
LR70-14	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230			6½	37.59	9.80
DR70-15	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490			5½	33.34	7.75
ER70-15	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580			5½	33.91	7.95
FR70-15	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700			6	34.87	8.40
GR70-15	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830			6	35.65	8.65
HR70-15	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010			6½	36.83	9.20
JR70-15	1,430	1,500	1,580	1,650	1,720	1,790	1,960	1,920	1,980	2,040	2,100			6½	37.31	9.40
KR70-15	1,460	1,540	1,620	1,690	1,770	1,830	1,900	1,970	2,030	2,090	2,150			6½	37.62	9.50
LR70-15	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230			6½	38.06	9.65

[1] The letter "H," "S," or "V" may be included in any specified tire size designation adjacent to or in place of the "dash."

[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–H

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR TYPE "R" RADIAL PLY TIRES

Tire size [1] designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section [2] width (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
145R10	525	550	580	605	630	655	680	700	725	750	770			4	24.76	5.79
125R12	430	450	475	495	515	535	555	575	595	610	630			3½	24.68	5.00
135R12	505	535	560	585	610	635	655	680	700	725	745			4	25.53	5.39
145R12	600	635	665	695	725	755	780	810	835	860	885			4	26.69	5.79
155R12	665	700	735	770	800	835	865	895	925	950	980			4½	27.36	6.18
135R13	545	575	600	630	655	680	705	730	755	780	800			4	26.53	5.39
145R13	665	700	735	770	800	835	860	890	920	950	980			4	27.59	5.79
155R13	730	770	810	845	885	915	950	985	1,015	1,045	1,075			4½	28.44	6.18
165R13	770	820	860	900	930	970	1,010	1,040	1,080	1,110	1,140			4½	29.18	6.40
175R13	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300			4½	30.30	6.75
185R13	980	1,030	1,080	1,130	1,180	1,230	1,270	1,310	1,360	1,400	1,440			5	31.42	7.25
195R13	1,060	1,110	1,170	1,220	1,280	1,320	1,370	1,420	1,470	1,510	1,550			5½	32.38	7.70
135R14	585	615	645	675	705	730	760	785	810	835	860			4	27.54	5.39
145R14	675	715	750	785	815	850	880	910	940	965	995			4	28.54	5.79
155R14	780	820	860	900	940	970	1,010	1,040	1,080	1,110	1,140			4	29.51	6.05
165R14	860	910	960	1,000	1,040	1,080	1,120	1,160	1,200	1,240	1,270			4½	30.65	6.55
175R14	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,310	1,350	1,390			5	31.63	7.00
185R14	1,040	1,100	1,160	1,210	1,260	1,310	1,360	1,400	1,450	1,490	1,540			5	32.59	7.30
195R14	1,150	1,210	1,270	1,330	1,390	1,440	1,500	1,550	1,600	1,650	1,690			5½	33.69	7.80
205R14	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830			6	34.82	8.30
215R14	1,360	1,430	1,510	1,580	1,640	1,710	1,770	1,830	1,890	1,950	2,000			6	35.79	8.60
225R14	1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100			6½	36.44	8.95
125R15	520	550	575	605	630	655	680	705	725	745	770			3½	27.69	5.00
135R15	615	650	680	715	745	775	800	830	855	880	910			4	28.53	5.39
145R15	720	760	795	830	865	900	935	965	995	1,025	1,055			4	29.54	5.79
155R15	780	825	865	905	940	980	1,015	1,050	1,085	1,115	1,150			4½	30.45	6.18
165R15	870	910	960	1,000	1,050	1,090	1,130	1,170	1,200	1,240	1,270			4½	31.18	6.40
175R15	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,390			5	32.30	6.90
185R15	1,070	1,130	1,180	1,240	1,290	1,340	1,390	1,440	1,480	1,530	1,570			5½	33.58	7.45
195R15	1,150	1,210	1,270	1,330	1,380	1,440	1,490	1,540	1,590	1,640	1,690			5½	34.22	7.65
205R15	1,240	1,300	1,370	1,430	1,490	1,550	1,610	1,660	1,720	1,770	1,820			6	35.20	8.10
215R15	1,340	1,410	1,480	1,550	1,620	1,680	1,740	1,800	1,860	1,920	1,970			6	36.00	8.35
225R15	1,430	1,510	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100			6½	36.94	8.80
235R15	1,510	1,600	1,680	1,750	1,830	1,900	1,970	2,030	2,100	2,160	2,230			6½	37.75	9.05

[1] The letter "H," "S," or "V" may be included in any specified tire size designation adjacent to the "R."

[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I–J

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "78 SERIES" BIAS PLY TIRES

Tire size [1] designation	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section [2] width (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
B78-14	870	910	960	1,000	1,050	1,090	1,130	1,170	1,200	1,240	1,280			4½	30.92	6.60
C78-14	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400			5	31.95	7.05
D78-14	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490			5	32.52	7.35
E78-14	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580			5½	33.29	7.65
F78-14	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700			5½	34.04	7.90
G78-14	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830			6	35.02	8.35
H78-14	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010			6	36.06	8.70
J78-14	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100			6	36.58	8.80
C78-15	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400			5	32.45	6.95
D78-15	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490			5	33.05	7.15
E78-15	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580			5	33.65	7.35
F78-15	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700			5½	34.56	7.70
G78-15	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830			5½	35.36	8.05
H78-15	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010			6	36.50	8.55
J78-15	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100			6	37.02	8.70
L78-15	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230			6	37.73	8.85

[1] The letter "H," "S," or "V" may be included in any specified tire size designation adjacent to or in place of the "dash."

[2] Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE II—MINIMUM BREAKING ENERGY VALUES (INCH-POUNDS)

TABLE II-A—FOR BIAS PLY TIRES WITH SIZE DESIGNATION OF 6.00 (OR 155 MILLIMETERS) AND ABOVE AND 70 SERIES TIRES

Cord material	Maximum permissible inflation pressure		
	32 p.s.i.	36 p.s.i.	40 p.s.i.
Rayon	1,650 in.-lbs.	2,475 in.-lbs.	3,300 in.-lbs.
Nylon or polyester.	2,600 in.-lbs.	3,900 in.-lbs.	5,200 in.-lbs.

TABLE II-B—FOR BIAS PLY TIRES WITH SIZE DESIGNATION BELOW 6.00 INCHES (OR 155 MILLIMETERS)

Cord material	Maximum permissible inflation pressure		
	32 p.s.i.	36 p.s.i.	40 p.s.i.
Rayon	1,000 in.-lbs.	1,875 in.-lbs.	2,500 in.-lbs.
Nylon or polyester.	1,950 in.-lbs.	2,925 in.-lbs.	3,900 in.-lbs.

TABLE II-C—FOR RADIAL PLY TIRES

Size designation	Maximum permissible inflation pressure		
	32 p.s.i.	36 p.s.i.	40 p.s.i.
Below 160 millimeters.	1,950 in.-lbs.	2,925 in.-lbs.	3,900 in.-lbs.
160 millimeters or above.	2,600 in.-lbs.	3,900 in.-lbs.	5,200 in.-lbs.

TABLE III

TEST INFLATION PRESSURES

Maximum permissible inflation pressure (in p.s.i.)	32	36	40
Pressure (in p.s.i.) to be used in tests for physical dimensions, bead unseating, tire strength, and tire endurance	24	28	32
Pressure (in p.s.i.) to be used in test or high speed performance	30	34	38

MOTOR VEHICLE SAFETY STANDARD NO. 110

TIRE SELECTION AND RIMS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for tire selection to prevent tire overloading.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Accessory weight" means the combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio, and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

"Curb weight" means the weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

"Maximum loaded vehicle weight" means the sum of—

(a) Curb weight;

(b) Accessory weight;

(c) Vehicle capacity weight; and

(d) Production options weight.

"Normal occupant weight" means 150 pounds times the number of occupants specified in the second column of Table I.

"Occupant distribution" means distribution of occupants in a vehicle as specified in the third column of Table I.

"Production options weight" means the combined weight of those installed regular production options weighing over 5 pounds in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

"Vehicle capacity weight" means the rated cargo and luggage load plus 150 pounds times the vehicles designated seating capacity.

"Vehicle maximum load on the tire" means that load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

"Vehicle normal load on the tire" means that load on an individual tire (distributed in accordance with Table I) and dividing by two.

S4. *Requirements.*

S4.1 *General.* Passenger Cars shall be equipped with tires that meet the requirements of Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires—Passenger Cars."

S4.2 *Tire load limits.*

S4.2.1 The vehicle maximum load on the tire shall not be greater than the applicable maximum load rating specified in Table I of Motor Vehicle Safety Standard No. 109 for the tire's size designation and type.

S4.2.2 The vehicle normal load on the tire shall not be greater than the test load used in the high speed performance test specified in S5.5 of Motor Vehicle Safety Standard No. 109 for that tire.

S4.3 *Placard.* A placard, permanently affixed to the glove compartment door or an equally accessible location, shall display the—

(a) Vehicle capacity weight;

(b) Designated seating capacity (expressed in terms of total number of occupants and in terms of occupants for each seat location);

(c) Vehicle manufacturer's recommended cold tire inflation pressure for maximum loaded vehicle weight and, subject to the limitations of S4.3.1, for any other manufacturer-specified vehicle loading condition; and

(d) Vehicle manufacturer's recommended tire size designation.

S4.3.1 No inflation pressure other than the maximum permissible inflation pressure may be specified unless—

(a) It is less than the maximum permissible inflation pressure;

(b) The vehicle loading condition for that pressure is specified; and

(c) The tire load rating from Table I of Motor Vehicle Safety Standard No. 109 for the tire at that pressure is not less than the vehicle load on the tire for that vehicle loading condition.

S4.4 *Rims.*

S4.4.1 *Requirements.* Each rim shall:

(a) Be constructed to the dimensions of a rim specified for the applicable tire's size designation in a reference cited in the definition of test rim in S3 of Motor Vehicle Safety Standard No. 109. Approved alternative size rims, not cited in S3 of Motor Vehicle Safety Standard No. 109 are listed in Table II of Appendix A of Standard No. 110.

(b) In the event of rapid loss of inflation pressure with the vehicle traveling in a straight line at a speed of 60 miles per hour, retain the deflated tire until the vehicle can be stopped with a controlled braking application.

Appendix A—Federal Motor Vehicle Safety Standard No. 110.

The following table lists alternative size rims for tire and rim combinations not contained in any reference in S3 of Standard No. 109.

Persons requesting the addition of alternative tire rims to Appendix A should submit five (5) copies of information and data supporting the request to the Secretary of Transportation, Attention: Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

The information should contain but not be limited to the following:

1. The requested alternative rim and tire size combination.

2. A statement as to whether the alternative tire/rim combination has been coordinated with an organization such as The Tire and Rim Association, The European Tire and Rim Technical Organization, The Society of Manufacturers and Traders Limited and the Japan Automobile Tire Manufacturers Association, whose purpose is to standardize tire and rim sizes.

3. A statement that the additional rim size requested has been tested in accordance with the requirements of Standard No. 110 and meets the requirements of the standard.

4. Copies of the test data sheets showing test conditions, results of tests performed on the tire/rim combination, and conclusions obtained for the individual tests specified in Standard No. 109.

5. Justification for the additional rim size.

Amendments to Appendix A of Standard No. 110 may be issued by the Director of the Motor Vehicle Safety Performance Service, National Highway Safety Bureau.

FMVSS No. 110

APPENDIX A, TABLE I

(Alternative Rims)

Tire size	*Rim* [1]
6.40–15	*4½–JK, 4½–J, 4½–K, 4.50 E,* 4–J, 5.00E, 5–J, 5–K, 5–JK, 5½–J.
7.00–15	*5.00F, 5–K.*
8.25–15	*6–JK, 6–K, 6–L.*
8.55–15	*6–JK, 6–K, 6–L,* 5½–JK, 5½–JJ, 5½–J.
8.90–15	*6½–L,* 6–JK, 6–JJ, 7–L.
Tire size	*Rim* [1]
D70–13	*5½–JK, 5½–JJ, 5½–J, 5½–K.*
F70–14	7JJ.
G70–14	7JJ.
5.0–15	*4J,* 3.50B, 3.50D, 3½–J, 4.00C.
5.5–15	*4J,* 3½J, 3.50D, 4½J.
B78–14	*4½–JJ, 4½–J, 4½–K,* 5–JJ, 5J, 5–K.
C78–14	*5–JJ, 5–J, 5–K,* 4½–JJ, 4½–J, 5½–J, 6–JJ, 6–JK.
D78–14	*5–JJ, 5–J, 5–K.*
E78–14	*5½–JK, 5½–JJ, 5½–J, 5½–K,* 4½–JJ, 4½–J, 5–JJ, 5–J, 5–K, 6½–JK.

F78-14 ----- *5½–JJ, 5½–JK, 5½–J, 5½–K,* 5–JJ, 5–J, 5–K, 6–JK, 6–JJ, 6–K, 6½–JK, 6½–JJ.
G78-14 ----- *6–JJ, 6–JK, 6–K,* 5–JJ, 5–J, 5½–JK, 5½–JJ, 5½–J, 5½–K.
H78-14 ----- *6–JK, 6–JJ, 6–K,* 5½–JK, 6½–JK, 6½–JJ, 6½–K.
J78-14 ----- *6–JK, 6–JJ, 6–K,* 6½–JK, 6½–JJ.
C78-15 ----- *5–JJ, 5–J, 5–K,* 4½–JJ, 4½–J, 4½–K.
D78-15 ----- *5–JJ, 5–J, 5–K.*
E78-15 ----- *5–JJ, 5–J, 5–K,* 4½–K, 5½–JK, 5½–JJ, 5½–J, 5½–K, 6–JK, 6–JJ.
F78-15 ----- *5½–JK, 5½–JJ, 5½–J, 5½–K,* 4½–K, 5–JJ, 5–J, 5–K, 6–JK, 6–JJ.
G78-15 ----- *5½–JK, 5½–JJ, 5½–J, 5½–K,* 5–JJ, 5–J, 5–K, 6–JK, 6–JJ, 6–K, 6–L.
H78-15 ----- *6–JK, 6–JJ, 6–K, 6–L,* 5½–JK, 5½–JJ, 5½–J, 5½–K, 6½–K.
J78-15 ----- *6–JK, 6–JJ, 6–K, 6–L,* 6½–JK, 6½–JJ.
L78-15 ----- *6–JK, 6–JJ, 6–K, 6–L,* 6½–JK, 6½–JJ.

[1] Italic designations denote Test Rims.

MOTOR VEHICLE SAFETY STANDARD NO. 111

REARVIEW MIRRORS—PASSENGER CARS AND MULITPURPOSE PASSENGER VEHICLES

S1. *Purpose and scope.* This standard specifies requirements for rearview mirrors to provide the driver with a clear and reasonably unobstructed view to the rear.

S2. *Application.* This standard applies to passenger cars and multipurpose passenger vehicles.

S3. *Requirements.*

S3.1 *Inside rearview mirrors.*

S3.1.1 *Field of view.* A mirror shall be installed that provides the driver a view to the rear, of substantially unit magnification, with an included horizontal angle of at least 20 degrees and sufficient vertical angle to provide a view of a level road surface extending to the horizon beginning at a point not greater than 200 feet to the rear of the vehicle when the vehicle is occupied by the driver and four passengers or the designed occupant capacity, if less, based on 150 pound average occupant weight. The line of sight may be partially obscured by seated occupants or by head restraints.

S3.1.2 *Mounting.*

S3.1.2.1 The mirror mounting shall provide a stable support for the mirror, and shall provide for mirror adjustment by tilting in both horizontal and vertical directions.

S3.1.2.2 If the mirror is in the head impact area, the mounting shall break away without leaving sharp edges or deflect or collapse when the mirror is subjected to a force of 90 pounds in a forward or sideward direction in any plane 45° above or below the horizontal.

S3.2 *Outside mirrors.*

S3.2.1 *Driver's side.*

S3.2.1.1 *Field of view.* An outside mirror shall be installed that provides the driver a view, of substantially unit magnification, of a level road surface extending to the horizon from a line perpendicular to a plane tangent to the driver's side of the vehicle at the widest point and parallel to the longitudinal axis of the vehicle extending 8 feet out from the tangent plane 35 feet behind the driver's eyes, with the seat in the rearmost position. The line of sight may be partially obscured by rear body or fender contours.

S3.2.1.2 *Mounting.* The mounting shall provide a stable support for the mirror and neither the mirror nor the mounting shall protrude further than the widest part of the vehicle body, except to the extent necessary to produce a field of view meeting or exceeding the requirements of S3.2.1.1. The mirror shall not be obscured by the unwiped portion of the windshield, and shall be adjustable from the driver's seated position. The mirror and mounting shall be free of sharp points or edges that could contribute to pedestrian injury.

S3.2.2 *Passenger's side.* If the inside mirror required by S3.1 does not meet the field of view requirements of S3.1.1, an outside mirror of substantially unit magnification shall be installed on the passenger's side.

S3.2.2.1 *Mounting.* The mounting shall provide a stable support for the mirror, and the mirror and mounting shall be free of sharp points or edges that could contribute to pedestrian injury.

S3.3 *Mirror construction.* The reflectance value of the reflective film employed shall be at least 35 percent. If a mirror is of the selective position prismatic type, the reflectance value in the night driving position shall be at least 4 percent.

S.4. *Demonstration procedures.* Reflectance shall be determined in accordance with Society of Automotive Engineers Recommended Practice J964, "Test Procedure for Determining Reflectivity of Rearview Mirrors," June 1966.

MOTOR VEHICLE SAFETY STANDARD NO. 112

HEADLAMP CONCEALMENT DEVICES; PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, BUSES, AND MOTORCYCLES

S1. *Scope.* This standard specifies requirements for headlamp concealment devices.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, and motorcycles.

S3. *Definitions.*

"Fully opened" means the position of the headlamp concealment device in which the headlamp is in the design open operating position.

"Headlamp concealment device" means a device, with its operating system and components, that provides concealment of the headlamp when it is not in use, including a movable headlamp cover and a headlamp that displaces for concealment purposes.

"Power" means any source of energy that operates the headlamp concealment device.

S4. *Requirements.*

S4.1 Each fully opened headlamp concealment device shall remain fully opened whenever either or both of the following occur—

(a) Any loss of power to or within the headlamp concealment device;

(b) Any disconnection, restriction, short-circuit, circuit time delay, or other similar malfunction in any wiring, tubing, hose, solenoid or other component that controls or conducts power for operating the concealment device.

S4.2 Whenever any malfunction occurs in a component that controls or conducts power for the actuation of the concealment device, each closed headlamp concealment device shall be capable of being fully opened—

(a) By automatic means;

(b) By actuation of a switch, lever or other similar mechanism; or

(c) By other means not requiring the use of any tools.

Thereafter, the headlamp concealment device must remain fully opened until intentionally closed.

S4.3 Except for cases of malfunction covered by S4.2, each headlamp concealment device shall be capable of being fully opened and the headlamps illuminated by actuation of a single switch, lever, or similar mechanism, including a mechanism that is automatically actuated by a change in ambient light conditions.

S4.4 Each headlamp concealment device shall be installed so that the headlamp may be mounted, aimed, and adjusted without removing any component of the device, other than components of the headlamp assembly.

S4.5 After December 31, 1969, the headlamp beam of headlamps that illuminate during opening and closing of the headlamp concealment device may not project to the left of or above the position of the beam when the device is fully opened.

S4.6 Except for cases of malfunction covered by S4.2, after December 31, 1969, each headlamp concealment device shall, within an ambient temperature range of −20° to +120° F., be capable of being fully opened in not more than 3 seconds after actuation of the mechanism described in S4.3.

MOTOR VEHICLE SAFETY STANDARD NO. 113

HOOD LATCH SYSTEM; PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard establishes the requirement for providing a hood latch system or hood latch systems.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. *Definitions.* "Hood" means any exterior movable body panel forward of the windshield that is used to cover an engine, luggage, storage, or battery compartment.

S4. *Requirements.*

S4.1 Each hood must be provided with a hood latch system.

S4.2 A front opening hood which, in any open position, partially or completely obstructs a driver's forward view through the windshield must be provided with a second latch position on the hood latch

system or with a second hood latch system.

MOTOR VEHICLE SAFETY STANDARD NO. 114

THEFT PROTECTION; PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for theft protection to reduce the incidence of accidents resulting from unauthorized use.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Combination" means one of the specifically planned and constructed variations of a locking system which, when properly actuated, permits operation of the locking system.

"Key" includes any other device designed and constructed to provide a method for operating a locking system which is designed and constructed to be operated by that device.

S4. *Requirements.*

S4.1 Each passenger car shall have a key-locking system that, whenever the key is removed, will prevent—

(a) Normal activation of the car's engine or other main source of motive power; and

(b) Either steering or self-mobility of the car, or both.

S4.2 The prime means for deactivating the car's engine or other main source of motive power shall not activate the deterrent required by S4.1(b).

S4.3 The number of different combinations of the key locking systems required by S4.1 of each manufacturer shall be at least 1,000, or a number equal to the number of passenger cars manufactured by such manufacturer, whichever is less.

S4.4 A warning to the driver shall be activated when the key required by S4.1 has been left in the locking system and the driver's door is opened.

MOTOR VEHICLE SAFETY STANDARD NO. 115

VEHICLE IDENTIFICATION NUMBER—PASSENGER CARS

S1. *Purpose and Scope.* This standard specifies requirements for vehicle identification numbers to reduce the incidence of accidents resulting from unauthorized use.

S2. *Application.* This standard applies to passenger cars.

S3. *Definition.* "Vehicle identification number" means a number consisting of arabic numerals, roman letters, or both, which the manufacturer assigns to the vehicle for identification purposes.

S4. *Requirements.*

S4.1 Each passenger car shall have a vehicle identification number.

S4.2 The vehicle identification numbers of two vehicles manufactured by a manufacturer within a 10-year period shall not be identical.

S4.3 The vehicle identification number of each passenger car shall be sunk into or embossed upon either a part of the vehicle (other than the glazing) that is not designed to be removed except for repair or a separate plate which is permanently affixed to such a part.

S4.4 The vehicle identification number shall be located inside the passenger compartment and shall be readable, without moving any part of the vehicle, through the vehicle glazing under daylight lighting conditions by an observer having 20/20 vision (Snellen) whose eyepoint is located outside the vehicle adjacent to the left windshield pillar.

MOTOR VEHICLE SAFETY STANDARD NO. 201

OCCUPANT PROTECTION IN INTERIOR IMPACT—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies initial requirements to afford impact protection for occupants.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements*—

S3.1 Instrument Panels. Except as provided in S3.1.1, when that area of the instrument panel that is within the head impact area is impacted in accordance with S3.1.2 by a 15-pound, 6.5-inch diameter head form at a relative velocity of 15 miles per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

S3.1.1 The requirements of S3.1 do not apply to—

(a) Console assemblies;

(b) Areas less than 5 inches inboard from the juncture of the instrument panel attachment to the body side inner structure;

(c) Areas closer to the windshield juncture than those statically contactable by the head form with the windshield in place;

(d) Areas outboard of any point of tangency on the instrument panel of a 6.5-inch diameter head form tangent to and inboard of a vertical longitudinal plane tangent to the inboard edge of the steering wheel; or

(e) Areas below any point at which a vertical line is tangent to the rearmost surface of the panel.

S3.1.2 *Demonstration procedures.* Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1963, except that—

(a) The origin of the line tangent to the instrument panel surface shall be a point on a transverse horizontal line through a point 5 inches horizontally forward of the seating reference point of the front outboard passenger designated seating position, displaced vertically an amount equal to the rise which results from a 5-inch forward adjustment of the seat or 0.75 inches; and

(b) Direction of impact shall be either—

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact.

S3.2 *Seat backs.* Except as provided in S3.2.1, when that area of the seat back that is within the head impact area is impacted in accordance with S3.2.2 by a 15-pound, 6.5-inch diameter head form at a relative velocity of 15 miles per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

S3.2.1 The requirements of S3.2 do not apply to rearmost, side-facing, back-to-back, folding auxiliary jump, and temporary seats.

S3.2.2 *Demonstration procedures.* Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1966, except that—

(a) The origin of the line tangent to the uppermost seat back frame component shall be a point on a transverse horizontal line through the seating reference point of the right rear designated seating position, with adjustable forward seats in their rearmost design driving position and reclinable forward seat backs in their nominal design driving position;

(b) The direction of impact shall be either—

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact;

(c) For seats without head restraints installed, tests shall be performed for each individual split or bucket seat back at points within 4 inches left and right of its centerline, and for each bench seat back between points 4 inches outboard of the centerline of each outboard designated seating position;

(d) For seats having head restraints installed, each test shall be conducted with the head restraint in place at its lowest adjusted position, at a point on the head restraint centerline; and

(e) For a seat that is installed in more than one body style, tests conducted at the fore and aft extremes identified by application of subparagraph (a) shall be deemed to have demonstrated all intermediate conditions.

S3.3 *Sun-visors.*

S.3.3.1 Two sun visors shall be provided that are constructed of, or covered with energy-absorbing material.

S3.3.2 Each sun visor mounting shall present no rigid material edge radius of less than 0.125 inch that is statically contactable by a spherical 6.5-inch diameter head form.

S3.4 *Armrests*—

S3.4.1 *General.* Each installed armrest shall conform to at least one of the following:

(a) It shall be constructed with energy-absorbing material and shall deflect or collapse laterally at least 2 inches without permitting contact with any underlying rigid material.

(b) It shall be constructed with energy absorbing material that deflects or collapses to within 1.25 inches of a rigid test panel surface without permitting contact with any rigid material. Any

rigid material between 0.5 and 1.25 inches from the panel surface shall have a minimum vertical height of not less than 1 inch.

(c) Along not less than 2 continuous inches of its length, the armrest shall, when measured vertically in side elevation, provide at least 2 inches of coverage within the pelvic impact area.

S3.4.2 *Folding armrests.* Each armrest that folds into the seat back or between two seat backs shall either—

(a) Meet the requirement of S3.4.1; or

(b) Be constructed of or covered with energy-absorbing material.

EDITORIAL NOTE: The provisions of the following Motor Vehicle Safety Standard No. 201 will become effective Jan. 1, 1970:

MOTOR VEHICLE SAFETY STANDARD NO. 201

OCCUPANT PROTECTION IN INTERIOR IMPACT—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements to afford impact protection for occupants.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 *Instrument panels.* Except as provided in S3.1.1, when that area of the instrument panel that is within the head impact area is impacted in accordance with S3.1.2 by a 15-pound, 6.5-inch diameter head form at a relative velocity of 15 miles per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

S3.1.1 The requirements of S3.1 do not apply to—

(a) Console assemblies;

(b) Areas less than 5 inches inboard from the juncture of the instrument panel attachment to the body side inner structure;

(c) Areas closer to the windshield juncture than those statically contactable by the head form with the windshield in place;

(d) Areas outboard of any point of tangency on the instrument panel of a 6.5-inch diameter head form tangent to and inboard of a vertical longitudinal plane tangent to the inboard edge of the steering wheel; or

(e) Areas below any point at which a vertical line is tangent to the rearmost surface of the panel.

S3.1.2 *Demonstration procedures.* Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1966, except that—

(a) The origin of the line tangent to the instrument panel surface shall be a point on a transverse horizontal line through a point 5 inches horizontally forward of the seating reference point of the front outboard passenger designated seating position, displaced vertically an amount equal to the rise which results from a 5-inch forward adjustment of the seat or 0.75 inches; and

(b) Direction of impact shall be either—

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact.

S3.2 *Seat Backs.* Except as provided in S3.2.1, when that area of the seat back that is within the head impact area is impacted in accordance with S3.2.2 by a 15-pound, 6.5-inch diameter head form at a relative velocity of 15 miles per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

S3.2.1 The requirements of S3.2 do not apply to rearmost, side-facing, back-to-back, folding auxiliary jump, and temporary seats.

S3.2.2 *Demonstration procedures.* Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumenation for Laboratory Impact Tests," November 1966, except that—

(a) The origin of the line tangent to the uppermost seat back frame component shall be a point on a transverse horizontal line through the seating reference point of the right rear designated seating position, with adjustable forward seats in their rearmost design driving position and reclinable forward seat backs in their nominal design driving position;

(b) The direction of impact shall be either—

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact;

(c) For seats without head restraints installed, tests shall be performed for each individual split or bucket seat back at points within 4 inches left and right of its centerline, and for each bench seat back between points 4 inches outboard of the centerline of each outboard designated seating position;

(d) For seats having head restraints installed, each test shall be conducted with the head restraint in place at its lowest adjusted position, at a point on the head restraint centerline; and

(e) For a seat that is installed in more than one body style, tests conducted at the fore and aft extremes identified by application of subparagraph (a) shall be deemed to have demonstrated all intermediate conditions.

S3.3 *Interior compartment doors.* Each interior compartment door assembly located in an instrument panel, console assembly, seat back, or side panel adjacent to a designated seating position shall remain closed when tested in accordance with either S3.3.1(a) and S3.3.1(b) or S3.3.1(a) and S3.3.1(c). Additionally, any interior compartment door located in an instrument panel or seat back shall remain closed when the instrument panel or seat back is tested in accordance with S3.1 and S3.2. All interior compartment door assemblies with a locking device must be tested with the locking device in an unlocked position.

S3.3.1 *Demonstration procedures.* (a) Subject the interior compartment door latch system to an inertia load of 10g in a horizontal transverse direction and an inertia load of 10g in a vertical direction in accordance with the procedure described in section 5 of SAE Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965, or an approved equivalent.

(b) Conduct a front end longitudinal barrier collision test at not less than 30 miles per hour in accordance with Society of Automotive Engineers Recommended Practice J850, "Barrier Collision Tests," February 1963, or an approved equivalent.

(c) Subject the interior compartment door latch system to a horizontal inertia load of 30g in a longitudinal direction in accordance with the procedure described in section 5 of SAE Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965, or an approved equivalent.

S3.4 *Sun visors.*

S3.4.1 Two sun visors shall be provided that are constructed of or covered with energy-absorbing material.

S3.4.2 Each sun visor mounting shall present no rigid material edge radius of less than 0.125 inch that is statically contactable by a spherical 6.5-inch diameter head form.

S3.5 *Armrests.*

S3.5.1 *General.* Each installed armrest shall conform to at least one of the following:

(a) It shall be constructed with energy-absorbing material and shall deflect or collapse laterally at least 2 inches without permitting contact with any underlying rigid material.

(b) It shall be constructed with energy-absorbing material that deflects or collapses to within 1.25 inches of a rigid test panel surface without permitting contact with any rigid material. Any rigid material between 0.5 and 1.25 inches from the panel surface shall have a minimum vertical height of not less than 1 inch.

(c) Along not less than 2 continuous inches of its length, the armrest shall, when measured vertically in side elevation, provide at least 2 inches of coverage within the pelvic impact area.

S3.5.2 *Folding armrests.* Each armrest that folds into the seat back or between two seat backs shall either—

(a) Meet the requirement of S3.5.1; or

(b) Be constructed of or covered with energy-absorbing material.

MOTOR VEHICLE SAFETY STANDARD NO. 202

HEAD RESTRAINTS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.* "Head restraint" means a device that limits rearward angular displacement of the occupant's head relative to his torso line.

S4. *Requirements.* A head restraint that conforms to either (a) or (b) shall be provided at each outboard front designated seating position—

(a) It shall, when tested in accordance with S5.1, during a forward acceleration of at least 8g on the seat supporting structure, limit rearward angular displacement of the head reference line to 45° from the torso reference line; or

(b) It shall, when adjusted to its fully extended design position, conform to each of the following—

(1) When measured parallel to torso line, the top of the head restraint shall not be less than 27.5 inches above the seating reference point;

(2) When measured either 2.5 inches below the top of head restraint or 25 inches above the seating reference point, the lateral width of the head restraint shall be not less than—

(i) 10 inches for use with bench-type seats; and

(ii) 6.75 inches for use with individual seats;

(3) When tested in accordance with S5.2, the rearmost portion of the head form shall not be displaced to more than 4 inches perpendicularly rearward of the displaced extended torso reference line during the application of the load specified in S5.2(c); and

(4) When tested in accordance with S5.2, the head restraint shall withstand an increasing load until one of the following occurs—

(i) Failure of the seat or seat back; or

(ii) Application of a load of 200 pounds.

S5. *Demonstration procedures.*

S5.1 Compliance with S4.(a) shall be demonstrated in accordance with the following with the head restraint in its fully extended design position:

(a) On the exterior profile of the head and torso of a dummy having the weight and seated height of a 95th percentile adult male with an approved representation of a human, articulated neck structure, or an approved equivalent test device, establish reference lines by the following method:

(1) Position the dummy's back on a horizonal flat surface with the lumbar joints in a straight line.

(2) Rotate the head of the dummy rearward until the back of the head contacts the same flat horizontal surface in (1).

(3) Position the SAE J–826 two-dimensional manikin's back against the flat surface in (1), alongside the dummy with the h-point of the manikin aligned with the h-point of the dummy.

(4) Establish the torso line of the manikin as defined in SAE Aerospace-Automotive Drawing Standards, sec. 2.3.6, P. E1.01, September 1963.

(5) Establish the dummy torso reference line by superimposing the torso line of the manikin on the torso of the dummy.

(6) Establish the head reference line by extending the dummy torso reference line onto the head.

(b) At each designated seating position having a head restraint, place the dummy, snugly restrained by a Type 1 seat belt, in the manufacturer's recommended design seated position.

(c) During a forward acceleration applied to the structure supporting the seat as described below, measure the maximum rearward angular displacement between the dummy torso reference line and the head reference line. When graphically depicted, the magnitude of the acceleration curve shall not be less than that of a half-sine wave having the amplitude of 8g and a duration of 80 milliseconds and not more than that of a half-sine wave curve having an amplitude of 9.6g and a duration of 96 milliseconds.

S5.2 Compliance with S4.(b) shall be demonstrated in accordance with the following with the head restraint in its fully extended design position:

(a) Place a test device, having the back pan dimensions and torso line (centerline of the head room probe in full back position), of the three dimensional SAE J826 manikin, at the manufacturer's recommended design seated position.

(b) Establish the displaced torso reference line by applying a rearward moment of 3,300 in. lb. about the seating reference point to the seat back through the test device back pan located in (a).

(c) After removing the back pan, using a 6.5 inch diameter spherical head form or a cylindrical head form having a 6.5 inch diameter in plan view and a 6-inch height in profile view, apply, perpendicular to the displaced torso reference line, a rearward initial load 2.5 inches below the top of the head restraint that will produce a 3,300 in. lb. moment about the seating reference point.

(d) Gradually increase this initial load to 200 pounds or until the seat or seat back fails, whichever occurs first.

Motor Vehicle Safety Standard No. 203

Impact protection for the driver from the steering control system—passenger cars

S1. *Purpose and scope.* This standard specifies requirements for steering control systems that will minimize chest, neck, and facial injuries to the driver as a result of impact.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.* "Steering control system" means the basic steering mechanism and its associated trim hardware, including any portion of a steering column assembly that provides energy absorption upon impact.

S4. *Requirements.*

S4.1 Except as provided in S4.2, when the steering control system is impacted by a body block in accordance with Society of Automotive Engineers Recommended Practice J944, "Steering Wheel Assembly Laboratory Test Procedure," December 1965, or an approved equivalent, at a relative velocity of 15 miles per hour, the impact force developed on the chest of the body block transmitted to the steering control system shall not exceed 2,500 pounds.

S4.2 A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

S4.3 The steering control system shall be so constructed that no components or attachments, including horn actuating mechanisms and trim hardware, can catch the driver's clothing or jewelry during normal driving maneuvers.

Motor Vehicle Safety Standard No. 204

Steering control rearward displacement—passenger cars

S1. *Purpose and scope.* This standard specifies requirements limiting the rearward displacement of the steering control into the passenger compartment to reduce the likelihood of chest, neck, or head injury.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Steering column" means a structural housing that surrounds a steering shaft.

"Steering shaft" means a component that transmits steering torque from the steering wheel to the steering gear.

S4. *Requirements.*

S4.1 Except as provided in S4.2, the upper end of the steering column and shaft shall not be displaced horizontally rearward parallel to the longitudinal axis of the vehicle relative to an undisturbed point on the vehicle more than 5 inches, determined by dynamic measurement, in a barrier collision test at 30 miles per hour minimum conducted in accordance with Society of Automotive Engineers Recommended Practice J850, "Barrier Collision Tests," February 1963.

S4.2 A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

Motor Vehicle Safety Standard No. 205

Glazing materials—passenger cars multipurpose passenger vehicles, motorcycles, trucks, and buses

S1. *Purpose and scope.* This standard specifies requirements for glazing materials to reduce lacerations to the face, scalp, and neck, and to minimize the possibility of occupants being thrown through the vehicle windows in collisions.

S2. *Application.* This standard applies to glazing materials for use in passenger cars, multipurpose passenger vehicles, motorcycles, trucks, and buses.

S3. *Requirements.*

S3.1 *Materials.* Except as provided in S3.2, glazing materials used in windshields, windows, and interior partitions shall conform to United States of America Standards Institute "American

Standard Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways,", ASA Standard Z26.1—1966, July 15, 1966, (hereinafter referred to in this standard as Z26.1—1966).

S3.2 *Materials for use in forward facing windows of campers.* Glazing materials used in forward facing windows of campers shall conform to AS1 type laminated safety glass specifications established by Z26.1—1966; or AS2 type laminated safety glass meeting the specifications established by Z26.1—1966 plus the Penetration Resistance Test No. 26, set forth in Z26.1—1966; or AS3 type laminated safety glass meeting the specifications established in Z26.1—1966 plus the Penetration Resistance Test No. 26, set forth in Z26.1—1966. The latter two glazing materials shall be identified by the characters AS2–26 and AS3–26, respectively.

S3.3 *Edges.* In vehicles, except school buses, exposed edges shall be treated in accordance with Society of Automotive Engineers Recommended Practice J673a "Automotive Glazing," August 1967. In school buses, exposed edges shall be banded.

S3.4 *Certification alternative.* As an alternative to the certification requirements under section 114 of the National Traffic and Motor Vehicle Safety Act of 1966, a prime glazing material manufacturer may use the marking requirements of section 6 of Z26.1—1966 if the symbol "DOT" and an approved manufacturer's code mark, in letters and numbers at least 0.070 inch in height, is included in the marking. The approved manufacturer's code mark is a two-digit number assigned upon request to a prime glazing material manufacturer. A prime glazing material manufacturer, for the purpose of this standard, is one who fabricates, laminates or tempers the glazing material.

MOTOR VEHICLE SAFETY STANDARD No. 206

DOOR LATCHES, HINGES, AND LOCKS; PASSENGER CARS

S1. *Purpose and scope.* This standard specifies load requirements for door latch and hinge systems and lock requirements to minimize the likelihood of occupants being thrown from the vehicle as a result of impact.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.* Side doors that can be used for occupant egress shall conform with this standard.

S3.1 *Door latches.* Each door latch and striker assembly shall be provided with two positions consisting of—

(a) A fully latched position; and

(b) A secondary latched position.

S3.1.1 *Longitudinal load.* The door latch and striker assembly shall withstand a longitudinal load of 2,500 pounds in the fully latched position and 1,000 pounds in the secondary latched position.

S3.1.2 *Transverse load.* The door latch and striker assembly of hinged doors shall withstand a transverse load of 2,000 pounds in the fully latched position and 1,000 pounds in the secondary latched position.

S3.1.3 *Inertia load.* The door latch shall not move from the fully latched position when a longitudinal or transverse inertia load of 30g is applied to the door latch system (including the latch and its actuating mechanism).

S3.2 *Door hinges.* Each door hinge system shall support the door and withstand a longitudinal load of 2,500 pounds and a transverse load of 2,000 pounds.

S3.3 *Door locks.* Each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle.

S3.3.1 *Front door locks.* When the lock mechanism is engaged, the outside door handle or other outside latch release control shall be inoperative.

S3.3.2 *Rear door locks.* When the lock mechanism is engaged, both the outside and inside door handle or other latch release control shall be inoperative.

S4. *Demonstration procedures.*

S4.1 *Door latches.* Door latches shall be tested in accordance with Society of Automotive Engineers Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965.

S4.1.1 *Inertia load.* Compliance with paragraph S3.1.3 shall be demonstrated by approved tests or in accordance with section 5 of SAE Recommended Practice J839b, May 1965.

S4.2 *Door hinges.* Door hinges shall be tested in accordance with SAE Recommended Practice J934, "Vehicle Passenger Door Hinge System," July 1965.

MOTOR VEHICLE SAFETY STANDARD No. 207

ANCHORAGE OF SEATS—PASSENGER CARS

S1. *Purpose and scope.* This standard establishes requirements for seats, their attachment assemblies, and their installation to minimize the possibility of failure by forces acting on the seat as a result of vehicle impact.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 *General.* Except for folding auxiliary jump seats and sidefacing seats, each occupant seat installation shall withstand the loads specified in S3.1.1, S3.1.2, and S3.1.3.

S3.1.1 The following loads shall be applied simultaneously—

(a) Twenty times the weight of the entire seat in a forward longitudinal direction; and

(b) If the seat belt assembly is directly attached to the seat, the total load imposed on the seat by simultaneous application of maximum loads required by Motor Vehicle Safety Standard No. 209 for all attached seat belt assemblies.

S3.1.2 A load equal to 20 times the weight of the entire seat shall be applied in a rearward longitudinal direction.

S3.1.3 A load equal to a 3,300 inch pound moment about the "H" point for each occupant position for which the seat is designed shall be applied to the upper cross member in a rearward longitudinal direction.

S3.2 The seat adjusters need not be operable after the application of the loads specified in S3.1.1, S3.1.2, and S3.1.3.

S3.3 *Folding and hinged seats.* Except for folding auxiliary seats and seats with backs which are adjustable for occupant comfort only, a hinged or folding seat or seat back shall be equipped with a self-locking, restraining device and a control for releasing the restraining device.

S3.3.1 The release control shall be readily accessible to the occupant of that seat and to the occupant of any seat immediately behind that seat, and shall be constructed to preclude inertial release when loaded longitudinally to 20g.

S3.3.2 The restraining device shall not release or fail when a forward longitudinal load equal to 20 times the weight of the entire seat back is applied at the center of gravity of the seat back.

S4. *Demonstration procudures.*

S4.1 Dynamic or static testing techniques may be used.

S4.2 Static testing of seats shall be conducted in accordance with Society of Automotive Engineers Recommended Practice J879, "Passenger Car Front Seat and Seat Adjuster," November 1963, using the values specified in and the procedures applicable to this standard.

S4.3 Distributed loads may be replaced by concentrated loads at the loading centroid.

MOTOR VEHICLE SAFETY STANDARD No. 208

SEAT BELT INSTALLATIONS—PASSENGER CARS

S1. *Purpose and scope.* This standard establishes requirements for seat belt installations.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.*

S3.1 Except as provided in S3.1.1 and S3.1.2, a Type 1 or Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each passenger car seat position.

S3.1.1 Except in convertibles a Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each outboard passenger car seat position that includes the windshield header within the head impact area.

S3.1.2 The requirements of S3.1 do not apply to folding auxiliary jump seats, side-facing seats, and rearfacing seats.

MOTOR VEHICLE SAFETY STANDARD No. 209

SEAT BELT ASSEMBLIES—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

S1. *Purpose and scope.* This standard specifies requirements for seat belt assemblies.

S2. *Application.* This standard applies to seat belt assemblies for use in passenger cars, multipurpose passenger vehicles, trucks, and buses.

S3. *Requirements.* Seat belt assemblies shall meet the requirements of Department of Commerce, National Bureau of Standards, *Standards for Seat Belts for Use in Motor Vehicles* (15 CFR Part 9; 31 F.R. 11528), using the attachment

hardware specified in paragraph (f) of 15 CFR 9.3 or approved equivalent hardware.

Standards for Seat Belts for Use in Motor Vehicles (15 CFR 9) (31 F.R. 11528).

This Standard supersedes Department of Commerce, National Bureau of Standards, *Standards for Seat Belts for Use in Motor Vehicles* (15 CFR 9) (30 F.R. 8432).

MOTOR VEHICLE SAFETY STANDARD NO. 210

SEAT BELT ASSEMBLY ANCHORAGES—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies the requirements for seat belt assembly anchorages to ensure proper location for effective occupant restraint and reduce the likelihood of failure in collisions.

S2. *Application.* This standard applies to passenger cars.

S3. *Definitions.*

"Seat belt anchorage" means the provision for transferring seat belt assembly loads to the vehicle structure.

S4. *Requirements.*

S4.1 *Type.* Except as provided in S4.1.1 and S4.1.2, anchorages for a Type 1 or Type 2 seat belt assembly, as applicable, shall be provided for each designated seating position in accordance with Table I.

S4.1.1 Anchorages for either a Type 1 or Type 2 seat belt assembly shall be provided for each designated seating position in a convertible.

S4.1.2 Anchorages need not be provided for folding, auxiliary jump seats.

TABLE I

Seating position		Seat belt assembly required
Forward-facing seat	Outboard	Type 2.
	Inboard	Type 1.
Rearward-facing seat.	Outboard and inboard.	Type 1.
Side-facing seat		Type 1.

S4.2 *Strength.*

S4.2.1 When tested in accordance with S5.1 or an equivalent dynamic test, no anchorage shall fail when a 5,000 pound load is applied to the body block.

S4.2.2 When tested in accordance with S5.2 or an equivalent dynamic test, no anchorage shall fail when a 3,000 pound load is applied to the pelvic body block together with a 3,000 pound load on the upper torso body block.

S4.2.3 Permanent deformation, including rupture or breakage, of any anchorage or surrounding area shall not constitute failure if the required load is attained.

S4.2.4 Except as provided in S4.2.5, belt assemblies having a common anchorage shall be tested simultaneously.

S4.2.5 Common anchorages for forward and rearward facing seating positions shall not be tested simultaneously.

S4.3 *Location.*

S4.3.1 *Type 1 and pelvic portion of Type 2 seat belt assembly anchorages.*

S4.3.1.1 For installations in which the belt passes around the outside of the seat, a line from the anchorage to the occupant's "H" point shall make an angle with the horizontal as near as practicable to 45 degrees with the seat at the midpoint of its adjustment range.

S4.3.1.2 For installations in which the belt passes through the springs or over the seat frame, the anchorage shall be aft of the rearmost position of the springs or seat bottom frame rear bar and the angle between the horizontal and the line of the belt from the occupant's "H" point with the belt snug, but not loaded, shall be as near as practicable to 45 degrees.

S4.3.1.3 Anchorages for an individual seat belt assembly shall be located, as near as practicable, 15 inches apart laterally.

S4.3.2 *Type 2 upper torso seat belt assembly anchorages.*

S4.3.2.1 With the seat in its rearmost driving position, and the seat back in its nominal design driving position, the anchorage for the upper end of the upper torso restraint shall be to the rear of a line extending 6 inches vertically above the shoulder reference point of the two-dimensional manikin described in Society of Automotive Engineers Standard J826, "Manikins for Use in Defining Vehicle Seating Accommodation," November 1962, and then extending rearward at an angle of 80 degrees above the horizontal. If the angle of the upper torso restraint passing from the shoulder of a seated 95th percentile adult male to the anchorage, or to a structure between the shoulder point and the anchorage, is downward from the horizontal, it shall be not more than 40 degrees.

S5. *Demonstration procedures.*

S5.1 *Seats with Type 1 or Type 2 seat belt anchorages.* With the seat in its rearmost position, the load specified in S4.2.1 shall be applied at an angle of 5 degrees or more, but less than 15 degrees above the horizontal to an appropriate body block restrained by a Type 1 or pelvic portions of a Type 2 seat belt assembly, as applicable.

S5.2 *Seats with Type 2 seat belt anchorages.* With the seat in its rearmost position, the load specified in S4.2.2 shall be applied at an angle of 5 degrees or more but less than 15 degrees above the horizontal to an appropriate body block restrained by a Type 2 seat belt assembly.

MOTOR VEHICLE SAFETY STANDARD NO. 211

WHEEL NUTS, WHEEL DISCS, AND HUB CAPS—PASSENGER CARS AND MULTIPURPOSE PASSENGER VEHICLES

S1. *Purpose and scope.* This standard precludes the use of wheel nuts, wheel discs, and hub caps that constitute a hazard to pedestrians and cyclists.

S2. *Application.* This standard applies to passenger cars, multipurpose passenger vehicles, and passenger car and multipurpose passenger vehicle equipment.

S3. *Requirements.* Wheel nuts, hub caps, and wheel discs for use on passenger cars and multipurpose passenger vehicles shall not incorporate winged projections.

EDITORIAL NOTE: The provisions of the following Motor Vehicles Safety Standard No. 212 will become effective Jan. 1, 1970.

MOTOR VEHICLE SAFETY STANDARD NO. 212

WINDSHIELD MOUNTING—PASSSENGER CARS

S1. *Purpose and scope.* This standard establishes windshield retention requirements for windshield mountings.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.* When tested in accordance with S4, each windshield mounting must retain either—

(a) Not less than 75 percent of the windshield periphery; or

(b) Not less than 50 percent of that portion of the windshield periphery on each side of the vehicle longitudinal centerline, if an unrestrained 95th percentile adult male manikin is seated in each outboard front seating position.

S4. *Demonstration procedures.* Compliance with S3 shall be demonstrated by a front end longitudinal barrier collision test conducted in accordance with Society of Automotive Engineers Recommended Practice J850, "Barrier Collision Tests," February 1963, at not less than 30 mph.

MOTOR VEHICLE SAFETY STANDARD NO. 301

FUEL TANKS, FUEL TANK FILLER PIPES, AND FUEL TANK CONNECTIONS—PASSENGER CARS

S1. *Purpose and scope.* This standard specifies requirements for the integrity and security of fuel tanks, fuel tank filler pipes, and fuel tank connections to minimize fire hazard as a result of collision.

S2. *Application.* This standard applies to passenger cars.

S3. *Requirements.* When tested in accordance with S4:

(a) Fuel tank filler pipes, fuel tank connections to fuel lines, and fuel tanks filled to at least 90 percent of capacity with a liquid having substantially the same viscosity as, and specific gravity no less than, the fuel used in the vehicle, shall not discharge fluid at a rate greater than 1 ounce (by weight) per minute after termination of impact.

(b) Fluid losses during impact shall not exceed 1 ounce (by weight).

S4. *Demonstration procedures.* A front end longitudinal barrier collision test shall be conducted at a speed of at least 30 miles per hour in accordance with Society of Automotive Engineers Recommended Practice J850, "Barrier Collision Test," February 1963.

Appendix A—Interpretations

CONTROLS AND REARVIEW MIRRORS

MOTOR VEHICLE SAFETY STANDARD NO. 101

CONTROL LOCATION AND IDENTIFICATION—PASSENGER CARS

The requirement of paragraph S3.2 that specified controls shall be identified to permit recognition may be met with words or symbols and need only be demonstrated under daylight lighting conditions.

MOTOR VEHICLE SAFETY STANDARD NO. 105

HYDRAULIC SERVICE BRAKE, EMERGENCY BRAKE, AND PARKING BRAKE SYSTEMS—PASSENGER CARS

(1) The definition of the term "emergency brake" contained in § 255.3(b) does not refer to a system that would provide a means of bringing a vehicle to a stop after a total failure of the entire hydraulic service brake system, since paragraph S4.2 of the Standard provides that rupture or leakage-type failure of any single pressure component of the service brake system, except structural failures of the brake master cylinder body or effectiveness indicator body shall not result in complete loss of function of the vehicle brakes when force on the brake pedal is continued.

(2) Paragraph S4.2.1 applies to loss of pressure in a part of the brake system resulting from failure of a pressure component or insufficient hydraulic fluid in that part of the system.

(3) The requirement of paragraph S4.2.2 that an indicator light illuminate before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system may be met with a master cylinder reservoir level indicator light or system pressure indicator light. The indicator light need not illuminate during that application of brake pressure that contributed to the failure.

MOTOR VEHICLE SAFETY STANDARD NO. 108

LAMPS, REFLECTIVE DEVICES, AND ASSOCIATED EQUIPMENT—MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, 80 OR MORE INCHES WIDE OVERALL

(1) The term "overall width" refers to the nominal design dimension of the widest part of the vehicle, exclusive of signal lamps, marker lamps, outside rearview mirrors, flexible fender extensions, and mud flaps, determine with doors and windows closed, and the wheels in the straight-ahead position.

This supersedes the interpretation of the term "overall width" appearing in the FEDERAL REGISTER of March 1, 1967 (32 F.R. 3390).

(2) Paragraph S3.1 and Tables I and III of Federal Standard No. 108 as amended (32 F.R. 18033, Dec. 16, 1967), specify that certain lamp assemblies shall conform to applicable SAE Standards. Each of these basically referenced standards subreferences both SAE Standard J575 (tests for motor vehicle lighting devices and components) which in turn references SAE Standard J573 on bulbs, and SAE Standard J567 on bulb sockets.

(3) Paragraph C of SAE Standard J575 states in part: "Where special bulbs are specified, they should be submitted with the devices and the same or similar bulbs used in the tests and operated at their rated mean spherical candlepower." The Administrator has determined that this provision of SAE Standard J575 permits the use of special bulbs, including tubular-type bulbs, which do not conform to the detailed requirements of Table I of SAE Standard J573. It follows that the sockets for special bulbs need not conform to the detailed requirements of SAE Standard J567. These provisions for special bulbs in no way except the lamp assemblies from meeting all performance requirements specified in Federal Standard No. 108, including those specified in the basically referenced SAE Standards, and in the subreferenced SAE Standard J575.

MOTOR VEHICLE SAFETY STANDARD NO. 111

REARVIEW MIRRORS—PASSENGER CARS AND MULTIPURPOSE PASSENGER VEHICLES

(1) When a supplemental mirror is furnished in addition to the inside rearview mirror and the driver's side outside rearview mirror, the supplemental mirror need not be adjustable from the driver's seat.

(2) The location of the driver's eye reference point may be that established in Motor Vehicle Safety Standard No. 104, or it may be a nominal location appropriate for any 95th percentile male driver.

(3) The horizontal angle is measured from the projected eye point, rather than the plane of the mirror.

MOTOR VEHICLE SAFETY STANDARD NO. 203

IMPACT PROTECTION FOR THE DRIVER FROM THE STEERING CONTROL SYSTEM—PASSENGER CARS

The term "jewelry" in paragraph S4.3 refers to watches, rings, and bracelets without loosely attached or dangling members.

MOTOR VEHICLE SAFETY STANDARD NO. 204

STEERING CONTROL REARWARD DISPLACEMENT—PASSENGER CARS

When conducting the barrier collision test, a driver dummy may be used without measuring the impact force developed on the chest.

In the event that the vehicle impacts the barrier at a velocity not less than 30 miles per hour nor more than 33 miles per hour, the displacement of the steering column may be corrected to 30 miles per hour by means of the following formula:

$$\frac{D_1}{D_2}=\frac{V_1^2}{V_2^2}$$

MOTOR VEHICLE SAFETY STANDARD NO. 208

SEAT BELT INSTALLATIONS—PASSENGER CARS

(1) The words "passenger car seat position" in paragraphs S3.1 and S3.1.1 refer to designated permanent seating positions, rather than fixed or folding jump-type seats.

(2) A Type 2a shoulder belt (upper torso restraint) when used in conjunction with a Type 1 seat belt assembly (pelvic restraint) provides the equivalent of a Type 2 seat belt assembly whether three or four seat belt assembly anchorages are used. Therefore, any requirement for a Type 2 seat belt assembly may be met with a Type 2a shoulder belt used in conjunction with a Type 1 seat belt assembly.

MOTOR VEHICLE SAFETY STANDARD NO. 209

SEAT BELT ASSEMBLIES—PASSENGER CARS, MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, AND BUSES

This Standard applies to seat belt assemblies manufactured after February 28, 1967, for use in passenger cars, multipurpose passenger vehicles, trucks and buses. Since the effective date of Motor Vehicle Safety Standard No. 208, which provides that a Type 1 or Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each passenger car seat position, is January 1, 1968, seat belt assemblies installed in passenger cars until that date need not conform to Standard No. 209 unless the seat belt assemblies have been manufactured after February 28, 1967.

SUBCHAPTER B—MOTOR CARRIER SAFETY REGULATIONS

PART 388—COOPERATIVE AGREEMENTS WITH STATES

Sec.
- 388.1 Eligibility.
- 388.2 Extent of acceptance.
- 388.3 Cancellation.
- 388.4 Exchange of information.
- 388.5 Requests for assistance.
- 388.6 Joint investigation, inspection, or examination.
- 388.7 Joint administrative activities related to enforcement of safety and hazardous materials laws and regulations.
- 388.8 Supplemental agreements.

AUTHORITY: The provisions of this Part 388 issued under sec. 1, 49 Stat. 546, as amended; 49 U.S.C. 304. Interpret or apply sec. 1, 49 Stat. 550, as amended; 49 U.S.C. 305.

§ 388.1 Eligibility.

Any State may agree with the Federal Highway Administration to enforce the safety laws and regulations of said State and the United States concerning motor carrier transportation by filing with the Administrator at Washington, D.C. 20591, a written acceptance of the terms herein.

§ 388.2 Extent of acceptance.

The written acceptance may be in letter form, signed by competent authority of said State charged with regulation of motor carrier safety and hazardous materials transportation and shall specify the terms herein pertaining to the obligations of a State in which said State will participate. To the extent that a State agrees to participate in the terms herein, officials of the Federal Highway Administration will reciprocate.

§ 388.3 Cancellation.

Cancellation or withdrawal, in whole or in part, from any agreement made under this chapter may be effected by written notice from either party indicating the effective date of said cancellation or withdrawal.

§ 388.4 Exchange of information.

(a) *Federal Highway Administration furnishing information to State.* Information that comes to the attention of an employee of the Federal Highway Administration in the course of his official duties of investigation, inspection, or examination of the property, equipment, and records of a motor carrier or others, pursuant to section 220(d) of the Interstate Commerce Act, and that is believed to be a violation of any law or regulation of the State pertaining to unsafe motor carrier operations and practices, shall be communicated to the appropriate State authority by an official of the Federal Highway Administration.

(b) *State furnishing information to Federal Highway Administration.* Information that comes to the attention of a duly authorized agent of the State in the course of his official duties of investigation, inspection, or examination of the property, equipment, and records of a motor carrier or others, and that is believed to be a violation of any provision of the safety or hazardous materials laws of the United States concerning highway transportation or the regulations of the Federal Highway Administration prescribed thereunder, shall be communicated to the Regional Federal Highway Administrator of the Federal Highway Administration or his designee for that State.

§ 388.5 Requests for assistance.

(a) *State request for Federal Highway Administration assistance.* Upon written request of the appropriate State authority, the Bureau of Motor Carrier Safety officials of the Federal Highway Administration for that State shall, as time, personnel, and funds permit, obtain evidence for use by said State in the

enforcement of its laws and regulations concerning unsafe motor carrier operations. Evidence obtained in this manner shall be transmitted to the appropriate State authority together with the name and address of an agent or employee, if any, having knowledge of the facts, who shall be made available when necessary to testify as a witness in an enforcement proceeding or other action.

(b) *Federal Highway Administration request for State assistance.* Upon written request from a Regional Administrator of the Federal Highway Administration or his designee the appropriate State authority, shall, as time, personnel, and funds permit, obtain evidence in the State for use by the Federal Highway Administration in its enforcement of the safety and hazardous materials laws and regulations of the United States concerning highway transportation. Evidence obtained in this manner shall be transmitted to the Regional Administrator of the Federal Highway Administration or his designee together with the name and address of an agent or employee, if any, having knowledge of the facts, who shall be made available when necessary to testify as a witness in an enforcement proceeding or other action.

§ 388.6 Joint investigation, inspection, or examination.

Upon agreement by the Regional Administrator of the Federal Highway Administration or his designee and the appropriate State authority, there will be conducted a joint investigation, inspection, or examination of the property, equipment, or records of motor carriers or others, for the enforcement of the safety and hazardous materials laws and regulations of the United States and the State concerning highway transportation. The said Regional Administrator or his designee of the Federal Highway Administration and the appropriate State authority shall decide as to the location and time, the objectives sought, and the identity of the person who will supervise the joint effort and make the necessary decisions. Any agent or employee of either agency who has personal knowledge of pertinent facts shall be made available when necessary to testify as a witness in an enforcement proceeding or other action.

§ 388.7 Joint administrative activities related to enforcement of safety and hazardous materials laws and regulations.

To facilitate the interchange of information and evidence, and the conduct of joint investigation and administrative action, the Regional Highway Administrator of the Federal Highway Administration or his designee and the appropriate State authority shall, when warranted, schedule joint conferences of staff members of both agencies. Information shall be exchanged as to the nature and extent of the authority and capabilities of the respective agencies to enforce the safety and hazardous materials laws and regulations of the State or of the United States concerning motor carrier transportation. The Federal Highway Administration and the State (or appropriate State authority) shall use their best efforts to inform each other of changes in their rules and regulations and cooperate with and assist each other in conducting training schools for Federal and State enforcement officials engaged in such duties.

§ 388.8 Supplemental agreements.

The terms hereinabove specified may be supplemented from time to time by specific agreement between the Federal Highway Administration and the appropriate State authority in order to further implement the provisions of 49 U.S.C. 305(f).

PART 389—RULEMAKING PROCEDURES—MOTOR CARRIER SAFETY REGULATIONS

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389.35 Petitions for reconsideration.
389.37 Proceedings on petitions for reconsideration.

AUTHORITY: The provisions of this Part 389 issued under secs. 204, 220, 224, 49 Stat. 546, 563, 566, as amended; sec. 6, 80 Stat. 931; 49 U.S.C. 304, 320, 324, 1655; 49 C.F.R. 1.4(c).

Subpart A—General

§ 389.1 Applicability.

This part prescribes rulemaking procedures that apply to the issue, amendment, and revocation of rules under sections 204, 220, and 224 of Part II of the Interstate Commerce Act.

§ 389.3 Definitions.

"Act" means Part II of the Interstate Commerce Act.

"Administrator" means the Administrator of the Federal Highway Administration or a person to whom he has delegated final authority in the matter concerned.

"Bureau" means the Bureau of Motor Carrier Safety, Federal Highway Administration.

"Director" means the Director of the Bureau of Motor Carrier Safety.

"Rule" includes any order or regulation issued under the Act.

§ 389.5 Regulatory Docket.

(a) Information and data deemed relevant by the Administrator of the Federal Highway Administration relating to rulemaking actions, including notices of proposed rulemaking; comments received in response to notices; petitions for rulemaking and reconsideration; denials of petitions for rulemaking and reconsideration; records of additional rulemaking proceedings under § 305.25; and final rules are maintained at Headquarters, Bureau of Motor Carrier Safety, Federal Highway Administration, Room 302A, Donohoe Building, Sixth and D Streets SW., Washington, D.C. 20591.

(b) Any person may examine docketed material, at any time during regular business hours after the docket is established, except material ordered withheld from the public under section 552(b) of Title 5 of the United States Code, and may obtain a copy of it upon payment of a fee.

§ 389.7 Records.

Records of the Federal Highway Administration relating to rulemaking proceedings are available for inspection as provided in section 552(b) of Title 5 of the United States Code and Part 7 of the regulations of the Secretary of Transportation (Part 7 of this title; 32 F.R. 9284 et seq.).

Subpart B—Procedures for Adoption of Rules

§ 389.11 General.

Unless the Administrator, for good cause, finds that notice is impractical, unnecessary, or contrary to the public interest, and incorporates that finding and a brief statement of the reasons for it in the rule, a notice of proposed rulemaking is issued and interested persons are invited to participate in the rulemaking proceedings involving rules under sections 204, 220, 224, of the Act.

§ 389.13 Initiation of rulemaking.

The Administrator initiates rulemaking on his own motion. However, in so doing, he may, in his discretion, consider the recommendations of his staff, bureaus, and other agencies of the United States or of other interested persons.

§ 389.15 Contents of notices of proposed rulemaking.

(a) Each notice of proposed rulemaking is published in the FEDERAL REGISTER, unless all persons subject to it are named and are personally served with a copy of it.

(b) Each notice, whether published in the FEDERAL REGISTER or personally served, includes:

(1) A statement of the time, place, and nature of the proposed rulemaking proceeding;

(2) A reference to the authority under which it is issued;

(3) A description of the subjects and issues involved or the substance and terms of the proposed rule;

(4) A statement of the time within which written comments must be submitted; and

(5) A statement of how and to what extent interested persons may participate in the proceeding.

§ 389.17 Participation by interested persons.

(a) Any interested person may participate in rulemaking proceedings by submitting comments in writing containing information, views, or arguments.

(b) In his discretion, the Administrator may invite any interested person to participate in the rulemaking procedures described in § 389.25.

§ 389.19 Petitions for extension of time to comment.

A petition for extension of the time to submit comments must be received in duplicate not later than three (3) days before expiration of the time stated in the notice. The filing of the petition does not automatically extend the time for petitioner's comments. Such a petition is granted only if the petitioner shows good cause for the extension, and if the extension is consistent with the public interest. If an extension is granted, it is granted to all persons, and it is published in the FEDERAL REGISTER.

§ 389.21 Contents of written comments.

All written comments must be in English and submitted in five (5) legible copies, unless the number of copies is specified in the notice. Any interested person must submit as part of his written comments all material that he considers relevant to any statement of fact made by him. Incorporation of material by reference is to be avoided. However, if such incorporation is necessary, the incorporated material shall be identified with respect to document and page.

§ 389.23 Consideration of comments received.

All timely comments are considered before final action is taken on a rulemaking proposal. Late filed comments may be considered as far as practicable.

§ 389.25 Additional rulemaking proceedings.

The Administrator may initiate any further rulemaking proceedings that he finds necessary or desirable. For example, interested persons may be invited to make oral arguments, to participate in conferences between the Administrator or his representative at which minutes of the conference are kept, to appear at informal hearings presided over by officials designated by the Administrator at which a transcript or minutes are kept, or participate in any other proceeding to assure informed administrative action and to protect the public interest.

§ 389.27 Hearings.

(a) Sections 556 and 557 of Title 5, United States Code, do not apply to hearings held under this part. Unless otherwise specified, hearings held under this part are informal, nonadversary, fact-finding proceedings at which there are no formal pleadings or adverse parties. Any rule issued in a case in which an informal hearing is held is not necessarily based exclusively on the record of the hearing.

(b) The Administrator designates a representative to conduct any hearing held under this part. The Chief Counsel of the Federal Highway Administration designates a member of his staff to serve as legal officer at the hearing.

§ 389.29 Adoption of final rules.

Final rules are prepared by representatives of the office concerned and the Office of the Chief Counsel. The rule is then submitted to the Administrator for his consideration. If the Administrator adopts the rule, it is published in the FEDERAL REGISTER, unless all persons subject to it are named and are personally served with a copy of it.

§ 389.31 Petitions for rulemaking.

(a) Any interested person may petition the Administrator to establish, amend, or repeal a rule.

(b) Each petition filed under this section must:

(1) Be submitted in duplicate to the Federal Highway Administration, Bureau of Motor Carrier Safety, Room 302A, Donohoe Building, Sixth and D Streets SW., Washington, D.C. 20591;

(2) Set forth the text or substance of the rule or amendment proposed, or specify the rule that the petitioner seeks to have repealed, as the case may be;

(3) Explain the interest of the petitioner in the action requested;

(4) Contain any information and arguments available to the petitioner to support the action sought.

§ 389.33 Processing of petition.

(a) *General.* Each petition received under § 389.31 is referred to the Director of the Bureau. Unless the Administrator otherwise specifies, no public hearing, argument, or other proceeding is held directly on a petition before its disposition under this section.

(b) *Grants.* If the Administrator determines that the petition contains adequate justification, he initiates rulemaking action under this Subpart B.

(c) *Denials.* If the Administrator determines that the petition does not justify rulemaking, he denies the petition.

(d) *Notification.* Whenever the Administrator determines that a petition should be granted or denied, the Office of the Chief Counsel prepares a notice of that grant or denial for issuance to the petitioner, and the Administrator issues it to the petitioner.

§ 389.35 Petitions for reconsideration.

(a) Any interested person may petition the Administrator for reconsideration of any rule issued under this part. The petition must be in English and submitted in five (5) legible copies to the Federal Highway Administration, Bureau of Motor Carrier Safety, Room 302A, Donohoe Building, Sixth and D Streets SW., Washington, D.C. 20591, and received not later than thirty (30) days after publication of the rule in the FEDERAL REGISTER. Petitions filed after that time will be considered as petitions filed under § 389.31. The petition must contain a brief statement of the complaint and an explanation as to why compliance with the rule is not practicable, is unreasonable, or is not in the public interest.

(b) If the petitioner requests the consideration of additional facts, he must state the reason they were not presented to the Administrator within the prescribed time.

(c) The Administrator does not consider repetitious petitions.

(d) Unless the Administrator otherwise provides, the filing of a petition under this section does not stay the effectiveness of the rule.

§ 389.37 Proceedings on petitions for reconsideration.

The Administrator may grant or deny, in whole or in part, any petition for reconsideration without further proceedings. In the event he determines to reconsider any rule, he may issue a final decision on reconsideration without further proceedings, or he may provide such opportunity to submit comment or information and data as he deems appropriate. Whenever the Administrator determines that a petition should be granted or denied, he prepares a notice of the grant or denial of a petition for reconsideration, for issuance to the petitioner, and issues it to the petitioner. The Administrator may consolidate petitions relating to the same rule.

PART 390—MOTOR CARRIER SAFETY REGULATIONS: GENERAL

Subpart A—Definitions

Sec.

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390.2 Vehicle.
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390.31 Vehicles used for purposes other than as defined.
390.32 Motor carrier to require observance of driver regulations.
390.33 Applicability of regulations.
390.40 Accident reports.

AUTHORITY: The provisions of this Part 390 issued under sec. 204, 49 Stat. 546, as amended; 49 U.S.C. 304, unless otherwise noted.

CROSS REFERENCE: See § 394.5 for references to field offices.

Subpart A—Definitions

§ 390.1 Motor vehicle.

The term "motor vehicle" means any vehicle, machine, tractor, trailer, or semitrailer propelled or drawn by mechanical power and used upon the highways in the transportation of passengers or property, or any combination thereof determined by the Federal Highway Administration, but does not include any vehicle, locomotive, or car operated exclusively on a rail or rails, or a trolley bus operated by electric power derived

from a fixed overhead wire, furnishing local passenger transportation similar to street-railway service.

§ 390.2 Vehicle.

The term "vehicle" means any conveyance of any type whatsoever operated upon the highways.

§ 390.3 Bus.

The term "bus" means any motor vehicle designed, constructed, and used for the transportation of passengers; including taxicabs.

§ 390.4 Truck.

The term "truck" means any self-propelled motor vehicle except a truck tractor, designed and used, or exclusively used whether or not so designed, for the transportation of property.

§ 390.5 Truck tractor.

The term "truck tractor" means a self-propelled motor vehicle designed and used primarily for drawing other vehicles and not so constructed as to carry a load other than a part of the weight of the vehicle and load so drawn.

§ 390.6 Semitrailer.

The term "semitrailer" means any motor vehicle other than a "pole trailer," with or without motive power, designed to be drawn by another motor vehicle and so constructed that some part of its weight rests upon the towing vehicle.

§ 390.7 Full trailer.

The term "full trailer" means any motor vehicle, with or without motive power, other than a "pole trailer," designed to be drawn by another motor vehicle and so constructed that no part of its weight except the towing device rests upon the towing vehicle. A semitrailer equipped with an auxiliary front axle (dolly) shall be deemed to be a "full trailer."

§ 390.8 Pole trailer.

The term "pole trailer" means any vehicle without motive power, possibly of variable wheel base, designed to be drawn by another vehicle, and attached to the towing vehicle by means of a "reach," or "pole," or by being "boomed" or otherwise secured to the towing vehicle, and ordinarily used for transporting long or irregular-shaped loads such as poles, pipes, or structural members capable generally of sustaining themselves as beams between the supporting connections.

§ 390.9 Driveaway-towaway operation.

The term "driveaway-towaway operation" means any operation in which any motor vehicle or motor vehicles, new or used, constitute the commodity being transported, when one set or more of wheels of any such motor vehicle or motor vehicles are on the roadway during the course of transportation; whether or not any such motor vehicle furnishes the motive power.

§ 390.10 Gross weight.

The term "gross weight" means the combined weight of the motor vehicle and any load thereon.

§ 390.11 Driver.

The term "driver" means any person who drives any motor vehicle.

§ 390.12 Business district.

The term "business district" means the territory contiguous to and including a highway when within any 600 feet along such highway there are buildings in use for business or industrial purposes, including but not limited to hotels, banks, or office buildings, railroad stations, and public buildings which occupy at least 300 feet of frontage on one side or 300 feet collectively on both sides of the highway.

§ 390.13 Residence district.

The term "residence district" means the territory contiguous to and including a highway not comprising a business district when the property on such highway for a distance of 300 feet or more is in the main improved with residence or residences and buildings in use for business.

§ 390.14 Other terms.

Any other term used in Parts 390–397 of this subchapter is used in its commonly accepted meaning, except where such other term has been defined elsewhere in this part or in section 203(a) of the Interstate Commerce Act (49 U.S.C. 203(a)), in which event the definition therein given shall apply.

Subpart B—General

§ 390.30 State and local laws, effect on.

Except as otherwise specifically indicated, Parts 390–397 of this subchapter are not intended to preclude States or subdivisions thereof from establishing or enforcing State or local laws relating to safety, the compliance with which would not prevent full compliance with these regulations by the persons subject thereto.

§ 390.31 Vehicles used for purposes other than as defined.

Whenever any motor vehicle other than a bus is used to perform the functions normally performed by a bus, the regulations pertaining to buses and to the transportation of passengers shall apply to that motor vehicle and to its operation as though it were a bus, except with respect to vehicles operated by a motor carrier to transport its employees to and from their place of work in the regular course of the carrier's business. Likewise, whenever any motor vehicles of one type is so used as to perform the functions normally performed by a motor vehicle of another type, the requirements of Parts 390–397 of this subchapter shall apply to such motor vehicle and to its operation in the same manner as though such motor vehicle were actually a motor vehicle of the latter type.

§ 390.32 Motor carrier to require observance of driver regulations.

Whenever in Parts 390–397 of this subchapter a duty is prescribed for a driver or a prohibition is imposed upon him, it shall be the duty of the motor carrier to require observance of such prescription or prohibition; and, if the motor carrier is himself a driver, he shall likewise be bound thereby.

§ 390.33 Applicability of regulations.

Parts 390–397 of this subchapter shall be applicable to common carriers, contract carriers, and private carriers subject to the Department of Transportation Act (49 U.S.C. 1651 et seq.) as shown in the following table:

	Applicable parts of regulations						
	391	392	393	394	395	396	397
A. Vehicles and drivers used wholly within a municipality or the commercial zone thereof as defined by the Interstate Commerce Commission:							
1. When transporting explosives or other dangerous articles of such type and in such quantity as to require the vehicle to be specially marked or placarded under the Explosives and Other Dangerous Articles Regulations, 49 CFR 177.823, or when operating without cargo under conditions which require the vehicle to be so marked or placarded under the cited regulations, except that until further order of the Federal Highway Administration § 390.33(A)(1) shall be governed by the quantity provisions of § 177.823 which were in effect prior to January 1, 1967, i.e., when transporting 2,500 pounds or more gross weight of one dangerous article or 5,000 pounds or more gross weight of two or more such items	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. When operating under such conditions that special marking or placarding is not required under the regulations cited in paragraph A–1 of this table	No	No	No	Yes	Yes	No	No
B. Vehicles and drivers used beyond a municipality or the commercial zone thereof as defined by the Interstate Commerce Commission:							
1. When transporting explosives or other dangerous articles	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. When not transporting explosives or other dangerous articles	Yes	Yes	Yes	Yes	Yes	Yes	No

NOTE: The operations outlined in A and B above, include the transportation and use of certain vehicles as specifically described in section 203(b) of the Interstate Commerce Act, which include, generally, the following: (1) School buses; (2) taxicabs; (3) hotel buses; (4) motor vehicles under control of the Secretary of the Interior; (5) motor vehicles of agricultural cooperative associations; (6) motor vehicles used exclusively in carrying ordinary livestock, fish, or agricultural commodities; (7) motor vehicles used exclusively in distribution of newspapers; (7a) transportation incidental to transportation by aircraft; (8) transportation wholly within a municipality or between contiguous municipalities or within a zone adjacent to and commercially a part of such municipality or municipalities; (9) the casual, occasional, or reciprocal transportation of passengers (when arranged for by brokers or other persons for compensation) and of property consisting of explosives or other dangerous articles by motor vehicle, except that Part 395 is applicable to all casual, occasional, or reciprocal transportation by motor vehicle in interstate or foreign commerce for compensation by any person not engaged in transportation by motor vehicle as a regular occupation or business.

The term "private carrier of property by motor vehicle" means any person not included in the terms "common carrier by motor vehicle" or "contract carrier by motor vehicle", who or which transports in interstate or foreign commerce by motor vehicle property of which such person is the owner, lessee, or bailee, when such transportation is for the purpose of sale, lease, rent, or bailment, or in furtherance of any commercial enterprise. (Section 203(a)(17) of the Interstate Commerce Act.) Except as otherwise specifically provided, motor vehicles controlled and operated by any farmer when used in the transportation of agricultural commodities and products thereof from his farm, or in the transportation of supplies to his farm, are subject to the same regulations as those applicable to private carriers of property.

§ 390.40 Accident reports.

Where filed: Motor carriers shall file reports required by §§ 394.5, 394.7, and 394.9 of this subchapter by serving or mailing by first-class mail to the Regional Federal Highway Administrator, Federal Highway Administration, for the region in which such carrier has his or its principal place of business as shown in the following table:

Region No.	Territory included	Location of regional office
1	Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont. That part of Canada east of Highways 19 and 8 from Port Burwell to Goderich, thence a straight line running north through Tobermory and Sudbury and thence due north to the Canadian border.	4 Normanskill Boulevard, Delmar, N.Y. 12054.
2	Delaware, District of Columbia, Maryland, Ohio, Pennsylvania, Virginia, and West Virginia.	31 Hopkins Plaza, Baltimore, Md. 21201.
3	Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee.	1720 Peachtree Road NW., Atlanta, Ga. 30309.
4	Illinois, Indiana, Kentucky, Michigan, and Wisconsin. That part of Canada on the west of Highways 19 and 8 from Port Burwell to Goderich, thence a straight line running north through Tobermory and Sudbury and thence due north to the Canadian border; and on the east of Highway 11 from Nipigon to Macdiarmid and thence a straight line due north to the Canadian border.	18209 South Dixie Highway, Homewood, Ill. 60430.
5	Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota. That part of Canada west of Highway 11 from Nipigon to Macdiarmid and thence a straight line due north to the Canadian border; and on and east of Highway 6 from Regway to Melfort and thence a straight line due north to the Canadian border.	Post Office Box 15177, Civic Center Station, Kanass City, Mo. 64106.
6	Arkansas, Louisiana, Oklahoma, and Texas. All Mexican States except the State of Chihuahua, Baja, California, and Sonora, Mexico.	819 Taylor St., Fort Worth, Tex. 76102.
7	Arizona, California, and Nevada. Baja, California and Sonora, Mexico.	450 Golden Gate Ave., San Francisco, Calif. 94102.
8	Idaho, Montana, Oregon, Washington, and Alaska. That part of Canada west of Highway 6 from Regway to Melfort and thence a straight line due north to the Canadian border, and all of the Provinces of Alberta and British Columbia.	222 Southwest Morrison St., Portland, Oreg. 97204.
9	Colorado, New Mexico, Utah, and Wyoming, State of Chihuahua, Mexico.	Room 242, Building 40, Denver Federal Center, Denver, Colo. 80225.

PART 391—QUALIFICATIONS OF DRIVERS

Sec.

391.1 Compliance required.
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391.3 Driving experience.
391.4 Driving skill.
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391.13 Driver's past record.

AUTHORITY: The provisions of this Part 391 issued under sec. 204, 49 Stat. 546, as amended; 49 U.S.C. 304, unless otherwise noted.

§ 391.1 Compliance required.

Every motor carrier, and his or its officers, agents, representatives, and employees who drive motor vehicles or are responsible for the hiring, supervision, training, assignment, or dispatching of drivers shall comply and be conversant with the requirements of this part.

§ 391.2 Minimum requirements.

Except as provided in paragraph (e) of this section, no person shall drive, nor shall any motor carrier require or permit any person to drive, any motor vehicle unless such person possesses the following minimum qualifications:

(a) *Mental and physical condition.* (1) No loss of foot, leg, hand, or arm.

(2) No mental, nervous, organic, or functional disease, likely to interfere with safe driving.

(3) No loss of fingers, impairment of use of foot, leg, fingers, hand or arm, or other structural defect or limitation, likely to interfere with safe driving.

(b) *Eyesight.* Visual acuity of at least 20/40 (Snellen) in each eye either without glasses or by correction with glasses; form field of vision in the horizontal meridian shall not be less than a total of 140 degrees; ability to distinguish colors red, green, and yellow; drivers requiring correction by glasses shall wear properly prescribed glasses at all times when driving.

(c) *Hearing.* Hearing shall not be less than 10/20 in the better ear, for conversational tones, without a hearing aid.

(d) *Liquor, narcotics, and drugs.* Shall not be addicted to the use of narcotics or habit-forming drugs, or the excessive use of alcoholic beverages or liquors.

(e) *Waiver of physical requirements.* Any person failing to meet the requirements of paragraph (a)(1) or (a)(3) of this section may be permitted to drive a vehicle, other than a vehicle transporting passengers, or a vehicle transporting explosives or other dangerous articles of such type and in such quantity as to require the vehicle to be specifically marked or placarded under the Explosives and Other Dangerous Articles Regulations (49 CFR 177.823) or when operating without cargo under conditions which require the vehicle to be so marked or placarded under the said regulations, if the Director, Bureau of Motor Carrier Safety, finds that a waiver may be granted consistent with safety and the public interest, and grants such a waiver, on the basis of an application meeting all of the following requirements:

(1) The application must be submitted jointly by a person seeking relief to permit him to drive and by a carrier wishing to employ such person as a driver, who both agree to fulfilling all conditions of the waiver;

(2) The application must be accompanied by reports of medical examinations satisfactory to the Director, Bureau of Motor Carrier Safety, and recommendations by at least two medical examiners, at least one of whom shall have been selected and compensated by the carrier. Such reports and recommendations must indicate the opinions of the medical examiners as to the ability of the driver to operate safely a commercial vehicle of the type to be driven by him.

(3) The application shall contain a description, satisfactory to the Director, Bureau of Motor Carrier Safety, of the type, size, and special equipment (if any) of the vehicle or vehicles to be driven, the general area and type of roads to be traversed, the distances and time periods contemplated, the nature of the commodities to be transported and the method of loading and securing them, and the experience (if any) of the applicant in driving vehicles of the type to be driven by him.

(4) The application shall specify agreement by both the person and the carrier that the carrier will file promptly with the Director, Bureau of Motor Carrier Safety, such periodic reports as are required and that such reports will contain complete and truthful information as to the extent of the person's driving activity, any accidents in which he may be involved, and any arrests, suspensions, or convictions in which the person is involved.

(i) If the applicant motor carrier is a corporation, the application shall be signed by a corporation officer and the applicant driver.

(ii) If the applicant motor carrier is a partnership, the application shall be signed by at least one of the partners and the applicant driver.

(iii) If the applicant motor carrier is a sole proprietorship, the application shall be signed by the proprietor and the applicant driver.

(5) The applicants shall agree that the waiver shall authorize driving in interstate commercial service for the applicant carrier only, that any arrests or convictions for violations of laws or

ordinances, and any revocation or suspension of driving privileges will be reported to the Director, Bureau of Motor Carrier Safety, immediately on occurrence.

(6) The waiver shall not exceed 2 years and will be renewable, upon submission of a new application, if approved by the Director, Bureau of Motor Carrier Safety.

(7) The waiver may be suspended at any time at the discretion of the Director, Bureau of Motor Carrier Safety, and may be canceled by him after the applicant has been given reasonable opportunity to show cause, if any, why such cancellation should not be made.

(8) A copy of the letter granting the waiver under this section, or a legible photographically reproduced copy thereof, shall be retained in the files of the motor carrier at its principal place of business during the period the driver is in the carrier's employment and 12 months after the termination of the driver's employment.

(9) Every driver granted a waiver under this section shall have in his possession while on duty a copy of the letter granting the waiver or a legible photographically reproduced copy thereof covering himself.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 391.3 Driving experience.

Every driver shall be experienced in driving some type of motor vehicle (including private automobiles) for not less than 1 year, including experience throughout the four seasons.

§ 391.4 Driving skill.

Every driver shall be competent by reason of experience or training to operate safely the type of motor vehicle or motor vehicles which he drives.

§ 391.5 Knowledge of regulations.

Every driver shall be familiar with the rules and regulations established by the Federal Highway Administration pertaining to the driving of motor vehicles.

§ 391.6 Age.

Every driver shall be not less than 21 years of age: *Provided, however,* That a person not less than 18 years of age may be permitted to drive a motor vehicle controlled and operated by any farmer and used in the transportation of agricultural commodities and products thereof from his farm or in the transportation of supplies to his farm, if such vehicle does not exceed a gross weight, including the load, of 10,000 pounds.

§ 391.7 Knowledge of English.

Every driver shall be able to read and speak the English language.

§ 391.8 Original physical examination of drivers.

No person shall drive nor shall any motor carrier require or permit any person to drive any motor vehicle unless such person shall have been physically examined and shall have been certified by a licensed doctor of medicine or osteopathy as meeting the requirements of § 391.2: *Provided, however,* That as to visual acuity, form field of vision, and ability to distinguish colors specified in § 391.2(b) examination and certification may be made by a licensed optometrist: *Provided further,* That this section shall not apply to drivers of motor vehicles controlled and operated by any farmer when used in the transportation of agricultural commodities or products thereof from his farm, or in the transportation of supplies to his farm.

§ 391.9 Periodic physical examinations of drivers.

Every driver shall be physically reexamined at least once in every 36 months and no person shall drive nor shall any motor carrier require or permit any person to drive any motor vehicle unless such person shall have been physically examined and certified by a licensed doctor of medicine or osteopathy as meeting the requirements of § 391.2: *Provided, however,* That as to visual acuity, form field of vision, and ability to distinguish colors specified in § 391.2(b) examination and certification may be made by a licensed optometrist: *Provided further,* That this section shall not apply to drivers of motor vehicles controlled and operated by any farmer when used in the transportation of agricultural commodities or products thereof from his farm, or in the transportation of supplies to his farm.

§ 391.10 Certificate of physical examination.

If a physical examination is required by § 391.8 or § 391.9 every motor carrier shall have in it files at its principal place of business for every driver employed or used by it a legible certificate of a licensed doctor of medicine or osteopathy based on a physical examination as required by §§ 391.8 and 391.9 or a legible photographically reproduced copy thereof: *Provided, however,* That as to visual acuity, form field of vision, and ability to distinguish colors specified in § 391.2 (b) examination and certification may be made by a licensed optometrist; provided further that a motor carrier may upon written request to and upon receiving consent from the Director, Bureau of Motor Carrier Safety, Federal Highway Administration, Washington, D.C. 20591, retain such certificates at such regional or terminal offices as are proposed by the carrier and approved by the Director. Every driver, if a physical examination is required with respect to him by §§ 391.8 and 391.9, shall have in his possession while on duty, such a certificate, or a photographically reproduced copy thereof covering himself.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 391.11 Doctor's certificate.

The doctor's certificate shall certify as follows:

DOCTOR'S CERTIFICATE

This is to certify that I have this day examined _____ in accordance with section 391.2 and the physical examination procedure prescribed by the Motor Carrier Safety Regulations of the Federal Highway Administration, and that I find him qualified under said rules.

_____ _____
(Date) (Place)

_____
(Signature of driver)

_____
(Address of driver)

_____
(Signature of examining doctor)

_____
(Address of doctor)

The following shall be completed to show compliance with the eyesight requirements of section 391.2.

☐ Qualified when not wearing glasses.
☐ Qualified only when wearing glasses.

_____
(Signature of (check one): ☐ Doctor ☐ Optometrist)

_____
(Address)

NOTE: Stocks of doctor's certificates in the possession of carriers or their suppliers as of the effective date of this order may be used until January 1, 1969, provided the information required by section 391.11 is entered thereon.

Such certificate shall be based on a physical examination made and recorded generally in accordance with the following instructions and examination form.

GENERAL INSTRUCTIONS FOR MAKING PHYSICAL EXAMINATION AND RECORDING FINDINGS

[Be sure to record an answer to each question. When negative or positive, so state]

MEDICAL HISTORY

The purpose of this physical examination is to detect the presence of physical and mental defects of such a character and extent as to affect the applicant's ability to operate safely a motor vehicle. The examination should be made carefully and at least as complete as is indicated by the attached form. Defects may be recorded which do not, because of their character or degree, indicate that a certificate of physical fitness should be denied. The presence, however, of these defects should be discussed with the applicant and he should be encouraged to take the necessary steps to insure correction particularly of those which if neglected might lead to a condition likely to affect his ability to drive safely. Careful inquiry regarding past illness, the character and date of such illness, may reveal cause for defects found upon physical examination. Lack of knowledge concerning the etiology of certain defects may result in the rejection for employment. Such data also may indicate the need for making certain laboratory tests.

General appearance and development: Note marked underweight or overweight; any posture defects; perceptible limp, anemia, tremor, or other form of nervousness such as might be caused by chronic alcoholism, thyroid intoxication, or other illnesses. The regulations of the Federal Highway Administration provide that no driver shall be addicted to the use of narcotics or habit-forming drugs, or the excessive use of alcoholic liquors or beverages.

Head—Eyes: The telebinocular, Snellen chart, and other approved tests may be used to measure visual acuity. It is desired, however, when other than the Snellen chart is used, that the results of such test be expressed in values comparable to the standard Snellen test. If applicant wears glasses, these should be worn while applicant's visual acuity is being tested. Indicate on record by striking the inapplicable phrase on form "without glasses" or "with glasses if worn." In recording distance vision use 20 feet as

normal. Report all vision as a fraction with 20 as numerator and the smallest type read at 20 feet as denominator. Note ptosis, discharge, corneal scar, exophthalmos, or strabismus uncorrected by glasses.

Ears: Note evidence of mastoid or middle ear disease; discharge. In recording hearing, record 20 feet as normal distance for conversational voice and record deviation from normal as fraction with 20 feet as denominator and actual distance as numerator.

Mouth: Note evidence of infection, pyorrhea.

Throat: Note evidence of disease, enlarged or infected tonsils.

Thorax—Heart: Stethoscopic examination is required. Note murmurs and arrhythmias. Electro-cardiogram is required when other findings indicate desirability.

Blood pressure: May be recorded with either spring or mercury column type of sphygmomanometer.

Pulse: Normal pulse taken after being seated at least 2 minutes, then have applicant stand and placing one foot on the seat of an ordinary chair raise his body to an erect position 20 times in 30 seconds. Pulse rate should return to his normal after 2 minutes' rest. Because of abnormal conditions, some applicants will be unable to do this. This test has been found helpful in ascertaining physical ability for work.

Lungs: It is necessary that the auscultatory cough be used. Tuberculosis, if suspected, state whether active or arrested, and if arrested, your opinion as to how long it has been quiescent. Sputum to be examined for tubercle bacilli in all suspected cases.

Abdomen—Scars: If present, state whether recent and if abnormally tender or if there is any evidence of hernia at the site of scar.

Abnormal masses: If present, note tenderness and whether or not individual knows how long they have been present.

Tenderness: When noted, state where most pronounced and cause suspected.

Hernia: Note whether no hernia, but impulse on coughing; no hernia or impulse, but abnormally large rings. Any hernia should be noted, and if present, state whether it is retained by well-fitted truss.

Genito-urinary: When scars or urethral discharge are present, indicate patient's reason for same and when indicated, submit smear of discharge to laboratory for examination.

Reflexes: If positive Rhomberg is reported, indicate degree. Pupillary reflexes should be reported for both light and accommodation. Knee jerks are to be reported absent only when not obtainable upon reinforcement and as increased when foot is actually lifted from the floor following light blow upon the patella; otherwise as normal.

Extremities: Be sure to record loss of foot, leg, fingers, hand or arm, or impairment of use thereof, or other structural defect or limitation, likely to interfere with safe driving.

Upper: Note deformities and limitation of motion.

Lower: Note deformities, limitation of motion; varicose veins.

In case of hand deformities, note particularly whether or not sufficient grip is present to enable driver to secure a grip on the wheel. Record chronic ulcers. Note any atrophy or paralysis.

Spine: Note deformities and limitation of motion.

Laboratory findings: Urine analysis is indicated whenever systolic blood pressure is over 150 and diastolic over 100 and such other times as medical history or findings upon physical examination may indicate that they are necessary. A serological test should always be taken in case of those giving history of luetic infection or present physical findings upon examination presenting possibility of latent syphilis.

Upon completion of the examination, physician should always date and sign his record of the same.

MINIMUM REQUIREMENTS OF § 391

(a) Mental and physical condition:

(1) No loss of foot, leg, hand, or arm.

(2) No mental, nervous, organic, or functional disease, likely to interfere with safe driving.

(3) No loss of fingers, impairment of use of foot, leg, fingers, hand or arm, or other structural defect or limitation, likely to interfere with safe driving.

(b) Eyesight: Visual acuity of at least 20/40 (Snellen) in each eye either without glasses or by correction with glasses: form field of vision in the horizontal meridian shall not be less than a total of 140 degrees, ability to distinguish colors red, green, and yellow; drivers requiring correction by glasses shall wear properly prescribed glasses at all times when driving.

(c) Hearing: Hearing shall not be less than 10/20 in the better ear, for conversational tones, without a hearing aid.

(d) Liquor, narcotics, and drugs: Shall not be addicted to the use of narcotics or habit-forming drugs, or the excessive use of alcoholic beverages or liquors.

PHYSICAL EXAMINATION OF DRIVERS

Date _____

Name _____
(Please print) (Last) (First) (Middle)

Present address _____
(Number) (Street)

_____
(City) (State)

_____
(Social Security Account No.)

Birth _____ Age _____
(Month, day, year) (Place)

HEALTH HISTORY

Yes	*No*	
☐	☐	Head or spinal injuries (severe).
☐	☐	Convulsions (fits, epilepsy).
☐	☐	Encephalitis (sleeping sickness).
☐	☐	Ever confined as chronic invalid.
☐	☐	Heart disease.
☐	☐	Tuberculosis.
☐	☐	Syphilis.
☐	☐	Gonorrhea.
☐	☐	Diabetes.
☐	☐	Stomach ulcer.
☐	☐	Rheumatic fever.
☐	☐	Asthma.
☐	☐	Kidney disease.
☐	☐	Suffering from incurable disease.
☐	☐	Permanent defect as result of disease or accident.

Other illnesses or injuries _____

PHYSICAL EXAMINATION

General appearance and development:
Good _____ Fair _____ Poor _____
Height _____ Weight _____
Head:
(Without glasses)
Eyes: For distance _____
Right 20/ _____ Left 20/ _____
(With glasses if worn)
Evidence of disease or injury:
Right _____ Left _____
Color vision _____ Horizontal field of vision:
Right _____° Left _____°
Ears: Hearing, 20 feet:
Right ear _____/20. Left ear _____/20.
Disease or injury _____
Mouth _____ Throat _____

PHYSICAL EXAMINATION—Continued

Thorax:
Heart _____
If organic disease is present, is it fully compensated? _____
Blood pressure (sitting):
Systolic _____ Diastolic _____
Pulse: Before exercise _____
Two minutes' rest after exercise _____
Lungs: _____
Abdomen:
Scars _____ Abnormal masses _____
Tenderness _____
Hernia: Yes ____ No ____ If so, where? ___
Is truss worn? _____
Genito-Urinary:
Scars _____ Urethral discharge _____
Reflexes:
Rhomberg _____
Pupillary _____ Light R _____ L _____
Accommodation R _____ L _____
Knee Jerks:
Right: Normal__ Increased__ Absent__
Left: Normal___ Increased___ Absent___
Extremities:
Upper _____
Lower _____
Spine _____
Laboratory findings:
Urine: Sp. Gr._____ Alb._____ Sugar____
Blood Serology _____
Chest X-ray _____

_____
(Date)

_____
(Examining doctor)

_____
(Address)

§ 391.12 Carrier's right to require additional qualifications.

Nothing contained in Parts 390–397 of this subchapter shall be so construed as to prevent a motor carrier from requiring additional or more stringent physical, mental, or intellectual qualifications or age requirements than prescribed in this part as minima; or to require more frequent or more stringent physical or mental examinations than prescribed in this part, notwithstanding that a driver may have in his possession a doctor's certificate as herein required.

§ 391.13 Driver's past record.

In addition to the other qualifications required by this part, motor carriers shall in the employment and use of drivers and from time to time thereafter in continuing drivers in their service give due consideration to the following factors where they exist:

(a) Violations of laws or regulations governing the operation of motor vehicles of which the driver is guilty, especially as to those violations which tend to establish a disregard for regulatory requirements and for the public safety.

(b) The driver's accident record insofar as it tends to establish a lack of concern for or indifference to his own or the public's safety.

(c) Violations of criminal laws of which the driver is guilty, especially with respect to those offenses which tend to demonstrate his unfitness in the public interest to be a driver of a motor vehicle in interstate or foreign commerce.

Motor carriers shall maintain and preserve as a part of each driver's personnel record a summary of all driver acts and

offenses which are within the purview of this section. In addition to the periodic review of such records as contemplated by this regulation, motor carriers shall specifically review the individual record of a driver when he is involved in a serious accident to the end that reckless or accident-prone drivers may not continue to drive vehicles as a hazard to the public safety.

PART 392—DRIVING OF MOTOR VEHICLES

Subpart A—General

Sec.
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392.3 Driving rules to be obeyed.
392.4 Driving while ill or fatigued.
392.5 Alcoholic beverages.
392.6 Schedules to conform with speed limits.
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392.40 All accidents.
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Subpart F—Fueling Precautions

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392.62 Bus driver; distraction.
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392.66 Carbon monoxide; use of vehicle when detected.
392.67 Heater, flame-producing; on vehicle in motion.
392.68 Motive power not to be disengaged.

AUTHORITY: The provisions of this Part 392 issued under sec. 204, 49 Stat. 546, as amended; 49 U.S.C. 304.

Subpart A—General

§ 392.1 Compliance required.

Every motor carrier shall comply with the requirements of this part, shall instruct its officers, agents, representatives, and drivers with respect thereto, and shall take such measures as are necessary to insure compliance therewith by such persons. All officers, agents, representatives, drivers, and employees of motor carriers, directly concerned with the management, maintenance, operation, or driving of motor vehicles, shall comply with and be conversant with the requirements of this part.

§ 392.2 Additional carrier rules permitted.

Nothing contained in Parts 390–397 of this subchapter shall be construed as prohibiting any motor carrier from enforcing additional rules and regulations relating to safety of operation, not inconsistent with Parts 390–397 of this subchapter, tending to a greater degree of precaution against accidents.

§ 392.3 Driving rules to be obeyed.

Every motor vehicle shall be driven in accordance with the laws, ordinances, and regulations of the jurisdiction in which it is being operated, unless such laws, ordinances and regulations are at variance with specific regulations of the Federal Highway Administration which impose a greater affirmative obligation or restraint.

§ 392.4 Driving while ill or fatigued.

No driver shall drive or be required or permitted to drive a motor vehicle while his ability or alertness is so impaired through fatigue, illness, or any other cause as to make it unsafe for him to begin or continue to drive, except in case of grave emergency where the hazard to passengers would be increased by observance of this section and then only to the nearest point at which the safety of passengers is assured.

§ 392.5 Alcoholic beverages.

No driver shall drive or be required or permitted to drive a motor vehicle, be in active control of any such vehicle, or go on duty or remain on duty, when under the influence of any alcoholic beverage or liquor, regardless of its alcoholic content, nor shall any driver drink any such beverage or liquor while on duty.

§ 392.6 Schedules to conform with speed limits.

No motor carrier shall schedule a run nor permit nor require the operation of any motor vehicle between points in such period of time as would necessitate the vehicle being operated at speeds greater than those prescribed by the jurisdictions in or through which the vehicle is being operated.

§ 392.7 Equipment, inspection and use.

No motor vehicle shall be driven unless the driver thereof shall have satisfied himself that the following parts and accessories are in good working order, nor shall any driver fail to use or make use of such parts and accessories when and as needed:

Service brakes, including trailer brake connections.
Parking (hand) brake.
Steering mechanism.
Lighting devices and reflectors.
Tires.
Horn.
Windshield wiper or wipers.
Rear-vision mirror or mirrors.
Coupling devices.

§ 392.8 Emergency equipment, inspection, and use.

No motor vehicle shall be driven unless the driver thereof shall have satisfied himself that the emergency equipment required by §§ 393.95 and 393.96 of this subchapter is in place and ready for use; nor shall any driver fail to use or make use of such equipment when and as needed.

§ 392.9 Safe loading.

(a) *Distribution and securing of load.* No motor vehicle shall be driven nor shall any motor carrier permit or require any motor vehicle to be driven if it is so loaded, or if the load thereon is so improperly distributed or so inadequately secured, as to prevent its safe operation.

(b) *Doors, tarpaulins, tailgates and other equipment.* No motor vehicle shall be driven unless the tailgate, tailboard, tarpaulins, doors, all equipment and rigging used in the operation of said vehicle, and all means of fastening the load, are securely in place.

(c) *Interference with driver.* No motor vehicle shall be driven when the lading or any other object obscures his view ahead, or to the right or left sides, or interferes with the free movement of his arms or legs, or prevents his free and ready access to the accessories required for emergencies, or prevents the free and ready exit of any person from the cab or driver's compartment.

(d) *Passengers on buses.* No bus shall be driven unless:

(1) Standees are to the rear of a line or other device prescribed in § 393.90 of this subchapter.

(2) Aisle seats, if any, are in accordance with § 393.91 of this subchapter.

(e) *Freight or express on buses.* No bus transporting baggage, express or freight shall be driven unless such articles are stowed in a manner which will assure: (1) Unrestricted freedom of motion to the driver for proper operation of the bus; (2) unobstructed passage to all exits by any person; and (3) adequate protection to passengers and others from injury as a result of the displacement or falling of such articles.

Subpart B—Driving of Vehicles

§ 392.10 Railroad grade crossings; stopping required.

(a) Except as provided in paragraph (b) of this section, the driver of any motor vehicle described in subparagraphs (1) through (6) of this paragraph, before crossing at grade any track or tracks of a railroad, shall stop such vehicle within 50 feet, but not less than 15 feet from the nearest rail of

such railroad, and while so stopped shall listen and look in both directions along such track for any approaching train, and shall not proceed until such precautions have been taken and until he has ascertained that the course is clear.

(1) Every bus transporting passengers,

(2) Every motor vehicle transporting any quantity of chlorine,

(3) Every motor vehicle which, in accordance with the regulations of the Department of Transportation, is required to be marked or placarded with one of the following markings:

(i) Explosives A.
(ii) Explosives B.
(iii) Poison.
(iv) Flammable.
(v) Oxidizers.
(vi) Compressed Gas.
(vii) Corrosives.
(viii) Flammable Gas.
(ix) Radioactive.
(x) Dangerous.

(4) Every cargo tank motor vehicle, whether loaded or empty, used for the transportation of any dangerous article as defined in the regulations of the Department of Transportation or for the transportation of any liquid having a flashpoint below 200° Fahrenheit, as determined by the Standard Method of Test for Flash Point of the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103, as set forth in ASTM D–56–61, ASTM D–92–57, or ASTM D–93–62, and referenced by the National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. 02110, in Pamphlet No. 385, 1964 edition.

(5) Every cargo tank motor vehicle transporting a commodity which at the time of loading has a temperature above its flashpoint as determined by the same standard method of testing as prescribed in subparagraph (4) of this paragraph.

(6) Every cargo tank motor vehicle, whether loaded or empty, transporting any commodity under special permit in accordance with the provisions of § 170.13 of this title.

(b) A stop need not be made at:

(1) A streetcar crossing, or railroad tracks used exclusively for industrial switching purposes, within a business district as defined in § 390.12 of this chapter,

(2) A railroad grade crossing when a police officer or crossing flagman directs traffic to proceed,

(3) A railroad grade crossing where a stop and go traffic light controls movement of traffic,

(4) An abandoned railroad grade crossing which is marked with a sign indicating that the rail line is abandoned,

(5) An industrial or spur line railroad grade crossing marked with a sign reading "Exempt Crossing." Such "Exempt Crossing" signs shall be erected only by or with the consent of the appropriate State or local authority.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 392.11 Railroad grade crossings; slowing down required.

Every motor vehicle other than those listed in § 392.10 shall, upon approaching a railroad grade crossing, be driven at a rate of speed which will permit said motor vehicle to be stopped before reaching the nearest rail of such crossing and shall not be driven upon or over such crossing until due caution has been taken to ascertain that the course is clear.

§ 392.12 Drawbridges; stopping of buses.

Every motor vehicle transporting passengers shall, upon approaching any drawbridge, known or marked as such be brought to a complete stop, not less than 50 feet from the lip of the draw, and shall proceed only when the driver has definitely ascertained that the draw is completely closed. A full stop need not be made at any drawbridge protected by a traffic "stop and go" signal giving positive indication to approaching vehicles to proceed, or where upon the opening of the draw, traffic is controlled by an attendant or traffic officer.

§ 392.13 Drawbridges; slowing down of other vehicles.

Any other motor vehicle, shall, upon approaching a drawbridge, be driven at a rate of speed which will permit said motor vehicle to be stopped before reaching the lip of the draw and shall proceed only when the draw is completely closed.

§ 392.14 Hazardous conditions; extreme caution.

Extreme caution in the operation of a motor vehicle shall be exercised when hazardous conditions, such as those caused by snow, ice, sleet, fog, mist, rain, dust, or smoke, adversely affect visibility or traction. Speed shall be reduced when such conditions exist. If conditions become sufficiently dangerous, the operation of the vehicle shall be discontinued and shall not be resumed until the vehicle can be safely operated. Whenever compliance with the foregoing provisions of this rule increases hazard to passengers, the motor vehicle may be operated to the nearest point at which the safety of passengers is assured.

§ 392.15 Required and prohibited use of turn signals.

(a) *Turns.* Every motor vehicle turn shall be signaled for a distance of not less than 100 feet in advance of, and during, the turning movement by flashing the turn signals at the front and the rear of the vehicle on the side toward which the turning movement is made.

(b) *Entry into traffic stream.* Turn signals shall be flashed to indicate the direction of vehicle movement, prior to and during entry of the vehicle into the traffic stream from a parked position.

(c) *Lane changes.* Turn signals shall be flashed to indicate the direction of vehicle movement continuously, for a distance of not less than 100 feet in advance of, and during, the turning movement of the vehicle from one traffic lane to another.

(d) *Parking or disablement.* Turn signals shall not be flashed on one side only on parked or disabled vehicles.

(e) *Courtesy or "do pass" signals.* Turn signals shall not be used as courtesy or "do pass" signals to operators of vehicles approaching from the rear.

Subpart C—Stopped Vehicles

§ 392.20 Unattended vehicles; precautions.

No motor vehicle shall be left unattended until the parking brake has been securely set and all reasonable precautions have been taken to prevent the movement of such vehicle.

§ 392.21 Stopped vehicles not to interfere with other traffic.

No motor vehicle shall be stopped, parked, or left standing, whether attended or unattended, upon the traveled portion of any highway outside of a business or residential district, when it is practicable to stop, park, or leave such vehicle off the traveled portion of the highway. In the event that conditions make it impracticable to move such motor vehicle from the traveled portion of the highway, the driver shall make every effort to leave all possible width of the highway opposite the standing vehicle for the free passage of other vehicles and he shall take care to provide a clear view of the standing vehicle as far as possible to the front and rear.

§ 392.22 Emergency signals; disabled vehicles.

(a) *Turn signals.* Whenever any motor vehicle is disabled upon the traveled portion of any highway or the shoulder thereof, during the period lighted lamps are required, except where there is sufficient all-night street or highway lighting provided as such to make it clearly discernible to persons on the highway at a distance of 500 feet, the driver of such vehicle shall immediately, upon learning of the disability, flash the two front and two rear turn signals simultaneously as a vehicular traffic hazard warning and continue such flashing until he shall have placed the portable emergency signals required by paragraphs (b) to (e) of this section in use on the highway, and during the time such portable emergency signals are being picked up for storage prior to movement of the vehicle. These warning signals may be given at other times during vehicle disablement in addition to but not in lieu of the portable emergency signals required in paragraphs (b) to (e) of this section.

(b) *Fusee, lantern, or reflector.* The driver of such vehicle shall immediately place on the traveled portion of the highway at the traffic side of the disabled vehicle, a lighted fusee, a lighted red electric lantern, or a red emergency reflector.

(c) *Flares, lanterns, or reflectors.* Except as provided in paragraphs (d), (e), and (f) of this section, as soon thereafter as possible, but in any event within the burning period of the fusee,

the driver shall place three liquid-burning flares (pot torches), or three red electric lanterns, or three red emergency reflectors on the traveled portion of the highway in the following order:

(1) One at a distance of approximately 100 feet from the disabled vehicle in the center of the traffic lane occupied by such vehicle and toward traffic approaching in that lane;

(2) One at a distance of approximately 100 feet in the opposite direction from the disabled vehicle in the center of the traffic lane occupied by such vehicle; and

(3) One at the traffic side of the disabled vehicle, not less than 10 feet to the front or rear thereof. If a red electric lantern or red emergency reflector has been placed on the traffic side of the vehicle in accordance with paragraph (b) of this section, it may be used for this purpose.

(d) *Hills, curves, and obstructions.* If disablement of any motor vehicle occurs within 500 feet of a curve, crest of a hill or other obstruction to view, the driver shall so place the warning signal in that direction as to afford ample warning to other users of the highway, but in no case less than 100 feet nor more than 500 feet from the disabled vehicle.

(e) *Divided or one-way roads.* If disablement of any motor vehicle occurs upon any roadway of a divided or one-way highway, the driver shall place one warning signal at a distance of 200 feet and one such signal at a distance of 100 feet to the rear of the vehicle in the center of the lane occupied by the stopped vehicle; one such signal at the traffic side of the vehicle not less than 10 feet to the rear of the vehicle.

(f) *Leaking, flammable material.* If gasoline or any other flammable liquid, or combustible liquid or gas seeps or leaks from a fuel container or a motor vehicle disabled or otherwise stopped upon a highway, no emergency warning signal producing a flame shall be lighted or placed except at such a distance from any such liquid or gas as will assure the prevention of a fire or explosion.

§ 392.23 Emergency signals; stopped or parked vehicles.

(a) *Stops 10 minutes or less.* Whenever for any cause other than disablement or necessary traffic stops, any motor vehicle is stopped upon the traveled portion of any highway, or shoulder thereof, during the period lighted lamps are required, except where there is sufficient all-night street or highway lighting provided as such to make it clearly discernible to persons on the highway at a distance of 500 feet, the driver of such vehicle shall immediately flash the two front and two rear turn signals simultaneously as a vehicular traffic hazard warning signal. These flashing warning signals shall be given continually if the stop is not to exceed 10 minutes.

(b) *Stops over 10 minutes.* If the stop is to exceed 10 minutes, the driver shall place emergency signals as required and in the manner prescribed by § 392.22 (b), (c), (d), and (e).

§ 392.24 Emergency signals; flame-producing.

No driver shall attach or permit any person to attach a lighted fusee or other flame-producing emergency signal to any part of a motor vehicle.

§ 392.25 Emergency signals; dangerous cargoes.

No driver shall use or permit the use of any flame-producing emergency signal for protecting any motor vehicle transporting explosives, Class A or Class B; any cargo tank motor vehicle used for the transportation of any flammable liquid or flammable compressed gas, whether loaded or empty; or any motor vehicle using compressed gas as a motor fuel. In lieu thereof, red electric lanterns or red emergency reflectors shall be used, the placement of which shall be in the same manner as prescribed in § 392.22 (b) and (c).

§ 392.26 Red flags; stopped vehicles.

During the time when lighted lamps are not required, whenever a motor vehicle is disabled, stopped, or parked upon the traveled portion of any highway or shoulder thereof, except within the business or residential district of a municipality, the driver of such vehicle shall place red flags as follows:

(a) One at a distance of approximately 100 feet from the vehicle in the center of the traffic lane occupied by such vehicle toward traffic approaching in that lane;

(b) One at a distance of approximately 100 feet in the opposite direction from the vehicle in the center of the traffic lane occupied by such vehicle.

Subpart D—Use of Lighted Lamps and Reflectors

§ 392.30 Lighted lamps; moving vehicles.

No motor vehicle shall be driven upon the highway unless the lamps required by Part 393 of this subchapter are lighted:

(a) During the period of one-half hour after sunset to one-half hour before sunrise;

(b) During any other time when there is not sufficient light to render clearly discernible persons and vehicles on the highway at a distance of 500 feet.

§ 392.31 Lighted lamps; stopped or parked vehicles.

Whenever any motor vehicle is parked or stopped upon the highway within a business or residential district of a municipality, whether attended or unattended, during the times mentioned in § 392.30, at least one white or amber light shall be displayed on the traffic side of the motor vehicle, visible from a distance of 500 feet to the front of the motor vehicle and at least one red light visible from a distance of 500 feet to the rear; and head-lamp beam shall be dimmed or depressed, if in use: *Provided, however,* That no lamps need be lighted if there is sufficient highway lighting to make clearly discernible persons and vehicles at a distance of 500 feet, unless lighted lamps are required by local regulations.

§ 392.32 Upper and lower head-lamp beams.

During the times when lighted lamps are required, every driver shall obey the following:

(a) *Upper beam.* He shall use the upper distribution of light when there is no on-coming vehicle within 500 feet: *Provided, however,* That a lower distribution of light may be used when fog, dust, or other atmospheric conditions make it desirable for reasons of safety, and when within the confines of municipalities where there is sufficient light to render clearly discernible persons and vehicles on the highway at a distance of 500 feet ahead;

(b) *Lower beam.* When within 500 feet of an on-coming vehicle, he shall use a distribution of light or composite beam so aimed that the glaring rays are not projected into the eyes of the on-coming driver and such distribution of light shall also be used when following another vehicle within 500 feet.

§ 392.33 Obscured lamps or reflectors.

No motor vehicle shall be driven when any of the required lamps or reflectors are obscured by the tailboard, by any part of the load, by dirt, or otherwise.

Subpart E—Accidents; Duties of Driver

§ 392.40 All accidents.

Every driver of a motor vehicle involved in an accident from which there results injury to or death of any person or persons, or property damage of any kind, regardless of the amount, shall:

(a) Stop immediately;

(b) Take all necessary precaution to prevent further accident at the scene;

(c) Render all reasonable assistance to injured persons (movement of injured persons by a driver should not be undertaken if likely to cause further injury);

(d) Give to any person demanding the same, his name and address, the name and address of the motor carrier for whom he is then driving, the State tag registration number of the vehicle involved, and if requested, exhibit his chauffeur's or operator's license;

(e) Report all details of the accident as soon as practicable after its occurrence to the motor carrier then using his services.

§ 392.41 Striking unattended vehicle.

If a moving vehicle strikes a vehicle standing unattended upon a highway, the driver of the former shall immediately stop and endeavor to locate the custodian of the unattended vehicle, and if his reasonable effort to do so is unsuccessful, the driver of the vehicle doing the striking shall place securely and conspicuously in or on the unattended vehicle his name and address and that of the motor carrier for whom he is then driving.

Subpart F—Fueling Precautions

§ 392.50 Ignition of fuel; prevention.

No driver or any employee of a motor carrier shall:

(a) Fuel a motor vehicle with the engine running, except when it is necessary to run the engine to fuel the vehicle;

(b) Smoke or expose any open flame in the vicinity of a vehicle being fueled;

(c) Fuel a motor vehicle unless the nozzle of the fuel hose is continuously in contact with the intake pipe of the fuel tank;

(d) Permit, insofar as practicable, any other person to engage in such activities as would be likely to result in fire or explosion.

§ 392.51 Reserve fuel.

No supply of fuel for the propulsion of said motor vehicle or for the operation of accessories shall be carried on any motor vehicle except in a properly mounted fuel tank or tanks.

§ 392.52 Buses; fueling.

No bus shall be fueled in a closed building with passengers aboard. The fueling of buses when passengers are being carried shall be reduced to the minimum number of times necessary during such transportation.

Subpart G—Prohibited Practices

§ 392.60 Unauthorized persons not to be transported.

Unless specifically authorized in writing to do so by the motor carrier under whose authority the motor vehicle is being operated, no driver shall transport any person or permit any person to be transported on any motor vehicle other than a bus. When such authorization is issued, it shall state the name of the person to be transported, the points where the transportation is to begin and end, and the date upon which such authority expires. No written authorization, however, shall be necessary for the transportation of:

(a) Employees or other persons assigned to a vehicle by a motor carrier;

(b) Any person transported when aid is being rendered in case of an accident or other emergency;

(c) An attendant delegated to care for livestock.

This section shall not apply to the operation of motor vehicles controlled and operated by any farmer and used in the transportation of agricultural commodities or products thereof from his farm or in the transportation of supplies to his farm.

§ 392.61 Driving by unauthorized person.

Except in case of emergency, no driver shall permit a motor vehicle to which he is assigned to be driven by any person not authorized to drive such vehicle by the motor carrier in control thereof.

§ 392.62 Bus driver; distraction.

No driver while driving a bus shall engage in any unnecessary conversation or other activities tending to distract his attention from the operation of such vehicle.

§ 392.63 Towing or pushing loaded buses.

No disabled bus with passengers aboard shall be towed or pushed; nor shall any person use or permit to be used a bus with passengers aboard for the purpose of towing or pushing any disabled vehicle, except in such circumstances where the hazard to passengers would be increased by observance of the foregoing provisions of this section, and then only in traveling to the nearest point where the safety of the passengers is assured.

§ 392.64 Riding within closed vehicles without proper exits.

No person shall ride within the closed body of any motor vehicle unless there are means on the inside thereof of obtaining exit. Said means shall be in such condition as to permit ready operation by the occupant.

§ 392.65 Sleeper berth; transfer to or from.

No person shall transfer to or from a sleeper berth while a motor vehicle is in motion unless by means of a direct access between the cab and the berth.

§ 392.66 Carbon monoxide; use of vehicle when detected.

No person shall dispatch or drive any motor vehicle or permit any passengers thereon, when the following conditions are known to exist, until such conditions have been remedied or repaired:

(a) Where an occupant has been affected by carbon monoxide;

(b) Where carbon monoxide has been detected in the interior of the vehicle;

(c) When a mechanical condition of the vehicle is discovered which would be likely to produce a hazard to the occupants by reason of carbon monoxide.

§ 392.67 Heater, flame-producing; on vehicle in motion.

No open flame heater used in the loading or unloading of the commodity transported shall be in operation while the vehicle is in motion.

§ 392.68 Motive power not to be disengaged.

No motor vehicle shall be driven with the source of motive power disengaged from the driving wheels except when such disengagement is necessary to stop or to shift gears.

PART 393—PARTS AND ACCESSORIES NECESSARY FOR SAFE OPERATION

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AUTHORITY: The provisions of this Part 393 issued under sec. 204, 49 Stat. 546, as amended; 49 U.S.C. 304, unless otherwise noted.

Subpart A—General

§ 393.1 Compliance.

Every motor carrier, and its officers, agents, drivers, representatives, and employees directly concerned with the installation and maintenance of equipment and accessories, shall comply and be conversant with the requirements and specifications of this part, and no motor carrier shall operate any motor vehicle, or cause or permit it to be operated, unless it is equipped in accordance with said requirements and specifications.

§ 393.2 Additional equipment and accessories.

Nothing contained in Parts 390–397 of this subchapter shall be construed to prohibit the use of additional equipment and accessories, not inconsistent with or prohibited by Parts 390–397 of this subchapter, provided such equipment and accessories do not decrease the safety of operation of the motor vehicles on which they are used.

Subpart B—Lighting Devices, Reflectors, and Electrical Equipment

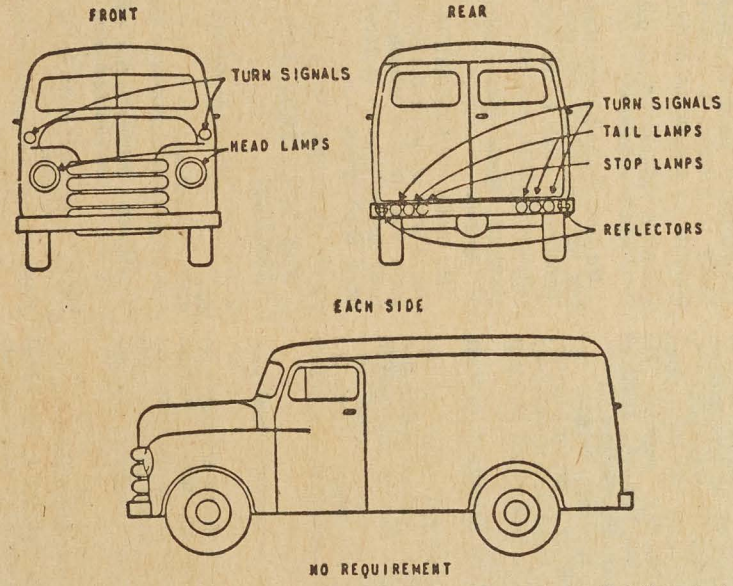
§ 393.11 Lamps and reflectors, small buses and trucks.

Every bus or truck less than 80 inches in overall width shall be equipped as follows:

(a) On the front, at least two head lamps, an equal number at each side; two turn signals, one at each side;

(b) On the rear, two tail lamps, one at each side; two stop lamps, one at each side; two turn signals, one at each side, and two reflectors, one at each side.

(Diagram to illustrate § 393.11.)



Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirements of § 393.25(e). Color of reflectors shall conform to requirements of § 393.26(d).

§ 393.12 Lamps and reflectors, large buses and trucks.

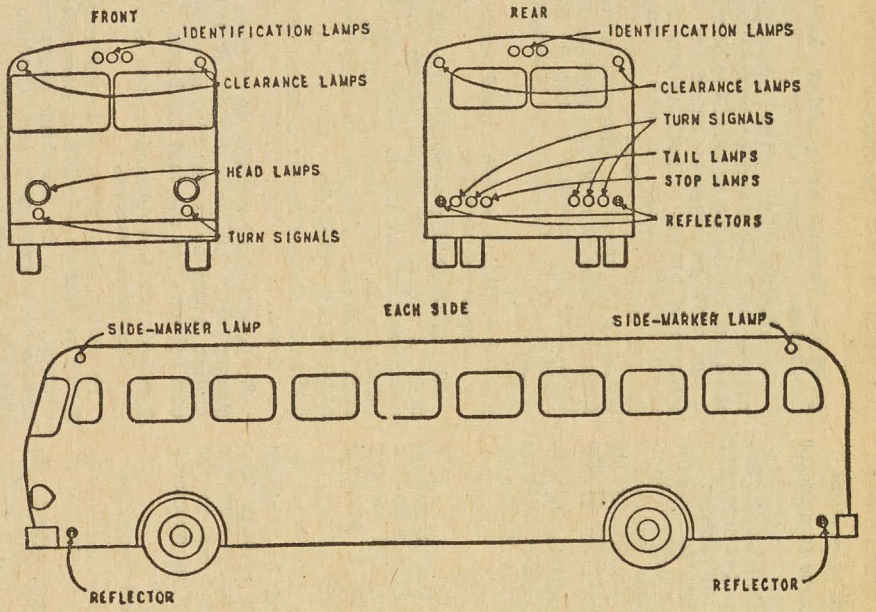
Every bus or truck 80 inches or more in overall width shall be equipped as follows:

(a) On the front, at least two headlamps, an equal number at each side; two turn signals, one at each side; two clearance lamps, one at each side; three identification lamps, mounted on the vertical centerline of the vehicle, or the vertical centerline of the cab where different from the centerline of the vehicle, except that where the cab is not more than 42 inches wide at the front roofline, a single lamp at the center of the cab shall be deemed to comply with the requirement for identification lamps. No part of the identification lamps or their mountings may extend below the top of the vehicle windshield.

(b) On the rear, two tail lamps, one at each side; two stop lamps, one at each side; two turn signals, one at each side; two clearance lamps, one at each side; two reflectors, one at each side; three identification lamps, mounted on the vertical center line of the vehicle, provided that the identification lamps need not be lighted if obscured by a vehicle towed by the truck;

(c) On each side, one side-marker lamp at or near the front, one side-marker lamp at or near the rear; one reflector at or near the front, and one reflector at or near the rear.

(Bus diagram to illustrate § 393.12.)



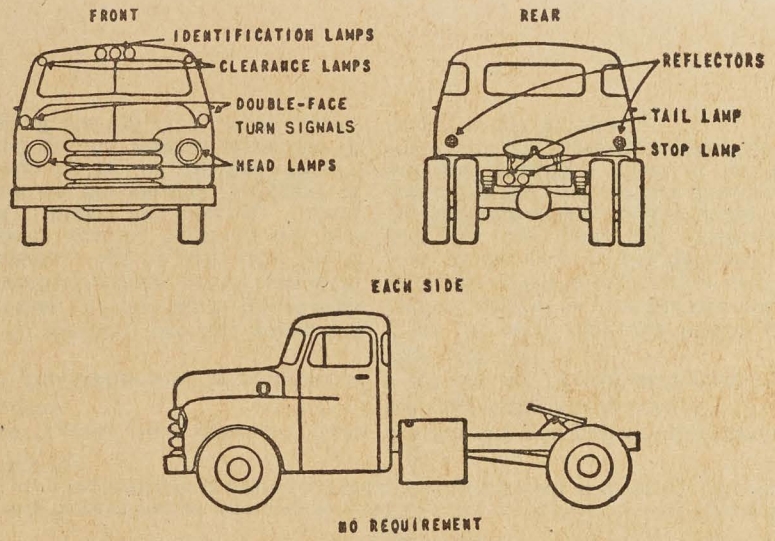
§ 393.13 Lamps and reflectors, truck tractors.

Every truck tractor shall be equipped as follows:

(a) On the front, at least two headlamps, an equal number at each side; two turn signals, one at each side; two clearance lamps, one at each side; three identification lamps, mounted on the vertical centerline of the vehicle, or the vertical centerline of the cab where different from the centerline of the vehicle, except that where the cab is not more than 42 inches wide at the front roofline, a single lamp at the center of the cab shall be deemed to comply with the requirement for identification lamps. No part of the identification lamps or their mountings may extend below the top of the vehicle windshield.

(b) On the rear, one tail lamp; one stop lamp; two reflectors, one at each side; and, unless the turn signals on the front are so constructed (double faced) and located as to be visible to passing drivers, two turn signals on the rear of the cab, one at each side.

(Diagram to illustrate § 393.13.)



Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirements of § 393.25(e). Color or reflectors shall conform to requirements of § 393.26(d).

§ 393.14 Lamps and reflectors, large semitrailers and full trailers.

Every semitrailer or full trailer 80 inches or more in overall width, except converter dollies, shall be equipped as follows:

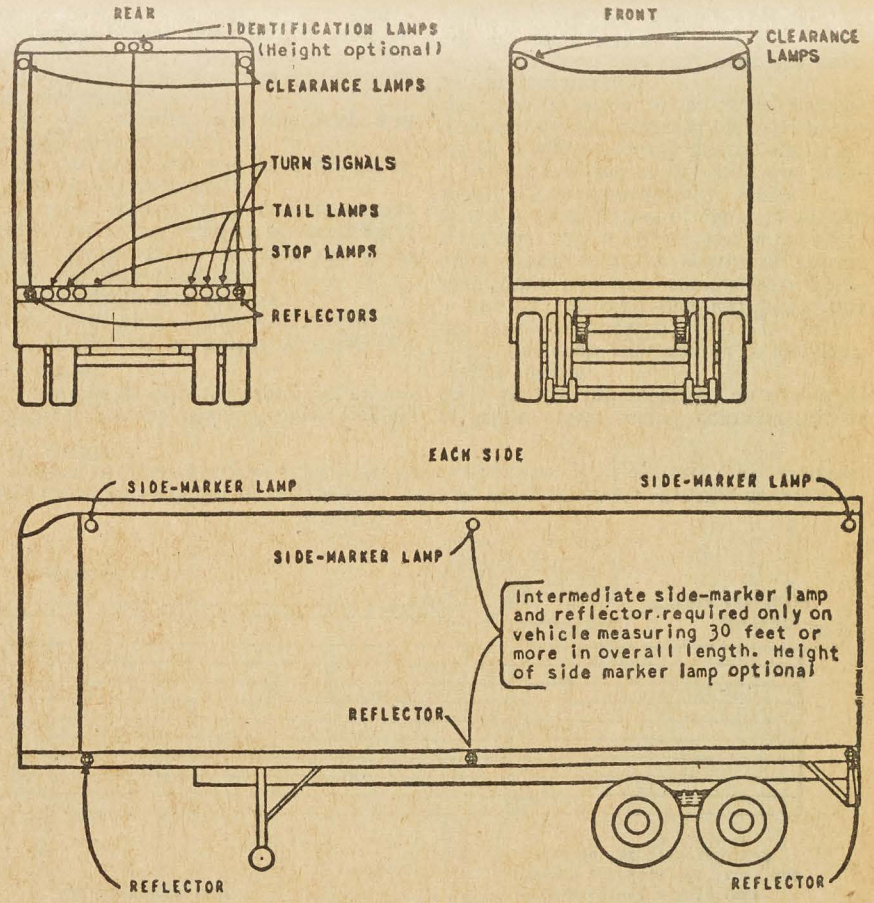
(a) On the front, two clearance lamps, one at each side;

(b) On the rear, two tail lamps, one at each side; two stop lamps, one at each side; two turn signals, one at each side; two clearance lamps, one at each side; two reflectors, one at each side; three identification lamps, mounted on the verticle centerline of the vehicle, provided that the identification lamps need not be lighted if obscured by another vehicle in the same combination;

(c) On each side, one side-marker lamp at or near the front; one side-marker lamp at or near the rear; one reflector at or near the front; one reflector at or near the rear; and, in case of semitrailers and full trailers 30 feet or more in length, at least one additional side-marker lamp at optional height and at least one additional reflector, the additional side-marker lamp (or lamps) and reflector (or reflectors) to be at or near the center or at approximately uniform spacing in the length of the vehicle.

(d) For the purposes of these regulations, a converter dolly is a motor vehicle with a fifth wheel lower half or equivalent mechanism, the attachment of which vehicle converts a semitrailer to a full trailer. Each dolly, when towed singly by another vehicle, and not as part of a full trailer, shall be equipped with one stop lamp, one tail lamp, and two reflectors on the rear. No lighting devices or reflectors are required on the front or sides of any dolly.

(Diagram to illustrate § 393.14.)



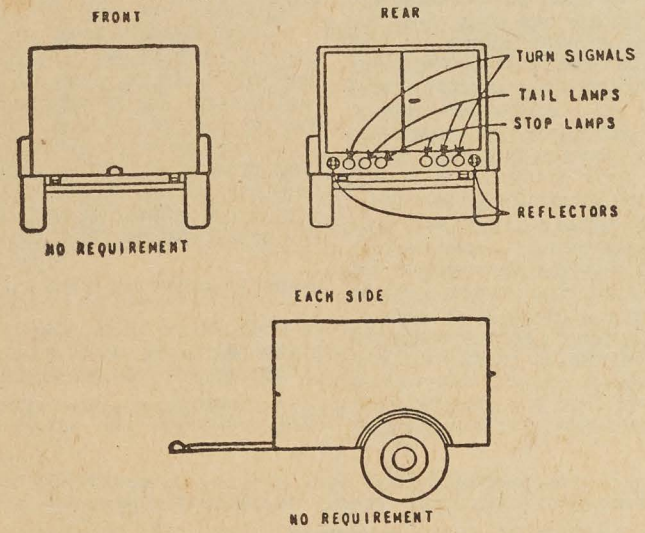
Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirements of § 393.25(e). Color of reflectors conform to requirements of § 393.26(d).

§ 393.15 Lamps and reflectors, small semitrailers and full trailers.

Every semitrailer or full trailer less than 80 inches in overall width shall be equipped as follows:

(a) On the rear, two tail lamps, one at each side; two turn signals, one at each side; two reflectors, one at each side; and two stop lamps, one at each side.

(Diagram to illustrate § 393.15.)



Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirements of § 393.25(e). Color of reflectors shall conform to requirements of § 393.26(d).

§ 393.16 Lamps and reflectors, pole trailers.

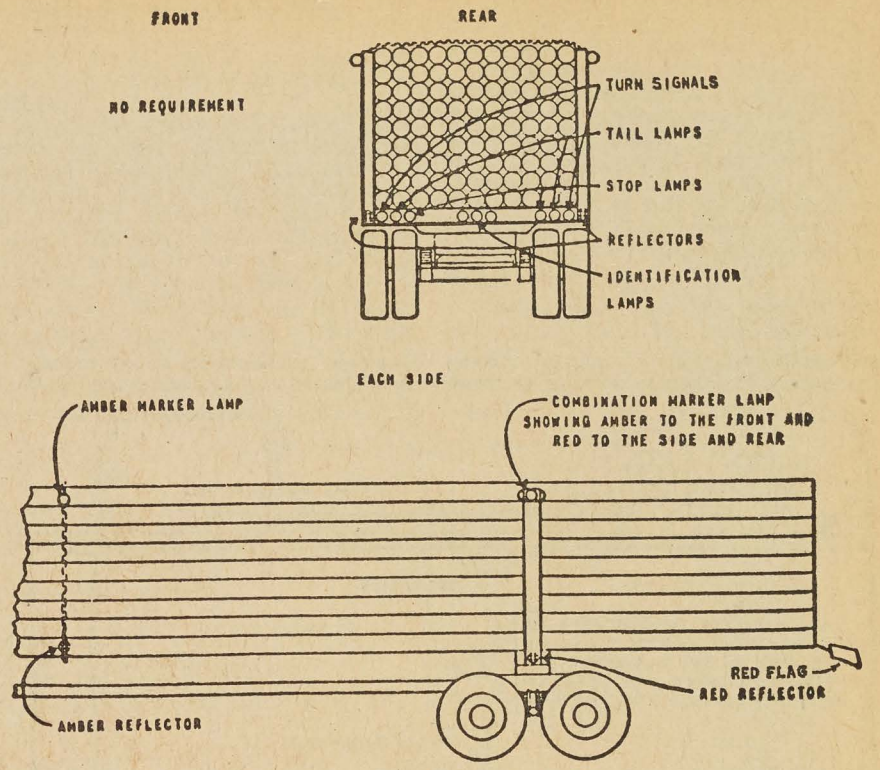
Every pole trailer shall be equipped as follows:

(a) On the rear, two tail lamps, one at each side; two stop lamps, one at each side; two turn signals, one at each side; two reflectors, one at each side, placed to indicate extreme width of the pole trailer; three identification lamps mounted on the vertical centerline of the pole trailer or in lieu thereof mounted on the vertical centerline of the rear of the cab of the truck tractor drawing the pole trailer and higher than the load being transported;

(b) On the rear of projecting loads. (See § 393.18.)

(c) On each side, one amber side-marker lamp at or near the front of the load; one amber reflector at or near the front of the load; on the rearmost support for the load, one combination marker lamp showing amber to the front and red to the rear and side, mounted to indicate maximum width of the pole trailer; on the rearmost support for the load, one red reflector.

(Diagram to illustrate § 393.16.)



Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirements of § 393.25(e). Color of reflectors shall conform to requirements of § 393.26(d).

§ 393.17 Lamps and reflectors, combinations in driveaway-towaway operations.

Combinations of motor vehicles engaged in driveaway-towaway operations shall be equipped as follows:

(a) On the towing vehicle:

(1) On the front, at least two head lamps, an equal number at each side; two turn signals and two clearance lamps, one at each side;

(2) On each side and near the front, one side-marker lamp;

(3) On the rear, one tail lamp and one stop lamp;

(b) On the towed vehicle of a tow-bar combination, the towed vehicle of a single saddle-mount combination, and on the rearmost towed vehicle of a double or triple saddle-mount combination, or on a vehicle full-mounted on a saddle-mount vehicle:

(1) On each side and near the rear, one side-marker lamp:

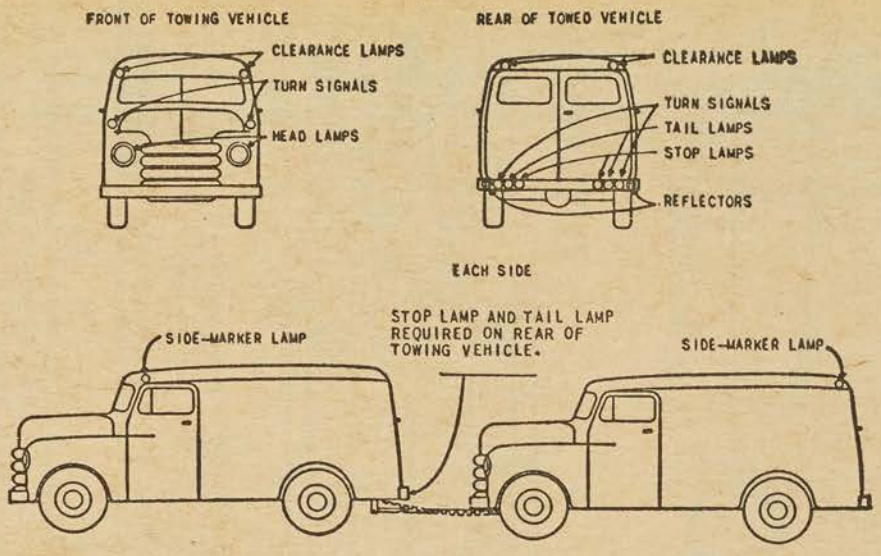
(2) On the rear, one tail lamp, one stop lamp, two turn signals, two clearance lamps, and two reflectors, one at each side; and, if any vehicle in the combination is 80 inches or more in overall width, three identification lamps;

(c) On the first saddle-mounted vehicle of a double saddle-mount combination and on the first and second saddle-mounted vehicles of a triple saddle-mount combination:

(1) On each side and near the rear, one side-marker lamp.

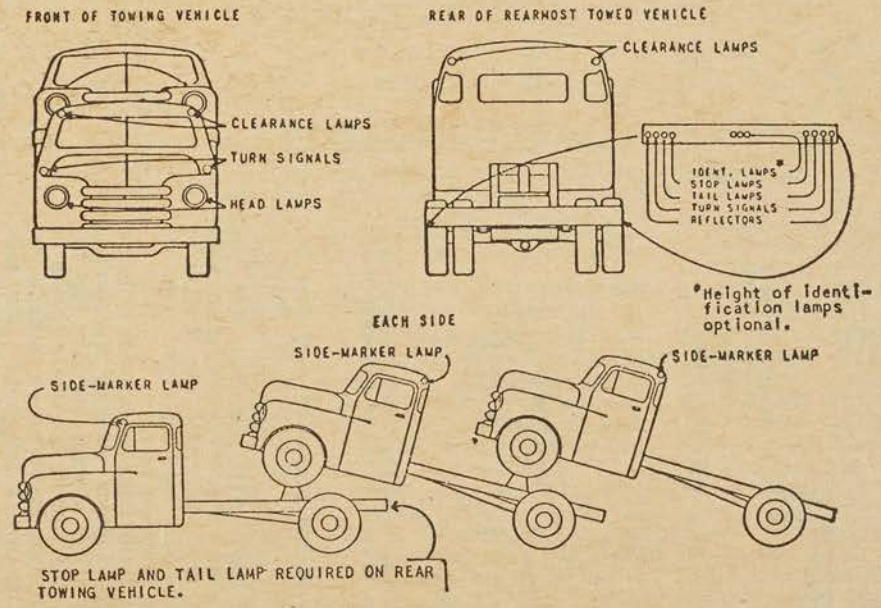
(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

(Tow-bar diagram to illustrate § 393.17.)



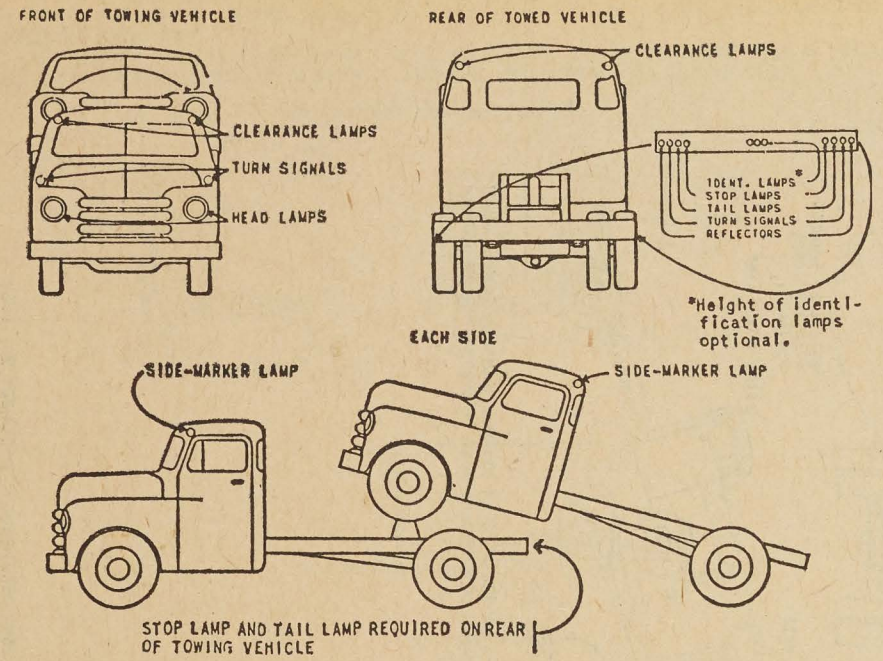
Lamps may be combined as permitted by § 393.22(e). Color of exterior lighting devices shall conform to requirements of § 393.25(e) except as otherwise provided in this section. Color of reflectors shall conform to requirements of § 393.26(d).

(Double-saddle-mount diagram to illustrate § 393.17.)



Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirements of § 393.25(e). Color of reflectors shall conform to requirements of § 393.26(d).

(Single-saddle-mount diagram to illustrate § 393.17.)



Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirmeents of § 393.25(e). Color of reflectors shall conform to requirements of § 393.26(d).

§ 393.18 Lamps on motor vehicles with projecting loads.

Any motor vehicle transporting a load which extends beyond the width or having projections beyond the rear of such vehicle shall be equipped with the following lamps in addition to other required lamps. (See § 393.87 for flags on such vehicles.)

(a) *Loads projecting beyond sides of motor vehicles.* (1) The foremost edge of the projecting load at its outermost extremity shall be marked with an amber lamp visible from the front and side;

(2) The rearmost edge of the projecting load at its outermost extremity shall be marked with a red lamp visible from the rear and side;

(3) If any portion of the projecting load extends beyond both the foremost and rearmost edge, it shall be marked with an amber lamp visible from the front, side, and rear;

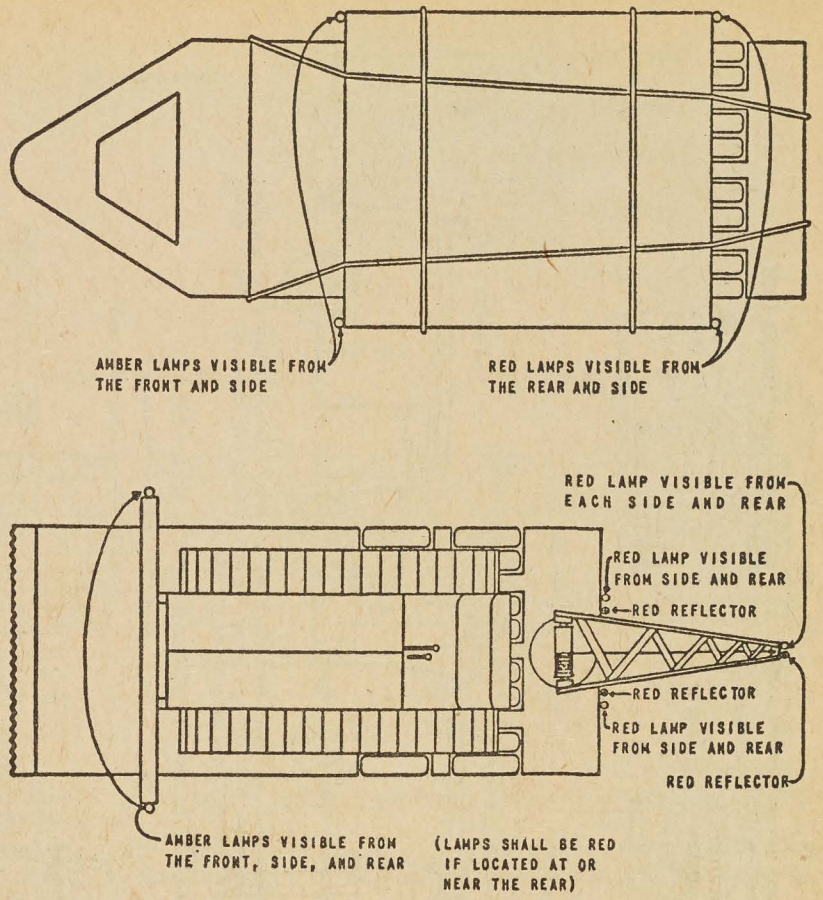
(4) If the projecting load does not measure over 3 feet from front to rear, it shall be marked with an amber lamp visible from the front, side, and rear except that if the projection is located at or near the rear, it shall be marked by a red lamp visible from the front, side, and rear.

(b) *Projections beyond rear of motor vehicles.* Motor vehicles transporting loads which extend over four feet beyond the rear of the motor vehicle or which have tailboards or tailgates extending over 4 feet beyond the body shall have these projections marked:

(1) On each side of the projecting load one red lamp, visible from the side located so as to indicate maximum overhang.

(2) On the rear of the projecting load two red lamps, visible from the rear, one at each side and two red reflectors visible from the rear, one at each side, located so as to indicate maximum width.

(Diagrams to illustrate § 393.18 for two types of projecting loads.)



Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirements of § 393.25(e). Color of reflectors shall conform to requirements of § 393.26(d).

§ 393.19 Requirements for turn signaling systems.

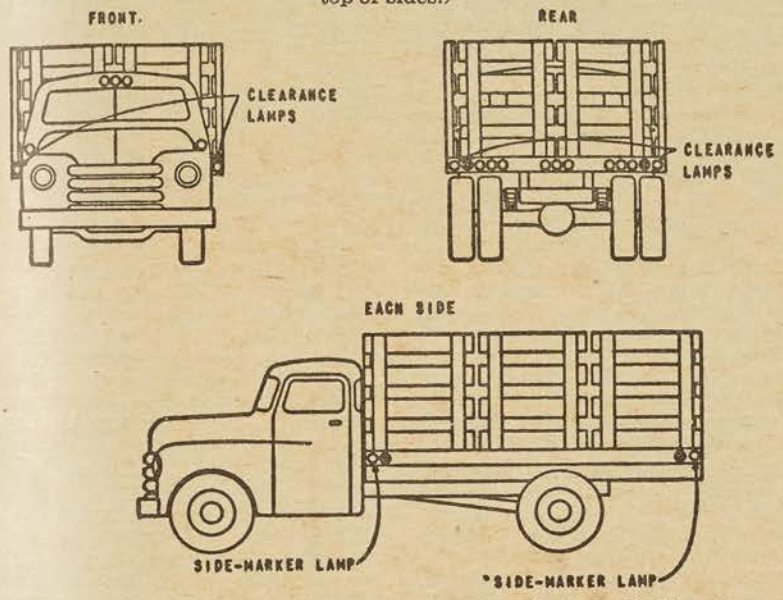
Every motor vehicle shall be equipped with a signaling system that in addition to signaling turning movements as required by § 392.15 shall have a switch or combination of switches that will cause the two front turn signals and the two rear turn signals to flash simultaneously as a vehicular traffic hazard warning required by §§ 392.22(a) and 392.23. The system shall be capable of flashing simultaneously with the ignition of the vehicle turned on or off.

§ 393.20 Clearance lamps to indicate extreme width and height.

Clearance lamps shall be mounted so as to indicate the extreme width of the motor vehicle (not including mirrors) and as near the top thereof as practicable: *Provided,* That when rear identification lamps are mounted at the extreme height of the vehicle, rear clearance lamps may be mounted at optional

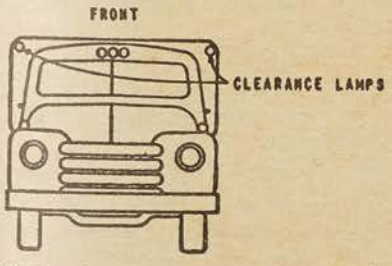
height: *And provided further*, That when mounting of front clearance lamps at the highest point of a trailer results in such lamps failing to mark the extreme width of the trailer, such lamps may be mounted at optional height but must indicate the extreme width of the trailer. Clearance lamps on truck tractors shall be so located as to indicate the extreme width of the truck tractor cab.

(Diagram to illustrate § 393.20 for mounting of lamps on vehicles without permanent top or sides.)



Lamps may be combined as permitted by § 393.22. Color of exterior lighting devices shall conform to requirements of § 393.25(e).

(Diagram to illustrate § 393.20 for mounting of front clearance lamps on truck tractors with sleeper cabs.)



§ 393.22 Combinations of lighting devices and reflectors.

Any two or more lighting devices and reflectors, whether required by these regulations or not, may be combined into one shell or housing, with exceptions enumerated below, and provided that the requirements for each required lighting device and reflector are met and that neither the mounting nor the use of any nonrequired lighting device is inconsistent with these regulations in any respect:

(a) No turn signal may be combined with any head lamp or other lighting device or combination of lighting devices capable of producing a greater intensity of light than the turn signal when the turn signal is operating.

(b) No turn signal may be combined with a stop lamp unless the arrangement of switches or other parts is such that the stop lamp as such is always extinguished when the turn signal is in use.

(c) No clearance lamp may be combined with any tail lamp or identification lamp.

§ 393.23 Lighting devices to be electric.

Lighting devices shall be electric, except that red liquid-burning lanterns may be used on the end of loads in the nature of poles, pipes, and ladders projecting to the rear of the motor vehicle.

§ 393.24 Requirements for head lamps and auxiliary road lighting lamps.

(a) *Mounting.* Head lamps and auxiliary road lighting lamps shall be mounted so that the beams are readily adjustable, both vertically and horizontally, and the mounting shall be such that the aim is not readily disturbed by ordinary conditions of service.

(b) *Head lamps required.* Every bus, truck, and truck tractor shall be equipped with a headlighting system composed of at least two head lamps, not including fog or other auxiliary lamps, with an equal number on each side of the vehicle. The headlighting system shall provide an upper and lower distribution of light, selectable at the driver's will.

(c) *Fog, adverse-weather, and auxiliary road-lighting lamps.* For the purposes of this section, fog, adverse-weather, and auxiliary road lighting lamps, when installed, are considered to be a part of the headlighting system. Such lamps may be used in lieu of head lamps under conditions making their use advisable if there be at least one such lamp conforming to the appropriate SAE Standard[1] for such lamps on each side of the vehicle.

(d) *Aiming and intensity.* Head lamps shall be constructed and installed so as to provide adequate and reliable illumination and shall conform to the appropriate specification set forth in the SAE Standards[1] for "Electric Head Lamps for Motor Vehicles" or "Sealed-Beam Head Lamp Units for Motor Vehicles."

§ 393.25 Requirements for lamps other than head lamps.

(a) *Mounting.* All lamps shall be permanently and securely mounted in workmanlike manner on a permanent part of the motor vehicle, except that temporary lamps on motor vehicles being transported in driveaway-towaway operations and temporary electric lamps on projecting loads need not be permanently mounted nor mounted on a permanent part of the vehicle. The requirement for three identification lamps on the centerline of a vehicle will be met as to location by one lamp on the centerline, with the other two at right and left. All temporary lamps must be firmly attached.

(b) *Visibility.* All required exterior lamps shall be so mounted as to be capable of being seen at all distances between 500 feet and 50 feet under clear atmospheric conditions during the time lamps are required to be lighted. The light from front clearance and front identification lamps shall be visible to the front, that from sidemarker lamps to the side, that from rear clearance, rear identification, and tail lamps to the rear, and that from projecting load-marker lamps from those directions required by § 393.18. This shall not be construed to apply to lamps on one unit which are obscured by another unit of a combination of vehicles.

(c) *Specifications.* All required lamps except those already installed on vehicles tendered for transportation in driveaway and towaway operations shall conform to appropriate requirements of the SAE Standards and/or Recommended Practices[1] as indicated below, except that the minimum required marking of lamps conforming to the 1959 requirements shall be as specified in paragraph (d) of this section. Projecting load marker lamps shall conform to the requirements for clearance, side-marker, and identification lamps. Turn signals shall conform to the requirements for class A, Type I turn signals, provided.

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[1] Wherever reference is made in these regulations to SAE Standards or SAE Recommended Practices, they shall be:

(a) As found in the 1952 edition of the "SAE Handbook" with respect to parts and accessories other than lighting devices and reflectors.

(b) As found in the 1952 edition of the "SAE Handbook" with respect to lighting devices and reflectors on motor vehicles made before July 1, 1961, except replacement lighting devices and reflectors as specified in §§ 393.25(c)(2) and 393.26(b)(2).

(c) As found in the 1959 edition of the "SAE Handbook" as supplemented by Pamphlet No. TR-34, published March 1959, with respect to lighting devices and reflectors on motor vehicles made on and after July 1, 1961, and with respect to replacement lighting devices and reflectors as specified in §§ 393.25(c)(2) and 393.26(b)(2).

The "SAE Handbook" and Pamphlet No. TR-34 are published by the Society of Automotive Engineers, 2 Pennsylvania Plaza, New York, N.Y. 10001.

(1) Lamps on vehicles made before July 1, 1961, excepting replacement lamps as specified in subparagraph (2) of this paragraph, shall conform to the 1952 requirements.

(2) Lamps on vehicles made on and after July 1, 1961, and replacement lamps installed on and after December 31, 1961, shall conform to the 1959 requirements.

(3) Lamps temporarily attached to vehicles transported in driveaway and towaway operations on and after December 31, 1961, shall conform to the 1959 requirements.

(d) *Certification and markings.* All lamps required to conform to the requirements of the 1959 SAE Standards[1] shall be certified by the manufacturer or supplier that they do so conform, by markings indicated below. The markings in each case shall be visible when the lamp is in place on the vehicle.

(1) Stop lamps shall be marked with the manufacturer's or supplier's name or trade name and shall be marked "SAE–S".

(2) Turn signal units shall be marked with the manufacturer's or supplier's name or trade name and shall be marked "SAE–AI" or "SAE–I".

(3) Tail lamps shall be marked with the manufacturer's or supplier's name or trade name and shall be marked "SAE–T".

(4) Clearance, side marker, identification, and projecting load-marker lamps, except combination lamps, shall be marked with the manufacturer's or supplier's name or trade name and shall be marked "SAE" or "SAE–P".

(5) Combination lamps shall be marked with the manufacturer's or supplier's name or trade name and shall be marked "SAE" followed by the appropriate letters indicating the individual lamps combined. The letter "A", as specified in § 393.26(c), may be included to certify that a reflector in the combination conforms to the requirements appropriate to such marking. If the letter "I" follows the letter "A" immediately, the two letters shall be deemed to refer to a turn signal unit, as specified in subparagraph (2) of this paragraph. Combination clearance and side marker lamps may be marked "SAE–PC".

(e) *Color.* The color of exterior lighting devices not otherwise specified in these regulations shall be as follows:

(1) All front clearance and identification lamps, and all sidemarker lamps except those at or near the rear shall when lighted display an amber color;

(2) No lighted red lamp of any character shall be displayed at any place other than on the rear or on the sides near the rear, except that this prohibition shall not apply to any school bus when operating as such, to lamps on projecting loads as specified in § 393.18, or to rear-facing lenses of turn signals;

(3) All rear clearance and identification lamps, the sidemarker lamps at or near the rear, and any other lamps mounted on the rear or on the sides near the rear shall when lighted display a red color except as specified by §§ 393.16 and 393.18, and as permitted by paragraphs (4), (5), and (6) of this section;

(4) The stop lamp or lamps, and the turn signals on or facing the rear of any motor vehicle shall be red, yellow, amber, or any shade of color between red and yellow; and the turn signals facing the front of any motor vehicle shall be white, amber, or any shade of color between white and amber;

(5) Back-up lamp or lamps showing white to amber to the rear may be mounted on the rear of any vehicle if such lamp or lamps can be lighted only when the vehicle is in reverse gear or when a pilot lamp readily visible to the driver is burning to indicate that such back-up lamp or lamps are lighted;

(6) White lamps may be used for the purpose of illuminating license plates on any vehicle or destination signs on buses;

(7) This section shall not be so construed as to prohibit the use of motor vehicles in combination if such motor vehicles are separately lighted as required by §§ 393.11 to 393.17 inclusive;

(8) Wherever reference is made in these regulations to the colors red, amber, or white, said colors shall be as prescribed in the SAE Standard[1] "Color Specification for Electric Lamps".

(f) *Lighting devices to be steady-burning.* All exterior lighting devices shall be of the steady-burning type except turn signals on any vehicle, stop lamps when used as turn signals, warning lamps on school buses when operating as such, and warning lamps on emergency and service vehicles authorized by State or local authorities, and except that lamps combined into the same shell or housing with any turn signal may be turned off by the same switch that turns the signal on for flashing and turned on again when the turn signal as such is turned off. This paragraph shall not be construed to prohibit the use of turn signals to give vehicular traffic hazard warning signals as required by §§ 393.22 and 393.23.

(g) *Stop lamp operation.* All stop lamps on each motor vehicle or combination of motor vehicles shall be actuated upon application of any of the service brakes, except that such actuation is not required upon activation of the emergency feature of trailer brakes by means of either manual or automatic control on the towing vehicle, and except that stop lamps on a towing vehicle need not be actuated when service brakes are applied to the towed vehicles or vehicles only, and except that no stop lamp need be actuated as such when it is in use as a turn signal or when it is turned off by the turn signal switch as provided in paragraph (f) of this section.

§ 393.26 Requirements for reflectors.

(a) *Mounting.* All required reflectors shall be mounted upon the motor vehicle at a height not less than 24 inches nor more than 60 inches above the ground on which the motor vehicle stands, except that reflectors shall be mounted as high as practicable on motor vehicles which are so constructed as to make compliance with the 24-inch requirement impractical. They shall be so installed as to perform their function adequately and reliably, and except for temporary reflectors required for vehicles in driveaway-towaway operations, or on projecting loads, all reflectors shall be permanently and securely mounted in workmanlike manner so as to provide the maximum of stability and the minimum likelihood of damage. Required reflectors otherwise properly mounted may be securely installed on flexible strapping or belting provided that under conditions of normal operation they reflect light in the required directions. Required temporary reflectors mounted on motor vehicles during the time they are in transit in any driveaway-towaway operation must be firmly attached.

(b) *Specifications.* All required reflectors except those already installed on vehicles tendered for transportation in driveaway and towaway operations shall conform to the requirements for Class A reflectors in the SAE Recommended Practice or SAE Standard[1] "Reflex Reflectors", as indicated below, except that the minimum required marking of reflectors conforming to the 1959 requirements shall be as specified in paragraph (c) of this section.

(1) Reflectors on vehicles made before July 1, 1961, excepting replacement reflectors as specified in subparagraph (2) of this paragraph, shall conform to the 1952 requirements.

(2) Reflectors on vehicles made on and after July 1, 1961, and replacement reflectors installed on and after December 31, 1961, shall conform to the 1959 requirements.

(3) Reflectors temporarily attached to vehicles transported in driveaway and towaway operations on and after December 31, 1961, shall conform to the 1959 requirements.

(c) *Certification and markings.* All reflectors required to conform to the requirements of the 1959 SAE Standard[1] shall be certified by the manufacturer or supplier that they do so conform, by marking with the manufacturer's or supplier's name or trade name and the letters "SAE–A". The marking in each case shall be visible when the reflector is in place on the vehicle.

(d) *Color.* All reflectors on the rear and those nearest to the rear on the sides, except those referred to in paragraph (e) of this section, shall reflect a red color; all other reflectors, except those referred to in paragraph (e) of this section, shall reflect an amber color, provided that this requirement shall not be construed to prohibit the use of motor vehicles in combination if such motor vehicles are separately equipped with reflectors as required by §§ 393.11 to 393.17, inclusive. Wherever reference is made to the colors red or amber for reflectors, such colors shall correspond to the requirements in the SAE Standard[1] "Color Specification for Electric Lamps".

(e) *Retroreflective surfaces.* Retroreflective surfaces other than required reflectors may be used, provided:

[1] See footnote 1 to § 393.24(c).

(1) Designs do not resemble traffic control signs, lights, or devices, except that straight edge striping resembling a barricade pattern may be used.

(2) Designs do not tend to distort the length and/or width of the motor vehicle.

(3) Such surfaces shall be at least 3 inches from any required lamp or reflector unless of the same color as such lamp or reflector.

(4) No red color shall be used on the front of any motor vehicle, except for display of markings or placards required by § 177.823 of this title.

(5) Retroreflective license plates required by State or local authorities may be used.

§ 393.27 Wiring specifications.

Wiring for both low tension and high tension circuits shall be constructed and installed so as to function reliably and adequately and shall conform to the appropriate requirements in the SAE Standard [1] for "Insulated Cable" or by wiring which is mechanically and electrically at least equal to such cable. Required lamps shall be connected to the source of power with stranded wire. The source of power and the electrical wiring shall be of such size and characteristics that required lamps shall when lighted be capable of being seen at least 500 feet under clear atmospheric conditions during the time lamps are required to be lighted. This shall not be so construed as to prohibit the use of the frame or other metal parts of a motor vehicle as a return ground system provided that for truck-tractor-semitrailer combinations, the truck-tractor is electrically bonded to the semitrailer.

§ 393.28 Wiring to be protected.

Wiring shall, when possible, be grouped together and protected by nonmetallic tape, braid, or other covering capable of withstanding severe abrasion or shall be protected by being enclosed in a metallic sheath or tube. Wiring shall be properly supported. Wiring shall not be so located as to be likely to be charred, overheated, or enmeshed in moving parts. Insofar as is practicable, wiring shall not be adjacent to any part of the fuel system. The edges of all holes in metal through which the wiring passes, unless the wiring is metal-covered, shall be rolled or bushed with a grommet of rubber or other suitable material.

§ 393.29 Grounds.

The battery ground and trailer return ground connections on a grounded system shall be readily accessible. The contact surfaces of electrical connections shall be clean and free of oxide, paint, or other nonconductive coating.

§ 393.30 Battery installation.

Every storage battery on every vehicle, unless located in the engine compartment, shall be covered by a fixed part of the motor vehicle or protected by a removable cover or enclosure. Removable covers or enclosures shall be substantial and shall be securely latched or fastened. The storage battery compartment and adjacent metal parts which might corrode by reason of battery leakage shall be painted or coated with an acid-resisting paint or coating and shall have openings to provide ample battery ventilation and drainage. Wherever the cable to the starting motor passes through a metal compartment, the cable shall be protected against grounding by an acid and waterproof insulating bushing. Wherever a battery and a fuel tank are both placed under the driver's seat, they shall be partitioned from each other, and each compartment shall be provided with an independent cover, ventilation, and drainage.

§ 393.31 Overload protective devices.

The current to all low tension circuits shall pass through overload protective devices except that this requirement shall not be applicable to battery-to-starting motor or battery-to-generator circuits, ignition and engine control circuits, horn circuits, electrically-operated fuel pump circuits, or electric brake circuits. Protective devices for electric circuits on every motor vehicle the date of manufacture of which is subsequent to June 30, 1953, except buses having a seating capacity of eight or less persons or motor vehicles being transported in driveaway-towaway operations, shall be arranged so that either the head lamp circuit or circuits shall not be affected by a short circuit in any of the other lighting circuits on the motor vehicle, or if the head lamp circuit is protected in common with other electrical circuits, the protection device shall be an automatic reset overload circuit breaker.

§ 393.32 Detachable electrical connections.

Electrical wiring between towing and towed vehicles shall be contained in a cable or cables or entirely within another substantially constructed protective device. All such electrical wiring shall be mechanically and electrically adequate and free of short or open circuits. Suitable provision shall be made in every such detachable connection to afford reasonable assurance against connection in an incorrect manner or accidental disconnection. Detachable connections made by twisting together wires from the towed and towing units are prohibited. Precaution shall be taken to provide sufficient slack in the connecting wire or cable to accommodate without damage all normal motions of the parts to which they are attached.

§ 393.33 Wiring, installation.

Electrical wiring shall be systematically arranged and installed in a workmanlike manner. All detachable wiring, except temporary wiring connections for driveaway-towaway operations, shall be attached to posts or terminals by means of suitable cable terminals which conform to the SAE Standard [1] for "Cable Terminals" or by cable terminals which are mechanically and electrically at least equal to such terminals. The number of wires attached to any post shall be limited to the number which such post was designed to accommodate. The presence of bare, loose, dangling, chafing, or poorly connected wires is prohibited.

Subpart C—Brakes

§ 393.40 Adequacy of brakes.

Every bus, truck, truck tractor, and combination of motor vehicles, except as provided in § 393.42, shall be equipped with brakes adequate to control the movement of, and to stop and to hold, such vehicle or combination of vehicles. Two separate means of brake application shall be provided. One such means shall be a parking brake which will conform to the requirements of § 393.41. If these two separate means of applying the brakes are connected in any way, they shall be so constructed that failure of any one part of the operating mechanism shall not leave the vehicle without operative brakes.

§ 393.41 Parking brakes.

(a) Every singly driven motor vehicle and every combination of motor vehicles shall at all times be equipped with a parking brake or brakes adequate to hold the vehicle or combination on any grade on which it is operated, under any condition of loading, on a surface free from ice or snow.

(b) The parking brake or brakes shall at all times be capable of being applied in conformance with the requirements of paragraph (a) by either the driver's muscular effort or by spring action or by other energy, provided that if such other energy is depended on for application of the parking brake, then an accumulation of such energy shall be isolated from any common source and used exclusively for the operation of the parking brake.

(c) The parking brake or brakes, shall be so designed, constructed, and maintained that when once applied they shall remain in the applied condition with the required effectiveness despite exhaustion of any source of energy or leakage of any kind, and so that they cannot be released unless adequate energy is available upon release of such brake or brakes to make immediate further application with the required effectiveness.

§ 393.42 Brakes required on all wheels.

Every motor vehicle shall be equipped with brakes acting on all wheels, except:

(a) Any full trailer, semitrailer, or pole trailer of a gross weight not exceeding 3,000 pounds: *Provided,* That the gross weight of any such full trailer or pole trailer, no part of the load of which rests upon the towing vehicle, shall not exceed 40 percent of the gross weight of the towing vehicle and that the gross weight of any such semitrailer or pole trailer part of the load of which rests upon the towing vehicle, shall not exceed 40 percent of the gross weight of the towing vehicle when connected to such semitrailer or pole trailer;

(b) Any vehicle being towed in a driveaway-towaway operation, provided the combination of vehicles is capable of

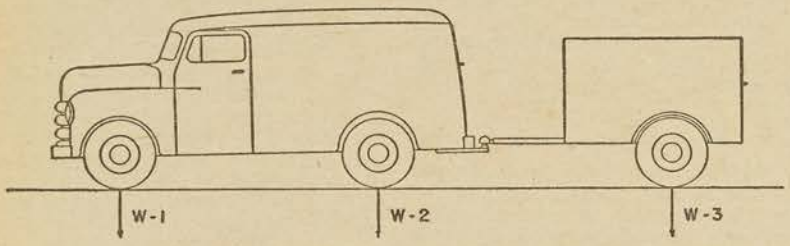
[1] See footnote 1 to § 393.24(c).

complying with the performance requirements of § 393.52; only such brakes on the vehicle or vehicles being towed in driveaway-towaway operations need be operative as may be necessary to insure compliance with the performance requirements of § 393.52. This paragraph is not applicable to any motor vehicle towed by means of a tow-bar when any vehicle is full-mounted on such motor vehicle or any combination of motor vehicles utilizing three saddle-mounts.

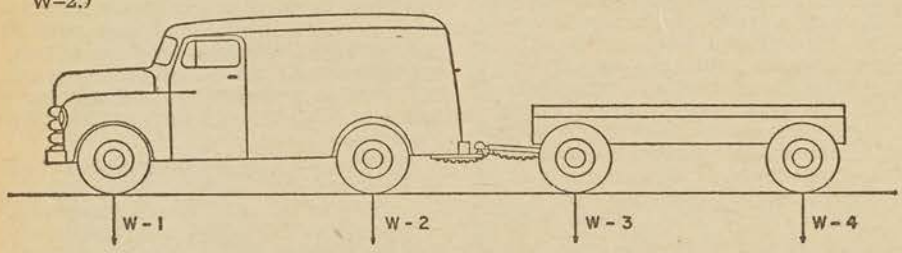
(c) Trucks and truck tractors having three or more axles need not have brakes on the front wheels, except when such vehicles are equipped with at least two steerable axles the wheels of one such axle need not be equipped with brakes.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

(Diagrams to illustrate § 393.42 for brake requirements for light trailers.)



(Semitrailer or 2-wheel pole trailer of 3,000 pounds gross weight or less must be equipped with brakes if W–3 is greater than 40 percent of the sum of W–1 and W–2.)



(Full trailer or 4-wheel pole trailer of 3,000 pounds gross weight or less must be equipped with brakes if the sum of W–3 and W–4 is greater than 40 percent of the sum of W–1 and W–2.)

§ 393.43 Breakaway and emergency braking.

(a) Every motor vehicle, if used to tow a trailer equipped with brakes, shall be equipped with means for providing that in case of breakaway of such trailer the service brakes on the towing vehicle will be sufficiently operative to stop the towing vehicle.

(b) Every truck or truck tractor equipped with air brakes, when used for towing other vehicles equipped with air brakes, shall be equipped with two means of activating the emergency features of the trailer brakes. One of these means shall operate automatically in the event of reduction of the towing vehicle air supply to a fixed pressure which shall not be lower than 20 pounds per square inch nor higher than 45 pounds per square inch. The other means shall be a manually controlled device readily operable by a person seated in the driving seat. Its emergency position or method of operation shall be clearly indicated. In no instance may the manual means be so arranged as to permit its use to prevent operation of the automatic means. The automatic and manual means required by this section may be, but are not required to be, separate.

(c) Every truck tractor and truck when used for towing other vehicles equipped with vacuum brakes, shall have, in addition to the single control required by § 393.49 to operate all brakes of the combination, a second manual control device which can be used to operate the brakes on the towed vehicles in emergencies. Such second control shall be independent of brake air, hydraulic, and other pressure, and independent of other controls, unless the braking system be so arranged that failure of the pressure on which the second control depends will cause the towed vehicle brakes to be applied automatically. The second control is not required by this rule to provide modulated or graduated braking.

(d) Every trailer required to be equipped with brakes shall be equipped with brakes of such character as to be applied automatically and promptly upon breakaway from the towing vehicle, and means shall be provided to maintain application of the brakes on the trailer in such case for at least 15 minutes.

(e) Air brake systems installed on towed vehicles shall be so designed, by the use of "no-bleed-back" relay emergency valves or equivalent devices, that the supply reservoir used to provide air for brakes shall be safeguarded against backflow of air to the towing vehicle upon reduction of the towing vehicle air pressure.

(f) The requirements of paragraphs (b), (c), and (d) of this section shall not be applicable to motor vehicles in driveaway-towaway operations.

§ 393.44 Front brake lines, protection.

On every bus, made after June 30, 1954, if equipped with air brakes, except buses being transported in driveaway-towaway operations, the braking system shall be so constructed that in the event any connection to the brake system forward of the driver's seat or any brake line to any of the front wheels is broken, the driver can apply the brakes on the rear wheels despite such breakage. The means used to apply the brakes on the rear wheels shall be adjacent to but neither forward nor to the left of the driver's seat.

§ 393.45 Brake tubing and hose, adequacy.

Brake tubing and brake hose shall be:

(a) Designed and constructed of proper material and so installed as to insure proper continued functioning;

(b) Sufficiently long and flexible as to accommodate without damage all normal motions of the parts to which they are attached;

(c) Suitably secured against chafing, kinking, or other mechanical injury; and

(d) Brake hose shall be so constructed as to insure adequate and reliable functioning and shall conform to the appropriate specification set forth in the SAE Standards [1] for "Hydraulic Brake Hose," "Air-Brake Hose," or "Vacuum Brake Hose."

§ 393.46 Brake tubing and hose connections.

All connections for air, vacuum, or hydraulic braking systems shall:

(a) Be adequate in material and construction to insure proper continued functioning;

(b) Be designed, constructed, and installed so as to insure, when properly connected, an attachment free of leaks, constrictions, or other defects;

(c) Have suitable provision in every detachable connection to afford reasonable assurance against accidental disconnection;

(d) Have the vacuum brake engine manifold connection at least three-eighths inch in diameter.

§ 393.47 Brake lining.

The brake lining on every motor vehicle shall be so constructed and installed as not to be subject to excessive fading and grabbing and shall be adequate in thickness, means of attachment, and physical characteristics to provide for safe and reliable stopping of the motor vehicle.

§ 393.48 Brakes to be operative.

All brakes with which motor vehicles are equipped shall be operative at all times except as provided in § 393.42(b) and except brakes on disabled vehicles being towed; but means may be used for reducing the braking effort on the front wheels of any bus, truck, or truck tractor or of removing the braking effort on the front wheels of any three-axle truck or truck tractor provided that the means for reducing or removing the braking effort shall be used only when operating under adverse road conditions such as wet, snowy, or icy roads.

[1] See footnote 1 to § 393.24(c).

§ 393.49 Single valve to operate all brakes.

Every motor vehicle, the date of manufacture of which is subsequent to June 30, 1953, which is equipped with power brakes, shall have the braking system so arranged that one application valve shall when applied operate all the service brakes on the motor vehicle or combination of motor vehicles. This requirement shall not be construed to prohibit motor vehicles from being equipped with an additional valve to be used to operate the brakes on a trailer or trailers or as provided in § 393.44. This section shall not be applicable to driveaway-towaway operations unless the brakes on such operations are designed to be operated by a single valve.

§ 393.50 Reservoirs required.

(a) *General.* As provided in paragraph (c) of this section, every bus, truck, and truck tractor made after June 30, 1953, and using air or vacuum for braking, shall be equipped with reserve capacity or a reservoir sufficient to insure a full service brake application with the engine stopped without depleting the air pressure or vacuum below 70 percent of that pressure or degree of vacuum indicated by the gauge immediately before the brake application is made. For purposes of this section, a full service brake application is considered to be made when the service brake pedal is pushed to the limit of its travel.

(b) *Safeguarding of air and vacuum.* (1) Every bus, truck, and truck tractor, when equipped with air or vacuum reservoirs and regardless of date of manufacture, shall have such reservoirs so safeguarded by a check valve or equivalent device that in the event of failure or leakage in its connection to the source of compressed air or vacuum the air or vacuum supply in the reservoir shall not be depleted by the leak or failure.

(2) Means shall be provided to establish the check valve to be in working order. On and after May 1, 1966, means other than loosening or disconnection of any connection between the source of compressed air or vacuum and the check valve, and necessary tools for operation of such means, shall be provided to prove that the check valve is in working order. The means shall be readily accessible either from the front, side, or rear of the vehicle, or from the driver's compartment.

(i) In air brake systems with one reservoir, the means shall be a cock, valve, plug, or equivalent device arranged to vent a cavity having free communication with the connection between the check valve and the source of compressed air or vacuum.

(ii) Where air is delivered by a compressor into one tank or compartment (wet tank), and air for braking is taken directly from another tank or compartment (dry tank) only, with the required check valve between the tanks or compartments, a manually operated drain cock on the first (wet) tank or compartment will serve as a means herein required if it conforms to the requirements herein.

(iii) In vacuum systems stopping the engine will serve as the required means, the system remaining evacuated as indicated by the vacuum gauge.

(c) *Application.* This section applies to passenger-carrying vehicles each having a seating capacity of nine or more persons, driver included, and to all property-carrying vehicles and combinations of property-carrying vehicles having three or more axles.

§ 393.51 Warning devices and gauges.

(a) *Air brakes as provided in paragraph (d) of this section.* Every bus, truck, and truck tractor using compressed air for the operation of its own brakes or the brakes on any towed vehicle shall be equipped with a warning signal readily audible or visible to the driver, which will give continuous warning at all pressures below a fixed pressure not less than one-half of the compressor governor cut-out pressure. In addition, each such vehicle shall be equipped with a pressure gauge which will indicate to the driver the pressure in pounds per square inch available for braking.

(b) *Vacuum brakes as provided in paragraph (d) of this section.* Every bus, truck, and truck tractor using vacuum for the operation of its own brakes or the brakes on any towed vehicle shall be equipped with a warning signal readily audible or visible to the driver, which will give continuous warning at any time the vacuum in the vehicle's supply reservoir is less than 8 inches of mercury. In addition, each such vehicle shall be equipped with a vacuum gauge which will indicate to the driver the vacuum in inches of mercury available for braking.

(c) *Maintenance.* The warning devices and gauges required by this section shall be maintained in operative condition.

(d) *Application.* This section applies to passenger-carrying vehicles each having a seating capacity of nine or more persons, driver included, and to all property-carrying vehicles and combinations of property-carrying vehicles having three or more axles.

§ 393.52 Brake performance.

(a) Every motor vehicle and combination of vehicles, at all times and under all conditions of loading, upon application of the service brake, shall be capable of:

(1) Developing a braking force that is not less than the percentage of its gross weight tabulated in paragraph (b) of this section for its classification.

(2) Decelerating to a stop from not more than 20 miles per hour at not less than the feet per second per second tabulated in paragraph (b) of this section for its classification, and

(3) Stopping from a speed of 20 miles per hour in not more than the distance tabulated in paragraph (b) of this section for its classification, such distance to be measured from the point at which movement of the service brake pedal or control begins.

Tests for deceleration and stopping distance shall be made on a substantially level, dry, smooth, hard surface that is free from loose material.

(b) Classification of vehicles:

	Braking force as a percentage of gross vehicle or combination weight	Deceleration in feet per second per second	Brake system application and braking distance in feet from an initial speed of 20 m.p.h.
	Percent		
(1) Passenger vehicles with a seating capacity of 10 people or less including driver, not having a manufacturer's gross weight rating	52.8	17	25
(2) Single unit vehicles with a manufacturer's gross weight rating of 10,000 pounds or less	43.5	14	30
(3) Single unit vehicles with a manufacturer's gross weight rating of more than 10,000 lbs	43.5	14	40
(4) Combinations of a two-axle towing vehicle and a trailer with a gross trailer weight of 3,000 pounds or less	43.5	14	40
(5) Buses, regardless of the number of axles, not having a manufacturer's gross weight rating	43.5	14	40
(6) All combinations of vehicles in driveaway or towaway operations	43.5	14	40
(7) All other vehicles and combinations of vehicles	43.5	14	50

NOTE: (a) There is a definite mathematical relationship between the figures in columns 2 and 3. If the decelerations set forth in column 3 are divided by 32.2 feet per second per second, the column 2 figures will be obtained. (For example, 17 divided by 32.2 gives 53.8 percent.) Column 2 is included in the tabulation because certain brake-testing devices utilize this factor.

(b) The decelerations as in column 3 are an indication of the effectiveness of the basic brakes, and as measured in practical brake testing are the maximum braking decelerations attained at some time during the stop.

This deceleration as measured in brake tests cannot be used to compute the values in column 4 because it is not sustained at the same rate over the entire period of the stop. The deceleration increases from zero to a maximum during a period of brake-system application and brake-force build-up. Also, other factors may cause the deceleration to decrease after reaching a maximum. The added distance which results because a maximum deceleration is not sustained is included in the figures in column 4 but is not indicated by the usual brake-testing devices for checking deceleration.

(c) The distances in column 4 and the deceleration in column 3 are not directly related. "Brake-system application and braking distance in feet" (column 4) is a definite measure of the overall effectiveness of the braking system, being the distance traveled between the point at which the driver starts to move the braking controls and the point at which the vehicle comes to rest. It includes distance traveled while the brakes are being applied and the distance traveled while the brakes are retarding the vehicle.

(d) The distance traveled during the period of brake-system application and brake-force build-up varies with vehicle

type, being negligible for many passenger cars and greatest for combinations of commercial vehicles. This fact accounts for the variation from 25 to 50 feet in the numerical values in column 4 for the various classes of vehicles.

(e) The deceleration requirement in column 3 is the same for all classifications of vehicles except for passenger vehicles, not including buses, because brakes on vehicles in the second through the seventh classifications are all capable with reasonable maintenance of producing the designated deceleration as measured by brake-testing devices. A higher deceleration requirement is warranted for passenger vehicles in view of Bureau of Public Roads test data.

Subpart D—Glazing and Window Construction

§ 393.60 Glazing in specified openings.

(a) *Kind of glass.* Whenever glazing is used in the windshield, window, door, or any other opening into a bus, truck, or truck tractor, except vehicles engaged in armored car service, such glazing shall conform to the requirements contained in the "American Standard Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways, Z26.1A–1964", of the American Standards Association, Inc., 10 East 40th Street, New York, N.Y. 10016: *Provided, however,* That glazing conforming to ASA Code Z26.1–1950 is acceptable for vehicles manufactured prior to January 1, 1966.

(b) *Windshield condition.* Every motor vehicle windshield shall be free of discoloration or other damage in that portion thereof extending upward from the height of the topmost portion of the steering wheel, but not including a 2 inch border at the top and a 1 inch border at each side of the windshield or each panel thereof, except that discoloration and damage as follows are allowable: (1) Coloring or tinting applied in manufacture, for reduction of glare; (2) any crack not over ¼-inch wide, if not intersected by any other crack; (3) any damaged area which can be covered by a disc ¾-inch in diameter, if not closer than 3 inches to any other such damaged area.

(c) *Use of vision-reducing matter.* No motor vehicle may be operated with any label, sticker, decalcomania, or other vision-reducing matter covering any portion of its windshield or windows at either side of the driver's compartment, except that stickers required by law may be affixed at the bottom of the windshield, provided no portion of any label, sticker, decalcomania, or other vision-reducing matter may extend upward more than 4½ inches from the bottom of such windshield.

§ 393.61 Window construction.

(a) *Windows in trucks and truck tractors.* Every truck and truck tractor, except vehicles engaged in armored car service, shall have, in addition to the area provided by the windshield, at least one window on each side of the driver's compartment, which window shall have sufficient area to contain either an ellipse having a major axis of 18 inches and a minor axis of 13 inches or an opening containing 200 square inches formed by a rectangle 13 inches by 17¾ inches with corner arcs of 6-inch maximum radius. The major axis of the ellipse and the long axis of the rectangle shall not make an angle of more than 45 degrees with the surface on which the unladen vehicle stands; however, if the cab is designed with a folding door or doors or with clear openings where doors or windows are customarily located, then no windows shall be required in such locations.

(b) *Bus windows.* On and after December 31, 1952, every bus, except buses having a seating capacity of eight or less persons shall have, in addition to the area provided by the windshield, adequate means of escape for passengers through windows. The adequacy of such means shall be determined in accordance with the following standards: For each seated passenger space provided, inclusive of the driver, there shall be at least 67 square inches of glazing if such glazing is not contained in a push-out window; or at least 67 square inches of free opening resulting from opening of a push-out type window. No area shall be included in this minimum prescribed area unless it will provide an unobstructed opening sufficient to contain an ellipse having a major axis of 18 inches and a minor axis of 13 inches or an opening containing 200 square inches formed by a rectangle 13 inches by 17¾ inches with corner arcs of 6-inch maximum radius. The major axis of the ellipse and the long axis of the rectangle shall make an angle of not more than 45 degrees with the surface on which the unladen vehicle stands. The area shall be measured either by removal of the glazing if not of the push-out type or of the movable sash if of the push-out type, and it shall be either glazed with laminated safety glass or comply with paragraph (c) of this section. No less than 40 percent of such prescribed glazing or opening shall be on one side of any bus.

(c) *Push-out window requirements.* Every glazed opening in a bus, except buses having a seating capacity of eight or less persons, used to satisfy the requirements of paragraph (b) of this section, if not glazed with laminated safety glass, shall have a frame or sash so designed, constructed, and maintained that it will yield outwardly to provide the required free opening when subjected to the drop test specified in Test 25 of the American Standard Safety Code referred to in § 393.60. The height of drop required to open such push-out windows shall not exceed the height of drop required to break the glass in the same window when glazed with the type of laminated glass specified in Test 25 of the Code. The sash for such windows shall be constructed of such material and be of such design and construction as to be continuously capable of complying with the above requirement. Such windows shall not be secured by latches, locks, or similar fastening devices, if such devices, when fastened, will require a greater effort to push out the window than is above required.

§ 393.62 Window obstructions.

Windows, if otherwise capable of complying with § 393.61 (a) and (b), shall not be obstructed by bars or other such means located either inside or outside such windows such as would hinder the escape of occupants unless such bars or other such means are so constructed as to provide a clear opening, at least equal to the opening provided by the window to which it is adjacent, when subjected to the same test specified in § 393.61(c). The point of application of such test force shall be such as will be most likely to result in the removal of the obstruction.

§ 393.63 Windows, markings.

Each push-out window and any other escape window glazed with laminated safety glass in every bus, except buses having a seating capacity of eight or less persons, shall be identified as such by clearly legible and visible signs, lettering or decalcomania. Such marking shall include appropriate wording to indicate that it is an escape window and also the method to be used for obtaining emergency exit.

Subpart E—Fuel Systems

§ 393.65 Fuel systems.

(a) *Fuel container location.* No part of any fuel tank or container or intake pipe shall project beyond the overall width of any motor vehicle upon which it is mounted. No part of any fuel tank shall be located forward of the front axle of the power unit upon which it is located, except that this requirement shall not apply to trucks manufactured prior to September 30, 1953, which have a total fuel capacity of less than 20 gallons, nor shall fuel be supplied to the engine of a bus, truck, or truck tractor from a fuel tank or container located on a semitrailer or full trailer.

(b) *Fuel container on bus.* No part of any fuel tank or container or intake pipe shall be located within or above the passenger-carrying portion of any bus unless securely sealed off from such compartment by means of a substantial metal cover. Except for buses having a seating capacity of eight or less persons and except those being transported in driveaway-towaway operations, the fuel containers, including intake pipes, caps, and vents on every bus, the date of manufacture of which is subsequent to September 30, 1953, shall be so designed that, in the event of overturn, the fuel will not be spilled at a rate in excess of 1 ounce per minute.

(c) *Gravity or syphon feed prohibited.* No fuel system on a motor vehicle shall be so constructed as to permit gravity or syphon feed direct to the carburetor or injector.

(d) *Selector valves.* If a motor vehicle is equipped with a selector control valve for fuel feed from two or more tanks, such valve shall be installed so that either (1) it is in normal reach of the driver so that he can readily operate it without taking his eyes from the road or moving from his customary driving position, or (2) the driver must stop the

vehicle and leave his seat in order to operate the valve.

(e) *Liquid fuel tank requirements.* (1) Every liquid fuel tank or container used for fuel for use on any motor vehicle shall be of substantial construction, free of leaks, securely attached to the motor vehicle, and shall have its filling opening provided with a plug or cap with means for securing it in place, such as by the use of properly fitted screw threads or bayonet type joint, and without leaks except as elsewhere provided in these regulations with regard to tank vents.

(2) Replacement side-mounted gasoline tanks, the date of manufacture of which is subsequent to November 30, 1953, on every motor vehicle, and side-mounted gasoline tanks on every motor vehicle, the date of manufacture of which is subsequent to November 30, 1953, shall comply with the requirements of paragraphs (f) to (k) inclusive, of this section.

(3) Replacement gasoline tanks, of the other than side-mounted type, the date of manufacture of which is subsequent to November 30, 1953, unless constructed in conformity with the original tank on the motor vehicle, shall comply with the requirements of paragraphs (f) and (i) of this section. Other than side-mounted gasoline tanks on every truck or truck tractor, the date of manufacture of which is subsequent to November 30, 1953, shall comply with the requirements of paragraphs (f) and (i) of this section.

(f) *Liquid fuel tank construction*—(1) *Material.* Material used in the construction of the tank and its fittings shall be suitable for the purpose intended.

(2) *Joints.* Joints of the tank body shall be closed only by arc, gas, seam, or spot welding, brazing, or silver soldering.

(3) *Fittings.* The tank shall be provided with suitable flanges or spuds for the assembly of all fittings.

(4) *Threads.* Threads on all fittings shall be American (National) Standard Taper Pipe Thread or SAE Standard[1] Short Dryseal Taper Pipe Thread except that straight (nontapered) threads may be used on fittings having integral flanges and using gaskets for sealing. There shall not be less than four full threads in engagement in any fitting.

(5) *Drains and bottom fittings.* Drains and other bottom fittings shall not extend more than three-quarter inch below the lowest part of the tank and shall be designed or guarded to minimize their being torn loose. All drain fittings shall be so designed and located as to permit complete drainage. The drain shall be located in a suitable flange or spud.

(6) *Fuel discharge line.* The fitting through which the fuel is drawn from the tank shall be located above the normal full line of the tank.

(7) *Excess flow valve.* When pressure devices are used to force fuel from the tank, means shall be provided to prevent the continued flow of fuel in the event the fuel feed line is broken.

[1] See footnote 1 to § 393.24(c).

(8) *Fill-pipe design.* The fill-pipe shall be designed and located so as to minimize the probability of its being torn loose in the event of an accident. The fill-pipe and vents on any fuel tank having a fuel capacity in excess of 25 gallons shall be so designed and constructed as to permit filling at a rate of at least 20 gallons per minute without spillage.

(9) *Air vent.* Every fuel tank shall be equipped with an air vent of a nonspill type (ball check or equivalent). The air vent may be mounted separately or combined with the filler cap or safety vent.

(10) *Safety vents.* (i) Side-mounted fuel tanks having a fuel capacity in excess of 25 gallons shall be provided with a fusible safety vent or vents which shall be so designed as to limit the pressure rise in the tank under any fire condition to a maximum of 50 pounds per square inch gage. The vent area shall be sufficient to prevent a rise in pressure in the tank of more than 10 percent of the release pressure of the safety vent or vents when the tank is subjected to a fire of any magnitude. If but one fusible safety vent is provided, it shall be located in the top of the tank; if more than one fusible safety vent is provided at least one shall be in the top of the tank.

(ii) All fuel tanks having a fuel capacity in excess of 25 gallons shall be provided with means of relieving pressure in the tank due to fire before such pressure would result in the failure of the body, seams, or any bottom opening in the tank.

(g) *Liquid fuel tank capacity markings.* The tank shall be marked with its liquid capacity and shall be provided with means to indicate that it shall not be filled to more than 95 percent of its total capacity.

(h) *Liquid fuel tank identity markings.* Each tank shall be marked to identify its manufacturer and to indicate the approximate date of manufacture by lot number or otherwise.

(i) *Liquid fuel tank installation*—(1) *General requirement.* The tank shall be mounted in accordance with the best commercial practice.

(2) *Location of fill-pipe.* The nozzle opening in the fill-pipe shall be outside the cab or body and must be so located as to minimize the likelihood of spillage of fuel during the filling process on the exhaust system or battery.

(j) *Liquid fuel tank tests*—(1) *Drop test on corner of tank.* The tank when filled with water equal in weight to that of its fuel capacity shall withstand without leakage a drop of 30 feet falling so as to strike squarely on one corner on concrete or equivalent surface which shall not rupture under the impact. The fill-pipe and cap, fuel gauge sending device, and the air intake and safety vents shall not leak more than 1 ounce of water per minute as a result of this test.

(2) *Drop test on fill-pipe.* The tank when filled with water equal in weight to that of its fuel capacity shall withstand without leakage a drop of 10 feet falling so as to strike squarely on the fill-pipe on concrete or equivalent surface which shall not rupture under the impact. The fill-pipe or cap shall not leak more than 1 ounce of water per minute as a result of this test.

(3) *Safety vent test.* The safety vent, or vents, shall limit the rise in internal pressure in the tank to a maximum of 50 pounds per square inch guage when the tank is filled to three-fourths of rated capacity with standard fuel and placed in inverted position with the fuel feed outlet connection plugged when an enveloping flame is applied to the tank with sufficient intensity to produce an internal fuel temperature rise of 6° to 8° F per minute starting from a fuel temperature of 50° to 80° F. Neither the tank, fill-pipe, fuel gauge, air intake vent, nor any other opening except blown fusible plugs shall leak more than 1 ounce of fuel per minute after having been subjected to these conditions. Other types of tests or calculations may be employed to determine compliance with this requirement if a comparable result is obtained.

(4) *Rupture test.* The tank and all appurtenances including the fill-pipe, cap, fuel gauge, and air intake vent shall withstand without rupture an internal hydrostatic pressure of 150 percent of the maximum at which the safety vent is required to release.

(5) *Spillage test.* At ordinary room temperature the tank when filled to capacity with its normal fuel and turned through an angle of 150° from its normal position, with outlet pipe plugged, shall not spill or leak fuel at a rate greater than 1 ounce per minute. The fill-pipe, cap, fuel gauge outlet, air intake vent, safety vent, and any other openings shall withstand this test.

(k) *Liquid fuel tank certification.* Every side-mounted gasoline fuel tank designed and constructed to comply with these requirements shall be plainly and permanently marked with the date of manufacture and a certification of the manufacturer that it complies with such requirements. The certification shall contain the words "Meets FHWA requirements—side-mounted—gasoline", or words of similar meaning.

§ 393.66 Liquefied petroleum gas fuel systems.

Every motor vehicle utilizing liquefied petroleum gas for any purpose shall be equipped with a fuel system, being utilized for such purpose, which complies with Division IV, June 1959 edition of the "Standards for the Storage and Handling of Liquefied Petroleum Gas" of the National Fire Protection Association, 60 Batterymarch Street, Boston, Massachusetts 02110: *Provided, however,* That such fuel systems installed on motor vehicles prior to Dec. 31, 1962, shall comply with the "standards for the Storage and Handling of Liquefied Petroleum Gas" of the National Fire Protection Association, as published in the 1951 edition, or such subsequent edition of the "Standards for the Storage and Handling of Liquefied Petroleum

Gas" of the National Fire Protection Association, in effect at the time of such installation: *Provided further, however,* That in any case compliance with the 1959 edition shall be deemed to be permissible. This section, in every case, requires the marking of the container in such fuel system to indicate compliance with the Standard as provided herein.

Subpart F—Coupling Devices and Towing Methods

§ 393.70 Coupling devices and towing methods, except for driveaway-towaway operations.

(a) *Fifth wheel mounting.* The lower half of every fifth wheel mounted on any truck tractor or dolly shall be securely affixed to the frame thereof by U-bolts of adequate size, securely tightened, or by other means providing at least equivalent security. Such U-bolts shall not be of welded construction. The installation shall be such as not to cause cracking, warping, or deformation of the frame. Adequate means shall be provided positively to prevent the shifting of the lower half of a fifth wheel on the frame to which it is attached.

(b) *Fifth wheel parts, securing.* The upper half of every fifth wheel shall be fastened to the motor vehicle with at least the security required for the securing of the lower half to a truck tractor or dolly.

(c) *Fifth wheel, locking.* Locking means shall be provided in every fifth wheel mechanism, including adapters when used, so that the upper and lower halves may not be separated without the operation of a positive manual release. A release mechanism operated by the driver from the cab shall be deemed to meet this requirement. On fifth wheels designed and constructed as to be readily separable, the fifth wheel locking devices shall apply automatically on coupling for any motor vehicle the date of manufacture of which is subsequent to December 31, 1952.

(d) *Tow-bar.* Every full trailer shall be equipped with a tow-bar and means of attaching the tow-bar to the towing and towed units which shall be structurally adequate for any weight drawn, properly and securely mounted, without excessive slack but with sufficient play to allow for universal action of the connection, and provided with a suitable locking means to prevent accidental separation of the towed and towing motor vehicles. The mounting of the trailer hitch (pintle-eye or equivalent mechanism) on the towing motor vehicle shall include sufficient reinforcement or bracing of the frame to provide sufficient strength and rigidity and to prevent undue distortion of the frame.

(e) *Tracking.* Coupling devices shall be so designed, constructed, and installed, and the vehicles in the combination shall be so designed and constructed, as to insure that any motor vehicle or motor vehicles being towed on level, smooth, paved surface will follow in the path of the towing vehicle without shifting or swerving from side to side over three inches to each side of the path of the towing vehicle when it is moving in a straight line.

(f) *Requirements for safety chains or cables.* Safety chains or cables shall comply with the following requirements:

(1) Every full trailer and every converter dolly used to convert a semitrailer to a full trailer shall be coupled with one or more safety chains or cables to the frame, or to an extension of the frame, of the motor vehicle by which it is towed. Attachment of these chains or cables to the pintle hook or to any other device on the towing vehicle to which the tow-bar is attached will not meet this requirement: *Provided, however,* That a separate place of attachment independent of the pintle hook on a pintle hook forging or casting may be used to attach the safety chains or cables to the towing vehicle.

(2) Safety chains or cables shall have no more slack than is necessary to permit proper turning.

(3) Each chain or cable and each means of attachment shall have an ultimate strength at least equal to the gross weight of the vehicle or vehicles being towed.

(4) Chains or cables shall be so connected to the towed and towing vehicle and to the tow-bar as to prevent the tow-bar from dropping to the ground in the event the tow-bar fails or becomes disconnected.

(5) Every full trailer and every converter dolly with a hinged tow-bar shall be equipped with two safety chains or cables, or a bride arrangement of a single chain or cable, attached to its frame or axle at two points as far apart as the configuration of the frame or axle permits. Such chains or cables shall be either two separate pieces, each equipped with a hook or other means for attachment to the towing vehicle, or a single piece leading along each side of the tow-bar from the two points of attachment on the towed vehicle and arranged into a bridle with a single means of attachment to be connected to the towing vehicle. When a single length of cable is used a thimble and twin-base cable clamps shall be used to form the forward bridle eye. The hook or other means of attachment to the towing vehicle shall be secured to the chains or cables in a fixed position.

(6) Converter dollies with solid tongues and without hinged tow-bars or other swivels between the fifth wheel mounting and the attachment point of the tongue eye or other hitch device may be equipped with either one or two safety chains or cables: *Provided,* That if only one chain or cable is used, it shall be in line with the centerline of the trailer tongue. The point of attachment of these chains or cables to such solid tongue converter dollies is optional: *Provided,* only that such attachment is to the rear of the attachment of the tongue eye or other hitch device.

(7) Where two safety chains or cables are used and attached to the towing vehicle at separate points, the points of attachment on the towing vehicle shall be located equally distant from, and on opposite sides of, the centerline of the towing vehicle. Where two chains or cables are attached to the same point on the towing vehicle, and where a bridle or a single chain or cable is used, the point of attachment must be on the centerline of the towing vehicle.

(g) *Location of lower half of fifth wheel.* The lower half of every fifth wheel shall be so located that, for any condition of loading, the relationship of position of king pin to the rear axle or axles of the towing motor vehicle results in proper distribution of the total gross weight of the motor vehicles to the axles and does not unduly interfere with the steering, braking, or maneuvering of the towing motor vehicle, or otherwise contribute to unsafe operation of the motor vehicles comprising the combination.

(h) *Location of upper half of fifth wheel.* The upper half of every fifth wheel shall be so located as to accomplish proper distribution of weight to the axles and safe movement of the combination of motor vehicles in all turning maneuvers.

§ 393.71 Coupling devices and towing methods, driveaway-towaway operations.

(a) *Number in combination.* (1) No more than three saddle-mounts may be used in any combination.

(2) No more than one tow-bar may be used in any combination.

(3) When motor vehicles are towed by means of triple saddle-mounts, the towed vehicles shall have brakes acting on all wheels which are in contact with the roadway.

(b) *Carrying vehicles on towing vehicle.* (1) When adequately and securely attached by means equivalent in security to that provided in paragraph (j) (2) of this section, a motor vehicle or motor vehicles may be full-mounted on the structure of a towing vehicle engaged in any driveaway-towaway operation.

(2) No motor vehicle or motor vehicles may be full-mounted on a towing vehicle unless the relationship of such full-mounted vehicles to the rear axle or axles results in proper distribution of the total gross weight of the vehicles and does not unduly interfere with the steering, braking, or maneuvering of the towing vehicle, or otherwise contribute to the unsafe operation of the vehicles comprising the combination.

(c) *Carrying vehicles on towed vehicles.* (1) When adequately and securely attached by means equivalent in security to that provided in paragraph (j) (2) of this section, a motor vehicle or motor vehicles may be full-mounted on the structure of towed vehicles engaged in any driveaway-towaway operation.

(2) No motor vehicle shall be full-mounted on a motor vehicle towed by means of a tow-bar unless the towed vehicle is equipped with brakes and is provided with means for effective applica-

tion of brakes acting on all wheels and is towed on its own wheels.

(3) No motor vehicle or motor vehicles shall be full-mounted on a motor vehicle towed by means of a saddle-mount unless the center line of the kingpin or equivalent means of attachment of such towed vehicle shall be so located on the towing vehicle that the relationship to the rear axle or axles results in proper distribution of the total gross weight of the vehicles and does not unduly interfere with the steering, braking, or maneuvering of the towing vehicle or otherwise contribute to the unsafe operation of vehicles comprising the combination; and unless a perpendicular to the ground from the center of gravity of the full-mounted vehicles lies forward of the center line of the rear axle of the saddle-mounted vehicle.

(4) If a motor vehicle towed by means of a double saddle-mount has any vehicle full-mounted on it, such saddle-mounted vehicle shall at all times while so loaded have effective brakes acting on those wheels which are in contact with the roadway.

(d) *Bumper tow-bars on heavy vehicles prohibited.* Tow-bars of the type which depend upon the bumpers as a means of transmitting forces between the vehicles shall not be used to tow a motor vehicle weighing more than 5,000 pounds.

(e) *Front wheels of saddle-mounted vehicles restrained.* A motor vehicle towed by means of a saddle-mount shall have the motion of the front wheels restrained if under any condition of turning of such wheels they will project beyond the widest part of either the towed or towing vehicle.

(f) *Vehicles to be towed in forward position.* Unless the steering mechanism is adequately locked in a straight-forward position, all motor vehicles towed by means of a saddle-mount shall be towed with the front end mounted on the towing vehicle.

(g) *Means required for towing.* (1) No motor vehicle or motor vehicles shall be towed in driveaway-towaway operations by means other than tow-bar or saddle-mount connections which shall meet the requirements of this section.

(2) For the purpose of the regulations of this part:

(i) Coupling devices such as those used for towing house trailers and employing ball and socket connections shall be considered as tow-bars.

(ii) Motor vehicles or parts of motor vehicles adequately, securely, and rigidly attached by devices meeting the requirements of paragraph (n) of this section shall be considered as one vehicle in any position in any combination.

(h) *Requirements for tow-bars.* Tow-bars shall comply with the following requirements:

(1) *Tow-bars, structural adequacy and mounting.* Every tow-bar shall be structurally adequate and properly installed and maintained. To insure that it is structurally adequate, it must, at least, meet the requirements of the following table:

Gross weight of towed vehicle (pounds) [1]	Longitudinal strength in tension and compression [2]		Strength as a beam (in any direction concentrated load at center) [2 3]
	All tow-bars	New tow-bars acquired and used by a motor carrier after Sept. 30, 1948	
	Pounds	*Pounds*	*Pounds*
Less than 5,000	3,000	6,500	3,000
5,000 and over, Less than 10,000	6,000	(1)	(1)
10,000 and over, Less than 15,000	9,000	(1)	(1)

[1] The required strength of tow-bars for towed vehicles of 15,000 pounds and over gross weight and of new tow-bars acquired and used after Sept. 30, 1948, for towed vehicles of 5,000 pounds and over gross weight shall be computed by means of the following formulae: Longitudinal strength=gross weight of towed vehicle x 1.3. Strength as a beam=gross weight of towed vehicle x 0.6.

[2] In testing, the whole unit shall be tested with all clamps, joints, and pins so mounted and fastened as to approximate conditions of actual operation.

[3] This test shall be applicable only to tow-bars which are, in normal operation, subjected to a bending moment such as tow-bars for house trailers.

(2) *Tow-bars, jointed.* The tow-bar shall be so constructed as to freely permit motion in both horizontal and vertical planes between the towed and towing vehicles. The means used to provide the motion shall be such as to prohibit the transmission of stresses under normal operation between the towed and towing vehicles, except along the longitudinal axis of the tongue or tongues.

(3) *Tow-bar fastenings.* The means used to transmit the stresses to the chassis or frames of the towed and towing vehicles may be either temporary structures or bumpers or other integral parts of the vehicles: *Provided, however,* That the means used shall be so constructed, installed, and maintained that, when tested as an assembly, failure in such members shall not occur when the weakest new tow-bar which is permissible under paragraph (h) (1) of this section is subjected to the tests given therein.

(4) *Means of adjusting length.* On tow-bars, adjustable as to length, the means used to make such adjustment shall fit tightly and not result in any slackness or permit the tow-bar to bend. With the tow-bar supported rigidly at both ends and with a load of 50 pounds at the center, the sag, measured at the center, in any direction shall not exceed 0.25 inch under any condition of adjustment as to length.

(5) *Method of clamping.* Adequate means shall be provided for securely fastening the tow-bar to the towed and towing vehicles.

(6) *Tow-bar connection to steering mechanism.* The tow-bar shall be provided with suitable means of attachment to and actuation of the steering mechanism, if any, of the towed vehicle. The attachment shall provide for sufficient angularity of movement of the front wheels of the towed vehicle so that it may follow substantially in the path of the towing vehicle without cramping the tow-bar. The tow-bar shall be provided with suitable joints to permit such movement.

(7) *Tracking.* The tow-bar shall be so designed, constructed, maintained, and mounted as to cause the towed vehicle to follow substantially in the path of the towing vehicle. Tow-bars of such design or in such condition as to permit the towed vehicle to deviate more than 3 inches to either side of the path of a towing vehicle moving in a straight line are prohibited.

(8) *Passenger-car trailer couplings.* Trailer couplings used for driveaway-towaway operations of passenger car trailers shall comply with the SAE Recommended Practice [1] "Passenger Car Trailer Couplings."

(9) *Marking tow-bars.* Every tow-bar acquired and used in drive-away-tow-away operations by a motor carrier shall be plainly marked with the following certification of the manufacturer thereof (or words of equivalent meaning):

This tow-bar complies with the requirements of the Federal Highway Administration for (maximum gross weight for which tow-bar is manufactured) vehicles.
Manufactured _____
(Month and year)
by _____
(Name of manufacturer)

(10) *Safety chains and cables.* (i) The towed vehicle shall be connected to the towing vehicle by means of two safety chains or cables. The tensile strength of such chains or cables and their means of attachment to the vehicles shall be at least equivalent to the corresponding longitudinal strength for tow-bars required in the table of paragraph (h) (1) of this section. The required strength shall be the combined strength of the combination of chains and cables.

(ii) The chains or cables shall be crossed and attached to the vehicles near the points of bumper attachments to the chassis of such vehicles. The length of chain used shall be no more than necessary to permit free turning of the vehicles. The chains shall be attached to the tow-bar at the point of crossing or as close thereto as is practicable.

(i) *Saddle-mount definitions.* The following terms, when used in this part, mean:

(1) *Saddle-mount.* "Saddle-mount" means a device, designed and constructed as to be readily demountable, used in driveaway-towaway operations to perform the functions of a conventional fifth wheel.

(2) *Upper-half.* "Upper-half" of a "saddle-mount" means that part of the device which is securely attached to the towed vehicle and maintains a fixed position relative thereto, but does not include the "king-pin."

(3) *Lower-half.* "Lower-half" of a "saddle-mount" means that part of the

[1] See footnote 1 to § 393.24(c).

device which is securely attached to the towing vehicle and maintains a fixed position relative thereto but does not include the "king-pin."

(4) *King-pin.* "King-pin" means that device which is used to connect the "upper-half" to the "lower-half" in such manner as to permit relative movement in a horizontal plane between the towed and towing vehicles.

(j) *Requirements for upper-half of saddle-mounts.* The upper-half of any saddle-mount shall comply with the following requirements:

(1) *Upper-half connection to towed vehicle.* The upper-half shall be securely attached to the frame or axle of the towed vehicle by means of U-bolts or other means providing at least equivalent security.

(2) *U-bolts or other attachments.* U-bolts used to attach the upper half to the towed vehicle shall be made of steel rod, free of defects, so shaped as to avoid at any point a radius of less than 1 inch: *Provided, however,* That a lesser radius may be utilized if the U-bolt is so fabricated as not to cause more than 5 percent reduction in cross-sectional area at points of curvature, in which latter event the minimum radius shall be one-sixteenth inch. U-bolts shall have a diameter not less than required by the following table:

DIAMETER OF U-BOLTS IN INCHES

Weight in pounds of heaviest towed vehicle	Double or triple saddle-mount			
	Front mount	Middle or front mount	Rear mount	Single saddle-mount [1]
Up to 5,000	0.625	0.5625	0.500	0.500
5,000 and over	0.6875	0.625	0.5625	0.5625

[1] The total weight of all the vehicles being towed shall govern. If other devices are used to accomplish the same purposes as U-bolts they shall have at least equivalent strength of U-bolts made of mild steel. Cast iron shall not be used for clamps or any other holding devices.

(3) *U-bolts and points of support, location.* The distance between the most widely separated U-bolts shall not be less than 9 inches. The distance between the widely separated points where the upper-half supports the towed vehicle shall not be less than 9 inches, except that saddle-mounts employing ball and socket joints shall employ a device which clamps the axle of the towed vehicle throughout a length of not less than 5 inches.

(4) *Cradle-type upper-halves, specifications.* Upper-halves of the cradle-type using vertical members to restrain the towed vehicle from relative movement in the direction of motion of the vehicles shall be substantially constructed and adequate for the purpose. Such cradle-mounts shall be equipped with at least one bolt or equivalent means to provide against relative vertical movement between the upper-half and the towed vehicle. Bolts, if used, shall be at least one-half inch in diameter. Devices using equivalent means shall have at least equivalent strength. The means used to provide against relative vertical motion between the upper-half and the towed vehicle shall be such as not to permit a relative motion of over one-half inch. The distance between the most widely separated points of support between the upper-half and the towed vehicle shall be at least 9 inches.

(5) *Lateral movement of towed vehicle.* (i) Towed vehicles having a straight axle or an axle having a drop of less than 3 inches, unless the saddle-mount is constructed in accordance with paragraph (m)(2) of this section, shall be securely fastened by means of chains or cables to the upper-half so as to insure against relative lateral motion between the towed vehicle and the upper-half. The chains or cables shall be at least 3/16-inch diameter and secured by bolts of at least equal diameter.

(ii) Towed vehicles with an axle with a drop of 3 inches or more, or connected by a saddle-mount constructed in accordance with paragraph (m)(2) of this section, need not be restrained by chains or cables provided that the upper-half is so designed as to provide against such relative motion.

(iii) Chains or cables shall not be required if the upper-half is so designed as positively to provide against lateral movement of the axle.

(k) *Requirements for lower half of saddle-mounts.* The lower half of any saddle-mount shall comply with the following requirements:

(1) *U-bolts or other attachments.* U-bolts used to attach the lower half to the towing vehicle shall be made of steel rod, free of defects, so shaped as to avoid at any point a radius of less than 1 inch: *Provided, however,* That a lesser radius may be utilized if the U-bolt is so fabricated as not to cause more than 5 percent reduction in cross-sectional area at points of curvature, in which latter event the minimum radius shall be one-sixteenth inch. U-bolts shall have a total cross-sectional area not less than as required by the following table:

TOTAL CROSS-SECTIONAL AREA OF U-BOLTS IN SQUARE INCHES

Weight in pounds of heaviest towed vehicle	Double or triple saddle-mount			
	Front mount	Middle or front mount	Rear mount	Single saddle-mount [1]
Up to 5,000	1.2	1.0	0.8	0.8
5,000 and over	1.4	1.2	1.0	1.0

[1] The total weight of all the vehicles being towed shall govern. If other devices are used to accomplish the same purposes as U-bolts they shall have at least equivalent strength of U-bolts made of mild steel. Cast iron shall not be used for clamps or any other holding devices.

(2) *Shifting.* Adequate provision shall be made by design and installation to provide against relative movement between the lower-half and the towing vehicle especially during periods of rapid acceleration and deceleration. To insure against shifting, designs of the tripod type shall be equipped with adequate and securely fastened hold-back chains or similar devices.

(3) *Swaying.* (i) Adequate provision shall be made by design and installation to provide against swaying or lateral movement of the towed vehicle relative to the towing vehicle. To insure against swaying, lower-halves designed with cross-members attached to but separable from vertical members shall have such cross-members fastened to the vertical members by at least two bolts on each side. Such bolts shall be of at least equivalent cross-sectional area as those required for U-bolts for the corresponding saddle-mount as given in the table in paragraph (k)(1) of this section. The minimum distance between the most widely separated points of support of the cross-member by the vertical member shall be three inches as measured in a direction parallel to the longitudinal axis of the towing vehicle.

(ii) The lower-half shall have a bearing surface on the frame of the towing vehicle of such dimensions that the pressure exerted by the lower-half upon the frame of the towing vehicle shall not exceed 200 pounds per square inch under any conditions of static loading. Hardwood blocks or blocks of other suitable material, such as hard rubber, aluminum or brakelining, if used between the lower half and the frame of the towing vehicle shall be at least ½ inch thick, 3 inches wide, and a combined length of 6 inches.

(iii) Under no condition shall the highest point of support of the towed vehicle by the upper-half be more than 24 inches, measured vertically, above the top of the frame of the towing vehicle, measured at the point where the lower-half rests on the towing vehicle.

(4) *Wood blocks.* (i) Hardwood blocks of good quality may be used to build up the height of the front end of the towed vehicle, provided that the total height of such wood blocks shall not exceed 8 inches and not over two separate pieces are placed upon each other to obtain such height; however, hardwood blocks, not over 4 in number, to a total height not to exceed 14 inches, may be used if the total cross-sectional area of the U-bolts used to attach the lower-half of the towing vehicle is at least 50 percent greater than that required by the table contained in paragraph (k)(1) of this section, or, if other devices are used in lieu of U-bolts, they shall provide for as great a resistance to bending as is provided by the larger U-bolts above prescribed.

(ii) Hardwood blocks must be at least 4 inches in width and the surfaces between blocks or block and lower-half or block and upper-half shall be planed and so installed and maintained as to minimize any tendency of the towed vehicle to sway or rock.

(5) *Cross-member, general requirements.* The cross-member, which is that part of the lower-half used to distribute the weight of the towed vehicle equally to

each member of the frame of the towing vehicle, if used, shall be structurally adequate and properly installed and maintained adequately to perform this function.

(6) *Cross-member, use of wood.* No materials, other than suitable metals, shall be used as the cross-member, and wood may not be used structurally in any manner that will result in its being subject to tensile stresses. Wood may be used in cross-members if supported throughout its length by suitable metal cross-members.

(7) *Lower half strength.* The lower half shall be capable of supporting the loads given in the following table. For the purpose of test, the saddle-mount shall be mounted as normally operated and the load applied through the upper half:

MINIMUM TEST LOAD IN POUNDS

Weight in pounds of heaviest towed vehicle	Double or triple saddle-mount			
	Front mount	Middle or front mount	Rear mount	Single saddle-mount [1]
Up to 5,000	15,000	10,000	5,000	5,000
5,000 and over	30,000	20,000	10,000	10,000

[1] The total weight of all the vehicles being towed shall govern.

(l) *Requirements for kingpins of saddle-mounts.* The kingpin of any saddle-mount shall comply with the following requirements:

(1) *Kingpin size.* (i) Kingpins shall be constructed of steel suitable for the purpose, free of defects, and having a diameter not less than required by the following table:

DIAMETER OF SOLID KINGPIN IN INCHES

Weight in pounds of heaviest towed vehicle	Double or triple saddle-mount							
	Front mount		Middle or front mount		Rear mount		Single saddle-mount [1]	
	Mild steel	H.T.S.[2]	Mild steel	H.T.S.[2]	Mild steel	H.T.S.[2]	Mild steel	H.T.S.[2]
Up to 5,000	1.125	1.000	1.000	0.875	0.875	0.750	0.875	0.750
5,000 and over	1.500	1.125	1.250	1.000	1.000	0.875	1.000	0.875

[1] The total weight of all the vehicles being towed shall govern.
[2] High-tensile steel is steel having a minimum ultimate strength of 65,000 pounds per square inch.

(ii) If a ball and socket joint is used in place of a kingpin, the diameter of the neck of the ball shall be at least equal to the diameter of the corresponding solid kingpin given in the above table. If hollow kingpins are used, the metallic cross-sectional area shall be at least equal to the cross-sectional area of the corresponding solid kingpin.

(2) *Kingpin fit.* If a kingpin bushing is not used, the king-pin shall fit snugly into the upper and lower-halves but shall not bind. Those portions of the upper or lower-halves in moving contact with the kingpin shall be smoothly machined with no rough or sharp edges. The bearing surface thus provided shall not be less in depth than the radius of the kingpin.

(3) *Kingpin bushing on saddle-mounts.* The kingpin of all new saddle-mounts acquired and used shall be snugly enclosed in a bushing at least along such length of the kingpin as may be in moving contact with either the upper or lower-halves. The bearing surface thus provided shall not be less in depth than the radius of the kingpin.

(4) *Kingpin to restrain vertical motion.* The kingpin shall be so designed and installed as to restrain the upper-half from moving in a vertical direction relative to the lower-half.

(m) *Additional requirements for saddle-mounts.* Saddle-mounts shall comply with the following requirements:

(1) *Bearing surface between upper and lower-halves.* The upper and lower-halves shall be so constructed and connected that the bearing surface between the two halves shall not be less than 16 square inches under any conditions of angularity between the towing and towed vehicles: *Provided, however,* That saddle-mounts using a ball and socket joint shall have a ball of such dimension that the static bearing load shall not exceed 800 pounds per square inch, based on the projected cross-sectional area of the ball: *And further provided,* That saddle-mounts having the upper-half supported by ball, taper, or roller-bearings shall not have such bearings loaded beyond the limits prescribed for such bearings by the manufacturer thereof. The upper-half shall rest evenly and smoothly upon the lower-half and the contact surfaces shall be lubricated and maintained so that there shall be a minimum of frictional resistance between the parts.

(2) *Saddle-mounts, angularity.* All saddle-mounts acquired and used shall provide for angularity between the towing and towed vehicles due to vertical curvatures of the highway. Such means shall not depend upon either the looseness or deformation of the parts of either the saddle-mount or the vehicles to provide for such angularity.

(3) *Tracking.* The saddle-mount shall be so designed, constructed, maintained, and installed that the towed vehicle or vehicles will follow substantially in the path of the towing vehicle without swerving. Towed vehicles shall not deviate more than 3 inches to either side of the path of the towing vehicle when moving in a straight line.

(4) *Prevention of frame bending.* Where necessary, provision shall be made to prevent the bending of the frame of the towing vehicle by insertion of suitable blocks inside the frame channel to prevent kinking. The saddle-mount shall not be so located as to cause deformation of the frame by reason of cantilever action.

(5) *Extension of frame.* No saddle-mount shall be located at a point to the rear of the frame of a towing vehicle.

(6) *Nuts, secured.* All nuts used on bolts, U-bolts, king-pins, or in any other part of the saddle-mount shall be secured against accidental disconnection by means of cotter-keys, lock-washers, double nuts, safety nuts, or equivalent means. Parts shall be so designed and installed that nuts shall be fully engaged.

(7) *Inspection of all parts.* The saddle-mount shall be so designed that it may be disassembled and each separate part inspected for worn, bent, cracked, broken, or missing parts.

(8) *Saddle-mounts, marking.* Every new saddle-mount acquired and used in driveaway-towaway operations by a motor carrier shall have the upper-half and the lower-half separately marked with the following certification of the manufacturer thereof (or words of equivalent meaning).

This saddle-mount complies with the requirements of the Federal Highway Administration for vehicles up to 5,000 pounds (or over 5,000 pounds):

Manufactured _____
(Month and year)

by _____
(Name of manufacturer)

(n) *Requirements for devices used to connect motor vehicles or parts of motor vehicles together to form one vehicle—*

(1) *Front axle attachment.* The front axle of one motor vehicle intended to be coupled with another vehicle as defined in paragraph (g)(2)(ii) of this section shall be attached with U-bolts meeting the requirements of paragraph (j)(2) of this section.

(2) *Rear axle attachment.* The rear axle of one vehicle shall be coupled to the frame of the other vehicle by means of a connecting device which when in place forms a rectangle. The device shall be composed of two pieces, top and bottom. The device shall be made of 4-inch by ½-inch steel bar bent to shape and shall have the corners reinforced with a plate at least 3 inches by ½ inch by 8 inches long. The device shall be bolted together with ¾-inch bolts and at least three shall be used on each side. Wood may be used as spacers to keep the frames apart and it shall be at least 4 inches square.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

Subpart G—Miscellaneous Parts and Accessories

§ 393.75 Tires.

(a) No motor vehicle shall be operated on tires which have been worn so smooth as to expose any tread fabric or which have any other defect likely to cause failure. No bus shall be operated on any tire which does not have tread configurations on that part of the tire which is in contact with the road sur-

face. No buses shall be operated with regrooved, recapped, or retreaded tires on the front wheels.

§ 393.76 Sleeper berths.

Every sleeper berth shall comply with the following requirements:

(a) *Ready exits.* The sleeper berth shall be so designed, constructed, and maintained as to provide the occupant, without the assistance of other persons, with at least two exits at opposite sides of the vehicle, each being at least 18 inches high and 21 inches wide: *Provided,* That if the berth space is part of the original cab or made part of the cab by remodeling of the cab, and has a doorway or opening at least 18 inches high and 36 inches wide between the berth and the driving seat, the requirement for two exits need not apply. It is further provided that the ready means of exit from sleeper berths into the driver's compartment, on sleeper berths which are installed on motor vehicles before December 31, 1962, shall have sufficient area to contain an ellipse having a major axis of 24 inches and a minor axis of 16 inches.

(b) *Equipment.* The sleeper berth shall be properly equipped for sleeping and shall be equipped with springs and a mattress or an innerspring or air mattress, or a cellular rubber mattress at least four inches in thickness and adequate bed-clothing and blankets. The sleeper berth shall be so constructed as to permit the ready removal of the mattress and bed-clothing for cleaning purposes.

(c) *Communication with driver.* Unless the sleeper berth is located within the driver's compartment or is provided with a direct entrance thereto means shall be provided to enable the occupant of the berth to communicate with the driver. Such means may include telephones, speaker tubes, buzzers, pull cords, or other mechanical or electrical means.

(d) *Size.* The sleeper berth shall be of such dimensions as to provide at least the following inside dimensions: 72 inches long measured on the center line of the longitudinal axis, 18 inches wide at its center, 18 inches deep at its center, measured from top of mattress. The sleeper berth shall be so constructed as not unduly to hinder the ready entrance or exit of the occupant.

(e) *Ventilation.* Sleeper berths shall be provided with louvers or other means of providing proper ventilation but shall be reasonably tight against dust and rain.

(f) *Protection against exhaust and fuel systems.* Sleeper berths shall not be so located as to permit the ready entrance of gases from the exhaust system. The sleeper berth shall not be so located as to be overheated or damaged by reason of its proximity to the exhaust system. The sleeper berth shall not be so located that defects in the fuel system would result in leakage on or in the sleeper berth.

(g) *Location limited.* No sleeper berth shall be located within the cargo space of a motor vehicle unless such berth is completely and securely compartmentized from the remainder of the cargo space. No sleeper berth shall be installed in or on any semitrailer or full trailer other than house trailers.

(h) *New vehicles, additional specifications.* Every sleeper berth installed in or on any truck or truck-tractor shall comply with the following requirements, in addition to those set forth in paragraphs (a) to (g) of this section:

(1) *Berth to be part of cab.* Every sleeper berth shall be located within the cab or be immediately adjacent therto, or be located within the cargo space of a truck. Such sleeper berth shall be securely fixed with relation to the cab and shall be provided with a direct and ready means of exit into the driver's compartment, which exit shall comply with the requirements of paragraph (a) of this section.

(2) *Berths, dimensions.* The sleeper berth shall be so constructed and maintained as to provide, at least, the following inside dimensions: 75 inches long measured on the centerline of the longitudinal axis, 21 inches wide and 21 inches deep measured from the top of the mattress, of generally rectangular shape, except that the horizontal corners and the roof corners may be rounded to radii not exceeding 10½ inches.

§ 393.77 Heaters.

On every motor vehicle, every heater shall comply with the following requirements:

(a) *Definition.* The term "heater" means any device or assembly of devices or appliances used to heat the interior of any motor vehicle.

(b) *Prohibited types of heaters.* The installation or use of the following types of heaters is prohibited:

(1) *Exhaust heaters.* Any type of exhaust heater in which the engine exhaust gases are conducted into or through any space occupied by persons or any heater which conducts engine compartment air into any such space.

(2) *Unenclosed flame heaters.* Any type of heater employing a flame which is not fully enclosed, except that such heaters are not prohibited when used for heating the cargo of tank motor vehicles.

(3) *Heaters permitting fuel leakage.* Any type of heater from the burner of which there could be spillage or leakage of fuel upon the tilting or overturning of the vehicle in which it is mounted.

(4) *Heaters permitting air contamination.* Any heater taking air, heated or to be heated, from the engine compartment or from direct contact with any portion of the exhaust system; or any heater taking air in ducts from the outside atmosphere to be conveyed through the engine compartment, unless said ducts are so constructed and installed as to prevent contamination of the air so conveyed by exhaust or engine compartment gases.

(5) *Solid fuel heaters except wood charcoal.* Any stove or other heater employing solid fuel except wood charcoal.

(6) *Portable heaters.* Portable heaters shall not be used in any space occupied by persons except the cargo space of motor vehicles which are being loaded or unloaded.

(c) *Heater specifications.* All heaters shall comply with the following specifications:

(1) *Heating elements, protection.* Every heater shall be so located or protected as to prevent contact therewith by occupants, unless the surface temperature of the protecting grilles or of any exposed portions of the heaters, inclusive of exhaust stacks, pipes, or conduits shall be lower than would cause contact burns. Adequate protection shall be afforded against igniting parts of the vehicle or burning occupants by direct radiation. Wood charcoal heaters shall be enclosed within a metal barrel, drum, or similar protective enclosure which enclosure shall be provided with a securely fastened cover.

(2) *Moving parts, guards.* Effective guards shall be provided for the protection of passengers or occupants against injury by fans, belts, or any other moving parts.

(3) *Heaters, secured.* Every heater and every heater enclosure shall be securely fastened to the vehicle in a substantial manner so as to provide against relative motion within the vehicle during normal usage or in the event the vehicle overturns. Every heater shall be so designed, constructed, and mounted as to minimize the likelihood of disassembly of any of its parts, including exhaust stacks, pipes, or conduits, upon overturn of the vehicle in or on which it is mounted. Wood charcoal heaters shall be secured against relative motion within the enclosure required by subparagraph (1) of this paragraph, and the enclosure shall be securely fastened to the motor vehicle.

(4) *Relative motion between fuel tank and heater.* When either in normal operation or in the event of overturn, there is or is likely to be relative motion between the fuel tank for a heater and the heater, or between either of such units and the fuel lines between them, a suitable means shall be provided at the point of greatest relative motion so as to allow this motion without causing failure of the fuel lines.

(5) *Operating controls to be protected.* On every bus, except buses having a seating capacity of eight or less persons, means shall be provided to prevent unauthorized persons from tampering with the operating controls. Such means may include remote control by the driver; installation of controls at inaccessible places; control of adjustments by key or keys; enclosure of controls in a locked space, locking of controls, or other means of accomplishing this purpose.

(6) *Heater hoses.* Hoses for all hot water and steam heater systems shall be specifically designed and constructed for that purpose.

(7) *Electrical apparatus.* Every heater employing any electrical apparatus shall be equipped with electrical conductors, switches, connectors, and other elec-

trical parts of ample current-carrying capacity to provide against overheating; any electric motor employed in any heater shall be of adequate size and so located that it will not be overheated; electrical circuits shall be provided with fuses and/or circuit breakers to provide against electrical overloading; and all electrical conductors employed in or leading to any heater shall be secured against dangling, chafing, and rubbing and shall have suitable protection against any other condition likely to produce short or open circuits.

NOTE: Electrical parts certified as proper for use by Underwriters' Laboratories, Inc., shall be deemed to comply with the foregoing requirements.

(8) *Storage battery caps.* If a separate storage battery is located within the personnel or cargo space, such battery shall be securely mounted and equipped with nonspill filler caps.

(9) *Combustion heater exhaust construction.* Every heater employing the combustion of oil, gas, liquefied petroleum gas, or any other combustible material shall be provided with substantial means of conducting the products of combustion to the outside of the vehicle: *Provided, however,* That this requirement shall not apply to heaters used solely to heat the cargo space of motor vehicles where such motor vehicles or heaters are equipped with means specifically designed and maintained so that the carbon monoxide concentration will never exceed 0.2 percent in the cargo space. The exhaust pipe, stack, or conduit if required shall be sufficiently substantial and so secured as to provide reasonable assurance against leakage or discharge of products of combustion within the vehicle and, if necessary, shall be so insulated as to make unlikely the burning or charring of parts of the vehicle by radiation or by direct contact. The place of discharge of the products of combustion to the atmosphere and the means of discharge of such products shall be such as to minimize the likelihood of their reentry into the vehicle under all operating conditions.

(10) *Combustion chamber construction.* The design and construction of any combustion-type heater except cargo space heaters permitted by the proviso of subparagraph (9) of this paragraph and unenclosed flame heaters used for heating cargo of tank motor vehicles shall be such as to provide against the leakage of products of combustion into air to be heated and circulated. The material employed in combustion chambers shall be such as to provide against leakage because of corrosion, oxidation, or other deterioration. Joints between combustion chambers and the air chambers with which they are in thermal and mechanical contact shall be so designed and constructed as to prevent leakage between the chambers and the materials employed in such joints shall have melting points substantially higher than the maximum temperatures likely to be attained at the points of jointure.

(11) *Heater fuel tank location.* Every bus, except those having a seating capacity of eight or less persons, with heaters of the combustion type shall have fuel tanks therefor located outside of and lower than the passenger space. When necessary, suitable protection shall be afforded by shielding or others means against the puncturing of any such tank or its connections by flying stones or other objects.

(12) *Heater, automatic fuel control.* Gravity or siphon feed shall not be permitted for heaters using liquid fuels. Heaters using liquid fuels shall be equipped with automatic means for shutting off the fuel or for reducing such flow of fuel to the smallest practicable magnitude, in the event of overturn of the vehicle. Heaters using liquefied petroleum gas or fuel shall have the fuel line equipped with automatic means at the source of supply for shutting off the fuel in the event of separation, breakage, or disconnection of any of the fuel lines between the supply source and the heater.

(13) *"Tell-tale" indicators.* Heaters subject to subparagraph (14) of this paragraph and not provided with automatic controls shall be provided with "tell-tale" means to indicate to the driver that the heater is properly functioning. This requirement shall not apply to heaters used solely for the cargo space in semitrailers or full trailers.

(14) *Shut-off control.* Automatic means, or manual means if the control is readily accessible to the driver without moving from the driver's seat, shall be provided to shut off the fuel and electrical supply in case of failure of the heater to function for any reason, or in case the heater should function improperly or overheat. This requirement shall not apply to wood charcoal heaters or to heaters used solely to heat the contents of cargo tank motor vehicles, but wood charcoal heaters must be provided with a controlled method of regulating the flow of combustion air.

(15) *Certification required.* Every combustion-type heater, except wood charcoal heaters, the date of manufacture of which is subsequent to December 31, 1952, and every wood charcoal heater, the date of manufacture of which is subsequent to September 1, 1953, shall be marked plainly to indicate the type of service for which such heater is designed and with a certification by the manufacturer that the heater meets the applicable requirements for such use. For example, "Meets I.C.C. Bus Heater Requirements," Meets I.C.C. Flue-Vented Cargo Space Heater Requirements," and after December 31, 1967, such certification shall read "Meets FHWA Bus Heater Requirements," "Meets FHWA Flue-Vented Cargo Space Heater Requirements," etc.

§ 393.78 Windshield wipers.

(a) Every bus, truck, and truck tractor, having a windshield, shall be equipped with at least two automatically-operating windshield wiper blades, one on each side of the centerline of the windshield, for cleaning rain, snow, or other moisture from the windshield and which shall be in such condition as to provide clear vision for the driver, unless one such blade be so arranged as to clean an area of the windshield extending to within 1 inch of the limit of vision through the windshield at each side: *Provided, however,* That in driveaway-towaway operations this section shall apply only to the driven vehicle: *And provided further,* That one windshield wiper blade will suffice under this section when such driven vehicle in driveaway-towaway operation constitutes part or all of the property being transported and has no provision for two such blades.

(b) Every bus, truck, and truck tractor, the date of manufacture of which is subsequent to June 30, 1953, which depends upon vacuum to operate the windshield wipers, shall be so constructed that the operation of the wipers will not be materially impaired by change in the intake manifold pressure.

§ 393.79 Defrosting device.

Every bus, truck, and truck tractor having a windshield, when operating under conditions such that ice, snow, or frost would be likely to collect on the outside of the windshield or condensation on the inside of the windshield, shall be equipped with a device or other means, not manually operated, for preventing or removing such obstructions to the driver's view: *Provided, however,* That this section shall not apply in driveaway-towaway operations when the driven vehicle is a part of the shipment being delivered.

§ 393.80 Rear-vision mirrors.

Every bus, truck, and truck-tractor shall be equipped with two rear-vision mirrors, one at each side firmly attached to the outside of the motor vehicle and so located as to reflect to the driver a view of the highway to the rear along both sides of the vehicle: *Provided, however,* That only one outside mirror shall be required, which shall be at the driver's side, on trucks which are so constructed that the driver has a view to the rear by means of an interior mirror: *And provided further,* That in driveaway-towaway operations the driven vehicle shall have at least one mirror furnishing a clear view to the rear.

§ 393.81 Horn.

Every bus, truck, truck-tractor, and every driven motor vehicle in driveaway-towaway operations shall be equipped with a horn and actuating elements which shall be in such condition as to give an adequate and reliable warning signal.

§ 393.82 Speedometer.

Every bus, truck, and truck-tractor shall be equipped with a speedometer indicating vehicle speed in miles per hour, which shall be operative with reasonable accuracy; however, this requirement shall not apply to any driven vehicle which is part of a shipment being delivered in a driveaway-towaway operation if such driven vehicle is equipped with an effective means of limiting its

maximum speed to 45 miles per hour, nor to any towed vehicle.

§ 393.83 Exhaust system location.

No part of the exhaust system of any motor vehicle shall be so located as would be likely to result in burning, charring, or damaging the electrical wiring, the fuel supply, or any combustible part of the motor vehicle. The exhaust system of every bus shall discharge to the atmosphere at or within 6 inches forward of the rearmost part of the bus. The exhaust system of every truck and truck-tractor shall discharge to the atmosphere at a location to the rear of the cab or, if the exhaust projects above the cab, at a location near the rear of the cab.

§ 393.84 Floors.

The flooring in all motor vehicles shall be substantially constructed, free of unnecessary holes and openings, and shall be maintained so as to minimize the entrance of fumes, exhaust gases, or fire. Floors shall not be permeated with oil or gasoline, and shall have the interior surface in good condition.

§ 393.85 Protection against shifting cargo.

Every motor vehicle carrying cargo, the nature of which is such that the shifting thereof due to rapid deceleration or accident would be likely to result in penetration or crushing of the driver's compartment must, in addition to having the load securely fastened or braced, be provided with header boards or similar devices of sufficient strength to prevent such shifting and penetration. All motor vehicles shall be so constructed or be equipped with adequate cargo fastening devices so that the load will not penetrate the cargo compartment wall when subjected to the maximum braking deceleration of which the vehicle is capable.

§ 393.86 Rear end protection.

Every motor vehicle, except truck-tractors, pole trailers, and vehicles engaged in driveaway-towaway operations, the date of manufacture of which is subsequent to December 31, 1952, which is so constructed that the body or the chassis assembly if without a body has a clearance at the rear end of more than 30 inches from the ground when empty, shall be provided with bumpers or devices serving similar purposes which shall be so constructed and located that: (a) The clearance between the effective bottom of the bumpers or devices and the ground shall not exceed 30 inches with the vehicle empty; (b) the maximum distance between the closest points between bumpers, or devices, if more than one is used, shall not exceed 24 inches; (c) the maximum transverse distance from the widest part of the motor vehicle at the rear to the bumper or device shall not exceed 18 inches; (d) the bumpers or devices shall be located not more than 24 inches forward of the extreme rear of the vehicle; and (e) the bumpers or devices shall be substantially constructed and firmly attached. Motor vehicles constructed and maintained so that the body, chassis, or other parts of the vehicle afford the rear end protection contemplated shall be deemed to be in compliance with this section.

§ 393.87 Flags on projecting loads.

Any motor vehicle having a load which extends beyond the sides or more than four feet beyond the rear shall have the extremities of the load marked with a red flag, not less than 12 inches square, at each point where a lamp is required by § 393.18.

§ 393.88 Television receivers.

Any motor vehicle equipped with a television viewer, screen or other means of visually receiving a television broadcast shall have the viewer or screen located in the motor vehicle at a point to the rear of the back of the driver's seat if such viewer or screen is in the same compartment as the driver and the viewer or screen shall be so located as not to be visible to the driver, while he is driving the motor vehicle. The operating controls for the television receiver shall be so located that the driver cannot operate them without leaving the driver's seat.

§ 393.89 Buses, driveshaft protection.

Any driveshaft extending lengthways under the floor of the passenger compartment of a bus, except buses having a seating capacity of eight or less persons, shall be protected by means of at least one guard or bracket at that end of the shaft which is provided with a sliding connection (spline or other such device) to prevent the whipping of the shaft in the event of failure thereof or of any of its component parts. A shaft contained within a torque tube shall not require any such device.

§ 393.90 Buses, standee line or bar.

Except as provided below, every bus, which is designed and constructed so as to allow standees, shall be plainly marked with a line of contrasting color at least 2 inches wide or equipped with some other means so as to indicate to any person that he is prohibited from occupying a space forward of a perpendicular plane drawn through the rear of the driver's seat and perpendicular to the longitudinal axis of the bus. Every bus shall have clearly posted at or near the front, a sign with letters at least one-half inch high stating that it is a violation of the Federal Highway Administration's regulations for a bus to be operated with persons occupying the prohibited area. The requirements of this section shall not apply to any bus being transported in driveaway-towaway operation or to any level of the bus other that the level in which the driver is located nor shall they be construed to prohibit any seated person from occupying permanent seats located in the prohibited area provided such seats are so located that persons sitting therein will not interfere with the driver's safe operation of the bus.

§ 393.91 Buses, aisle seats prohibited.

No bus, except buses having a seating capacity of eight or less persons, shall be equipped with aisle seats unless such seats are so designed and installed as to automatically fold and leave a clear aisle when they are unoccupied. No bus shall be operated if any seat therein is not securely fastened to the vehicle: *Provided, however,* That this section shall not apply with respect to any bus while engaged exclusively in the transportation of agricultural workers in charter transportation if such bus carries not to exceed eight passengers on temporary folding seats located in the center aisle of the bus: *And provided further,* That if such temporary seats are used, the carrier at the end of each month in which such transportation is provided, shall promptly file a report with the Director, Bureau of Motor Carrier Safety, Federal Highway Administration, Washington, D.C. 20591, containing the following information: (a) Number of bus trips during the month involving the use of such temporary seats; (b) Aggregate passenger miles of such trips; (c) Details concerning any injuries sustained by persons riding on the temporary seats; (d) Details of injuries sustained by others in same bus not riding the temporay seats.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 393.92 Buses, marking emergency doors.

Any bus equipped with an emergency door shall have such door clearly marked in letters at least 1 inch in height with the words "Emergency Door" or "Emergency Exit." Emergency doors shall also be identified by a red electric lamp readily visible to passengers which lamp shall be lighted at all times when lamps are required to be lighted by § 392.30.

Subpart H—Emergency Equipment

§ 393.95 Emergency equipment on all power units.

On every bus, truck, truck-tractor, and every driven vehicle in driveaway-towaway operation, there shall be:

(a) *Fire extinguisher.* At least one fire extinguisher with physical characteristics and fire extinguishing ability equivalent to or better than fire extinguishers which qualify under Classification B of the standards of Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago, Ill. 60611, in effect on June 30, 1951. The extinguisher shall utilize an extinguishing agent which does not need protection from freezing and shall be properly filled and securely mounted in a bracket. The minimum size shall be 1½-quart carbon tetrachloride type, 4-pound carbon dioxide type, 4-pound dry chemical type, or extinguishers of other types having extinguish capacity equivalent to any of these types. Two extinguishers may be carried to obtain the capacity required. It is further provided that a fire extinguisher marked and labeled as rated not less than 4 B:C under standards of Underwriters' Laboratories in effect on January 1, 1961, if equipped with a gauge or similar device to indicate whether or not the fire extinguisher is fully charged, or is designed and constructed so as to permit visual inspection to determine if it is fully charged may

be used in lieu of the fire extinguishers specified in this subparagraph, whether they meet the size requirements or not if all other pertinent requirements herein are met. This requirement shall not apply to any bus having a seating capacity of eight or less persons or any driveaway-towaway operation.

(b) [Reserved]

(c) *Spare fuses.* At least one spare fuse or other overload protective device, if the devices used are not of a reset type, for each kind and size used. In driveaway-towaway operations, spares located on any one of the vehicles will be deemed adequate.

(d) *Tire chains.* One set of tire chains for at least one driving wheel on each side, during the time when likely to encounter conditions requiring them, except that this requirement shall not apply to motor vehicles engaged in driveaway-towaway operations if such motor vehicles are not operated when such conditions exist.

(e) [Reserved]

(f) *Warning devices for stopped vehicles.* Except as provided in paragraph (g) of this section, one of the following combinations of warning devices:

(1) Three liquid burning emergency flares which satisfy the requirements of SAE Standard J597, "Liquid Burning Emergency Flares," and three fusees and two red flags; or

(2) Three electric emergency lanterns which satisfy the requirements of SAE Standard J596, "Electric Emergency Lanterns," and two red flags; or

(3) Three red emergency reflectors which satisfy the requirements of paragraph (i) of this section, and two red flags; or

(4) Three red emergency reflective triangles which satisfy the requirements of paragraph (h) of this section.

(g) *Flame producing devices prohibited on certain vehicles.* Liquid burning emergency flares, fusees, oil lanterns, or any signal produced by a flame shall not be carried on any motor vehicle transporting explosives, Class A or Class B; any cargo tank motor vehicle used for the transportation of flammable liquids or flammable compressed gas whether loaded or empty; or any motor vehicle using compressed gas as a motor fuel.

(h) *Requirements for red emergency reflective triangle.* (1) Each reflector shall be a collapsible equilateral triangle, with legs not less than 17 inches long and not less than 2 inches wide. The front and back of the exposed leg surfaces shall be covered with red reflective material not less than one half inch in width. The reflective surface, front and back, shall be approximately parallel. When placed in position, one point of the triangle shall be upward. The area within the sides of the triangle shall be open.

(2) Reflective material: The reflecting material covering the leg of the equilateral triangle shall comply either with:

(i) The requirements for reflex-reflector elements made of red methylmethacrylate plastic material, meeting the color, sealing, minimum candlepower, wind test, vibration test, and corrosion resistance test of section 3 and 4 of Federal Specification RR–R–1185, dated November 17, 1966, or

(ii) The requirements for red reflective sheeting of Federal Specification L–S–300, dated September 7, 1965, except that the aggregate candlepower of the assembled triangle, in one direction, shall be not less than eight when measured at 0.2° divergence angle and —4° incidence angle, and not less than 80 percent of the candlepower specified for 1 square foot of material at all other angles shown in Table II, Reflective Intensity Values, of L–S–300.

(3) Reflective surfaces alignment: Every reflective triangle shall be so constructed that, when the triangle is properly placed, the reflective surfaces shall be in a plane perpendicular to the plane of the roadway surface with a permissible tolerance of ±10°. Reflective triangles which are collapsible shall be provided with means for holding the reflective surfaces within the required tolerance. Such holding means shall be readily capable of adjustment without the use of tools or special equipment.

(4) Reflectors mechanical adequacy: Every reflective triangle shall be of such weight and dimensions as to remain stationary when subjected to a 40 mile per hour wind when properly placed on any clean, dry paved road surface. The reflective triangle shall be so constructed as to withstand reasonable shocks without breakage.

(5) Reflectors, incorporation in holding device: Each set of reflective triangles shall be adequately protected by enclosure in a box, rack, or other adequate container specially designed and constructed so that the reflectors may be readily extracted for use.

(6) Certification: Every red emergency reflective triangle designed and constructed to comply with these requirements shall be plainly marked with the certification of the manufacturer that it complies therewith.

(i) *Requirements for red emergency reflectors.* Each red emergency reflector shall conform in all respects to the following requirements:

(1) *Reflecting elements required.* Each reflector shall be composed of at least two reflecting elements or surfaces on each side, front and back. The reflecting elements, front and back, shall be approximately parallel.

(2) *Reflecting elements to be Class A.* Each reflecting element or surface shall meet the requirement for a red Class A reflector contained in the SAE Recommended Practice[1] "Reflex Reflectors." The aggregate candlepower output of all the reflecting elements or surface in one direction shall not be less than 12 when tested in a perpendicular position with observation at one-third degree as specified in the Photometric Test contained in the above-mentioned Recommended Practice.

(3) *Reflecting surfaces, protection.* If the reflector or the reflecting elements are so designed or constructed that the reflecting surfaces would be adversely affected by dust, soot, or other foreign matter or contacts with other parts of the reflector or its container, then such reflecting surfaces shall be adequately sealed within the body of the reflector.

(4) *Reflecting surfaces to be perpendicular.* Every reflector shall be so constructed that, when the reflector is properly placed, every reflecting element or surface is in a plane perpendicular to the plane of the roadway surface. Reflectors which are collapsible shall be provided with means for locking the reflector elements or surfaces in the required position; such locking means shall be readily capable of adjustment without the use of tools or special equipment.

(5) *Reflectors, mechanical adequacy.* Every reflector shall be of such weight and dimensions as to remain stationary when subjected to a 40 mile per hour wind when properly placed on any clean, dry, paved road surface. The reflector shall be so constructed as to withstand reasonable shocks without breakage.

(6) *Reflectors, incorporation on holding device.* Each set of reflectors and the reflecting elements or surfaces incorporated therein shall be adequately protected by enclosure in a box, rack, or other adequate container specially designed and constructed so that the reflectors may be readily extracted for use.

(7) *Certification.* Every red emergency reflector designed and constructed to comply with these requirements shall be plainly marked with the certification of the manufacturer that it complies therewith.

(j) *Requirements for fusees.* Each fusee shall be adequate, reliable, capable of burning at least 15 minutes, and shall comply with the specifications of the Bureau of Explosives, 2 Pennsylvania Plaza, New York, N.Y. 10001, dated December 1944, and be so marked.

(k) *Requirements for red flags.* Red flags shall be not less than 12 inches square, with standards adequate to maintain the flags in an upright position.

§ 393.96 Buses, additional emergency equipment.

On every bus, except buses engaged in driveaway-towaway operations there shall be:

(a) All items required by § 393.95, and in addition,

(b) One hand axe, except for buses having a seating capacity of eight or less persons,

(c) One first-aid kit complying with the following requirements:

(1) *Size of kit.* The kit shall be of heavy duty 10-unit type or larger, or have contents at least equivalent in quality and number to the contents of such a kit.

(2) *Material for case and cover.* The case and the cover shall be substantially constructed of sheet steel, wood, fiber, or other durable material. If made of sheet steel, the case and cover shall be of metal at least number 24 U.S. Gage (nominal).

(3) *Tightness of case.* The case and cover shall be so constructed, including corners, covers, and closure means, that

[1] See footnote 1 to § 393.24(c).

it shall be reasonably dust and weather proof when the cover is in the closed position, or the kit shall be mounted in a protected location within the passenger compartment of the motor vehicle so as to be reasonably dust and weather proof.

(4) *Opening and stop for cover.* If made of sheet steel or other metals, the case shall be so designed and constructed that the cover will be capable of being easily opened to an angle of 90° to 100° with the case and a substantial stop shall be provided at the angle of full opening; such stop shall not interfere with the smooth operation of the cover.

(5) *Method of hinging cover.* If made of metal, the cover shall be attached to the case by, at least, two substantial hinges or by a continuous piano-type hinge. If nonmetallic, the cover shall be attached by either a sliding or a hinged joint; if hinged, it shall be as prescribed for metallic construction.

(6) *Size of case.* The dimensions of the case shall be such as to permit the contents to be easily extracted and yet maintain the contents in a relatively fixed position.

(7) *Contents of kit.* The kit shall contain at least the contents specified, in not less than the quantities shown, in either of the two following types of kits:

A—UNIT TYPE KIT

4-inch bandage compress	1 package.
2-inch bandage compress	1 package.
1-inch adhesive compress	2 packages.
40-inch triangular bandage with two safety pins	1 package.
Burn ointment	1 package.
Iodine applicator or applicator of other antiseptic solutions of, at least, equivalent bacteriological properties	1 package.
Wire or wood splint	1 package.
Tourniquet	1 package.

B—COMMERCIAL TYPE KIT

3-inch by 3-inch sterile gauze pads	Package of 12.
Gauze bandages as follows (each package opened to be replaced by unopened package):	
1-inch by 10 yards	3 packages.
2-inch by 10 yards	2 packages.
3-inch by 10 yards	1 package.
¾-inch adhesive compress	Package of 24.
1-inch by 2½ yards adhesive tape	1 roll.
40-inch triangular bandage with two safety pins	1 package.
Burn ointment	1-ounce tube.
Iodine applicator or applicator of other antiseptic solution of, at least, equivalent bacteriological properties	1 package.
Wire or wood splint	1 package.
Tourniquet	1 package.
Scissors	1.

Each kit shall be provided with instructions for the use of the contents. The contents of the kits, whether required by Parts 390–397 of this subchapter or in addition thereto, either in number or kind, shall conform either to the requirements contained in Federal Specification GG–K–391(a) (Oct. 19, 1954), as amended March 3, 1959, or the standards as found in the Fifteenth Revision of the Pharmacopoeia of the United States and Supplement No. 2 thereof dated September 1, 1958, except that the 40-inch triangular bandage in the commercial type kit may be non-sterile and not compressed in the required manner if the package containing it clearly indicates that the contents are not sterile, and except that no specification type scissor is required. Federal Specification GG–K–391(a) and amendments may be obtained from the Superintendent of Documents, Washington, D.C. 20402, at a cost of 15 cents per copy.

PART 394—RECORDING AND REPORTING OF ACCIDENTS

Sec.

394.1 Accident reports confidential.
394.2 Definitions.
394.3 Accident Register.
394.4 Accident reporting.
394.5 Filing of accident reports of Forms MCS 50–B (formerly BMC 50–B) and MCS 50–T.
394.6 Annual safety report required; private carriers.
394.7 Immediate notice of fatal accidents.
394.8 Deaths occurring before filing report.
394.9 Notice of death after filing report.
394.10 Carrier to assist in investigation.
394.11 Supplies of accident report Forms MCS 50–B and MCS 50–T.
394.12 Instructions for preparing accident reports.

AUTHORITY: The provisions of this Part 394 issued under sec. 204, 49 Stat. 546, as amended, Sec. 220, 49 U.S.C. 320.

§ 394.1 Accident reports confidential.

Accident reports made by motor carriers in compliance with the regulations in this part shall be for the information of the Federal Highway Administration, and shall not be open to public inspection: *Provided however,* When the Federal Highway Administrator considers such action consistent with the public interest and necessary to the proper administration and enforcement of the provisions of Part II of the Interstate Commerce Act, or of orders, rules, and regulations issued thereunder, he may in his discretion, upon prior approval of an application of a Bureau of the Federal Highway Administration, allow such reports, or excerpts therefrom to be offered in evidence, (a) by attorneys in the employ of the Federal Highway Administration in a Federal agency proceeding, and (b) by attorneys in the employ of the Department of Transportation or by U.S. attorneys in a court proceeding instituted by or at the request of the Federal Highway Administration.

§ 394.2 Definitions.

(a) *Recordable accident.* Any occurrence in the interstate, foreign, or intrastate operations of a motor carrier subject to the Department of Transportation Act (sec. 6, 80 Stat. 937; 49 U.S.C. 1655(e)) which involves a motor vehicle, whether loaded or empty, and which results in the death or injury of a person, or in property damage to any and all vehicles, cargo, and other property to an extent of $250 or more; except those occurrences which take place in boarding or alighting from stationary motor vehicles or in loading or unloading cargoes, unless explosives (or other dangerous articles as defined in Parts 171 to 189 of this chapter) or fire is involved. The term "recordable accidents" shall include, but is not limited to, the following:

(1) The contact of a motor vehicle, vehicle part or vehicle accessory, or of the cargo of a motor vehicle with another vehicle, a person, or an animal or any inanimate object.

(2) The overturn, running off the roadway, or rolling away from a parked position, by a motor vehicle.

(3) The unintended separation of units of a combination vehicle.

(4) Fire or explosion in or on a motor vehicle.

(5) The shifting of cargo within or upon a motor vehicle resulting in damage to property other than the cargo itself.

(6) The falling of cargo or of any person from a moving motor vehicle.

(7) Escape of any injurious, flammable or contaminating solid, liquid or gas, or of radiation from the cargo or other contents of a motor vehicle.

(8) Injury, as defined in paragraph (b) of this section, to any person in or on a motor vehicle, including injury resulting from inhalation of fumes.

(b) *Injury.* Bodily harm to any person resulting in one or more of the following:

(1) Loss of consciousness.

(2) Necessity to carry the person from the scene.

(3) Necessity for medical treatment.

(4) Disability which prevents the discharge of normal duties or the pursuit of normal activities beyond the day of the accident.

(c) *Property damage.* Physical damage, in dollars, to any and all vehicles, cargo, and other property, based upon actual cost or reliable estimates.

§ 394.3 Accident Register.

(a) Every motor carrier shall have in its files at its principal place of business—or at such regional office or offices as the Director, Bureau of Motor Carrier Safety, upon application by the motor carrier, may approve—a register, maintained currently and containing at least the following items of information with respect to each recordable accident:

(1) Accident Claim number, or carrier's file number.

(2) Date and hour of accident.

(3) Location of the accident (city or town and State).

(4) Name of driver.

(5) Numbers of deaths and of nonfatal injuries, and amounts of damage to property, in dollars.

(6) Nature of accident such as collision, overturn, fire, cargo damage, etc.

(7) Local or intercity operation (Did run extend beyond municipal commercial zone?).

(b) A copy of each report of a recordable accident made to the Bureau of Motor Carrier Safety, Federal Highway Administration, to any State or local regulatory agency, or to any insurance company, shall be filed with the Accident Register and shall be arranged in ac-

cordance with an orderly plan which is coordinated with the entries on the Accident Register.

(c) Retention of Accident Register: The Accident Register provided for in paragraph (a) of this section and the additional information provided for in paragraph (b) of this section, shall be retained in the carrier's files at least for three years following occurrence of any accident so recorded.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 394.4 Accident reporting.

(a) Every motor carrier, except private carriers of property, shall file a report prepared on the form prescribed in this section for such carrier's use, for each recordable accident (as defined in § 394.2(a)) which occurs in the operations of such carrier.

(b) Reports of accidents involving passenger-carrying vehicles: A detailed report of every recordable accident involving a bus operated by him or it shall be prepared by the motor carrier on Form MCS 50–B.

(c) Reporting of accidents involving property-carrying vehicles: A detailed report of every recordable accident involving a motor vehicle other than a bus operated by him or it shall be prepared by the motor carrier on Form MCS 50–T.

§ 394.5 Filing of accident reports of Forms MCS 50–B (formerly BMC 50–B) and MCS 50–T.

The original and one copy of each accident report on Forms MCS 50–B and MCS 50–T, prepared in compliance with this section, shall be filed by the motor carrier as soon as possible, and in every instance within 15 days after occurrence of the accident, with the Regional Federal Highway Administrator, Bureau of Motor Carrier Safety, Federal Highway Administration, listed in § 390.40 of this subchapter for the region in which the motor carrier has his or its principal place of business: *Provided,* That motor carriers may continue to use forms BMC 50–B and BMC 50–T prescribed by the Interstate Commerce Commission until further order.

§ 394.6 Annual safety report required; private carriers.

(a) (1) Every private carrier engaged in transporting hazardous materials of such kind and in such quantities as to require that a motor vehicle be marked or placarded under the provisions of § 177.823 of this title, shall file, on or before April 1, 1969, and on or before April 1 of each year thereafter, Form MCS–51 entitled Private Carrier Annual Safety Report,[1] with the Director, Bureau of Motor Carrier Safety, Federal Highway Administration, Washington, D.C. 20591. This report shall include, in addition to the carrier's name and principal business address, the following information concerning the operations of the private carrier during the preceeding calendar year:

(i) Maximum number of trucks and truck tractors operated at any time during the calendar year;

(ii) Actual number of truck and truck tractor miles operated in intrastate and interstate operations, except that estimated mileage is acceptable where accurate mileage figures are not maintained;

(iii) Total number of recordable accidents as defined in § 394.2(a) including:

(*a*) Total number of fatalities and injuries; and

(*b*) Total amount of property damage in dollars;

(iv) Total number of trucks and truck tractors transporting hazardous materials of such kind and in such quantities as to require the motor vehicle to be placarded under the provisions of § 177.823 of this title by primary State of registration only; and

(v) Total number of recordable accidents as defined in § 394.2(a), involving those motor vehicles referred to in subdivision (iv) of this paragraph.

(2) The Director, Bureau of Motor Carrier Safety, upon written request and for good cause shown, may permit a private carrier to limit the information contained in the report specified in this paragraph (a) to that part of its operation involving the actual transportation of hazardous materials.

(b) Identification of vehicles of certain private carriers:

(1) *General requirements.* There shall be displayed on both sides of each vehicle operated under its own power, either alone or in combination, and engaged in the transportation of the articles described in paragraph (a) of this section, the name or trade name of the private carrier operating such vehicle, and the city or community in which the carrier maintains its principal office or in which the vehicle is customarily based. If the name of any person other than the operating carrier appears on a vehicle operated under its own power, either alone or in combination, the name of the operating carrier shall be followed by the information required by this paragraph, and be preceded by words "operated by." Nothing in the regulations in this part shall prohibit display of such additional identification as is not inconsistent herewith.

(2) *Size, shape, and color.* The display of name and address prescribed in subparagraph (1) of this paragraph, shall be in letters in sharp color contrast to the background, and be of such size, shape, and color as to be readily legible, during daylight hours from a distance of 50 feet while the vehicle is not in motion, and such display shall be kept and maintained in such manner as to remain so legible. The display may be accomplished through use of a removable device so prepared as to meet the identification and legibility requirements of this section.

§ 394.7 Immediate notice of fatal accidents.

Whenever a reportable accident results in the death of any person at the time of the accident or within 24 hours thereafter, the motor carrier, whether domiciled in the United States or elsewhere, shall immediately transmit notice of such accident by telegraph or telephone to the proper Regional Federal Highway Administrator as indicated in § 394.5. Such notices shall include the following information: The date, time, and exact location of the accident; the number of persons killed and the number injured; and the name and address of the motor carrier.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 394.8 Deaths occurring before filing report.

In addition to the requirements of § 394.7, every death shall be reported on Form MCS 50–B or Form MCS 50–T whether it occurs at the time of the accident or subsequently if such deaths occur prior to the filing of said accident report form.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 394.9 Notice of death after filing report.

Whenever any accident results in the death of any person after the motor carrier has filed his or its report of the accident on Form MCS 50–B or Form MCS 50–T, notice of such death shall be given in writing, as soon as possible after such death becomes known to the motor carrier, to the proper Regional Federal Highway Administrator as indicated in § 394.5. Such notice shall include the following information: The date and location of the accident; the name and age of the deceased; and the name and address of the motor carrier.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 394.10 Carrier to assist in investigation.

Every motor carrier shall make available to the duly authorized representative or representatives of the Federal Highway Administration all records and information which in any way pertain to any reportable accident, and shall afford all reasonable assistance in the investigation of any such accident.

(Sec. 12, 80 Stat. 931; 49 U.S.C. 1651 note)

§ 394.11 Supplies of accident report Forms MCS 50–B and MCS 50–T.

For the purpose of compliance with the regulations in this part, every common and contract motor carrier shall keep on hand an adequate supply of Form MCS 50–B and/or Form MCS 50–T to enable prompt reporting of accidents.[2]

§ 394.12 Instructions for preparing accident reports.

Reports of accidents on Form MCS 50–B and Form MCS 50–T shall be prepared in accordance with the following instructions:

General: Every applicable item, and the detachable stub, must be filled in as fully and as accurately as information accessible

[1] Filed as part of the original document.

[2] Supplies of these forms may be obtained from the Superintendent of Documents, Washington, D.C. 20402, at prevailing cost.

to the motor carrier at the time of filing the report will permit.

Item 1: Enter name of legal entity.

Item 2: Check "Yes" if you have been notified that your revenues place you in Class I. Otherwise check "No."

Item 3: Enter the address of your principal place of business.

Item 4: Always make two entries under this item: First, show whether the operation involved is common, contract, or exempt. Second, enter your docket (MC) number if you have one. Otherwise enter "none."

Item 8: Enter all three names, State, county, and city or town in or near which accident occurred.

Item 9: Under this item give information fixing the accident location as nearly exactly as possible. This is especially important when highway design or condition, or some other local feature was involved in any way.

Item 15: Indicate the commodities which compose the vehicle's cargo, and not merely the class of such cargo. For example: enter "gasoline" or "No. 2 fuel oil" rather than "petroleum products."

Item 16(b), on MCS 50–T only: If a second driver was on the vehicle, whether he is called a relief driver, a helper driver, or by some other designation, check "Yes."

Item 17, on MCS 50–T and 18 on MCS 50–B: If the vehicle, or any unit of a combination of vehicles, was itself the cargo being transported, by the driveaway-towaway method, check "Yes"; otherwise check "No."

Item 18(a), on MCS 50–T only: Check "Yes" only if the vehicle was equipped with a berth meeting the specifications set forth in the Motor Carrier Safety Regulations.

Item 19(b), on MCS 50–T only: If the power unit was owned by the driver whose name is reported under item 20, check "Yes." If it was owned by the person riding as relief driver at the time of the accident, write in the words "relief driver" and check "Yes."

Item 20: Enter the name and home address of the person at the wheel when the accident occurred, or who last drove the vehicle if it was stopped or parked without a driver at the time of the accident.

Items 21 through 30: These items are to be filled in whether the driver was operating a company-owned vehicle, a vehicle which he himself owned and leased to the carrier, or a vehicle owned by a third party and leased to the carrier.

Item 23: Accuracy in entering the Social Security number is very important. Error in entering any one of the nine digits which compose this number, or the omission of a digit, will render the number useless.

Items 28 and 29: If the driver has made use of the sleeper-berth provisions for breaking his off-duty time into two periods totaling 8 hours, write in the words "sleeper berth" in addition to entering the hours on duty and hours driving since last period of 8 consecutive hours off duty.

Items 33 and 34: If another vehicle involved in the accident was operated by a motor carrier, regardless of ownership, the name and address of that motor carrier should be given.

Item 37: Enter the best available estimate of the amount of damage (in dollars) to each vehicle or unit of a combination of vehicles involved in the accident. Make this entry in every case, whether or not it is also reported that the vehicle or unit was a total loss.

If damage to a vehicle or unit is so extensive that it is not practical to repair it, check the appropriate space to indicate that it was a total loss.

If any vehicle or unit involved in the accident was not damaged, write "none" in the appropriate space.

Items 38, 39, and 40: For each person either killed or injured in the accident, enter name, address and age, if known, or approximate age, and check all applicable boxes. The number of checks necessary to give full information will vary for different persons. For example: John Smith may have been affected by carbon monoxide and also burned, the degree of his injuries being serious. If he were driver in vehicle No. 1, the total number of check marks required to report these facts would be five. On the other hand, Mary Brown may have been struck and killed instantly as she walked across the street. Two boxes only need be checked "killed outright" and "pedestrian."

If no one was killed or injured, enter the word "none" under item 38.

Item 42: Check each defect known to exist before the accident, brought to light by the accident itself, or discovered by investigation following the accident. Do not show breakage of sound parts which resulted from the accident. Include defects which caused the vehicle to be stopped, if accident occurred while it was so stopped.

Item 43: If opposing lanes of travel are separated by a parkway or other strip, check the word "Divided" in addition to showing the total number of lanes.

Item 46: Whenever the driver survives the accident and is able to make a statement, his own account of the accident is to be entered here. The account obtained from the driver for this purpose must be sufficiently complete and detailed to convey an understanding of his version of the accident. This account should be continued on an extra sheet of paper if more space is needed.

Item 47: An account of the accident containing the most reliable information to which the motor carrier has access at the time of reporting, sufficiently detailed and complete to convey an understanding of his version of the accident, shall be entered under this item, and shall be signed by a responsible official of the motor carrier. This account should be continued on an extra sheet of paper if more space is needed.

Diagram. In addition, a diagram showing pertinent highway information such as the approximate angle at which roads intersect, the width of pavement and of shoulders, etc., the course of travel of each vehicle involved, and the point at which collision occurred, should be prepared in those cases in which such a diagram would clarify the presentation of the facts.

PART 395—HOURS OF SERVICE OF DRIVERS

Sec.

395.1 Compliance with, and knowledge of regulations required.
395.2 Definitions.
395.3 Maximum driving and on-duty time.
395.6 Sleeper berth, occupation.
395.7 Travel time.
395.8 Driver's daily log.
395.10 Adverse driving conditions.
395.11 Emergency conditions.
395.12 Relief from regulations.
395.13 Drivers declared "Out of Service."

AUTHORITY: The provisions of this Part 395 issued under sec. 204, 49 Stat. 546, as amended; 49 U.S.C. 304, unless otherwise noted.

§ 395.1 Compliance with, and knowledge of regulations required.

Every motor carrier and its officers, drivers, agents, employees, and representatives shall comply with the following regulations, and every motor carrier shall require that its officers, drivers, agents, employees, and representatives be conversant with this part.

§ 395.2 Definitions.

As used in this part, the following words and terms are construed to mean:

(a) *On-duty time.* All time from the time a driver begins to work or is required to be in readiness to work until the time he is relieved from work and all responsibility for performing work. The term "On-duty" time shall include:

(1) All time at a carrier or shipper plant, terminal, facility, or other property, or on any public property, waiting to be dispatched, unless the driver has been relieved from duty by the motor carrier.

(2) All time inspecting equipment as required by §§392.7 and 392.8 or otherwise inspecting, servicing, or conditioning any motor vehicle at any time;

(3) All driving time as defined in paragraph (b) of this section;

(4) All time, other than driving time, in or upon any motor vehicle except time spent resting in a sleeper berth as defined in paragraph (g) of this section;

(5) All time loading or unloading a vehicle, supervising, or assisting in the loading or unloading, attending a vehicle being loaded or unloaded, remaining in readiness to operate the vehicle, or in giving or receiving receipts for shipments loaded or unloaded;

(6) All time spent performing the driver requirements of §§ 392.40 and 392.41 relating to accidents;

(7) All time repairing, obtaining assistance, or remaining in attendance upon a disabled vehicle;

(8) Performing any other work in the capacity of, or in the employ or service of, a common, contract or private motor carrier.

(9) In the case of specially trained drivers of specially constructed oil well servicing vehicles, on-duty time shall not include waiting time at a natural gas or oil well site: *Provided,* That all such time shall be fully and accurately accounted for in records to be maintained by the motor carrier. Such records shall be made available upon request of the Federal Highway Administration.

(b) *Driving time.* The term "drive" and "driving time" shall include all time spent at the driving controls of a motor vehicle in operation. All stops made in any one village, town, or city, may be computed as one.

(c) *Seven consecutive days.* The term "7 consecutive days" means the period of 7 consecutive days beginning at 12:01 a.m. on any day.

(d) *Eight consecutive days.* The term "8 consecutive days" means the period of 8 consecutive days beginning at 12:01 a.m. on any day.

(e) *Twenty-four consecutive hours.* The term "24 consecutive hours" means any such periods starting at the time the driver reports for duty as defined in paragraph (a) of this section.

(f) *Regularly employed driver.* The term "regularly employed driver" means a driver who in any period of 7 con-

secutive days is employed or used as a driver solely by a single motor carrier.

(g) *Sleeper berth.* The term "sleeper berth" means a berth conforming to the requirements of § 393.76 of this subchapter.

(h) *Driver-salesman.* The term "driver-salesman" means any employee who is employed solely as such by a private carrier of property by motor vehicle, who is engaged both in selling goods, services, or the use of goods, and in delivering by motor vehicle the goods sold or provided or upon which the services are performed, who does so entirely within a radius of 100 miles of the point at which he reports for duty, who devotes not more than 50 percent of his hours on duty to driving time. The term "selling goods" for purposes of this subsection shall include in all cases solicitation or obtaining of reorders or new accounts, and may also include other selling or merchandising activities designed to retain the customer or to increase the sale of goods or services, in addition to solicitation or obtaining of reorders or new accounts.

§ 395.3 Maximum driving and on-duty time.

(a) Except as provided in paragraphs (c) and (e) of this section and in § 395.10, no motor carrier shall permit or require any driver used by it to drive nor shall any such driver drive more than 10 hours following 8 consecutive hours off duty or drive for any period after having been on duty 15 hours following 8 consecutive hours off duty: *Provided, however,* That drivers using sleeper-berth equipment, or off duty at a natural gas or oil well location, may cumulate the aforementioned total of at least 8 hours off duty in two periods of at least 2 hours each, resting in a sleeper berth, as defined in § 395.2(g), or resting while off duty in other sleeping accommodations at a natural gas or oil well location.

(b) Except as provided in paragraph (e) of this section, no motor carrier shall permit or require any driver used by it to be on duty, nor shall any such driver be on duty, more than 60 hours in any 7 consecutive days as defined in § 395.2(c) regardless of the number of motor carriers using the driver's services. *Provided, however,* That carriers operating vehicles every day in the week may permit drivers to remain on duty for a total of not more than 70 hours in any period of 8 consecutive days. *Provided further, however,* That the limitations of this paragraph shall not apply with respect to any driver-salesman whose total driving time does not exceed 40 hours in any 7 consecutive days.

(c) The provisions of paragraph (a) of this section shall not apply with respect to drivers used wholly in driving motor vehicles having not more than 2 axles and whose gross weight, as defined in § 390.10, does not exceed 10,000 pounds, unless such vehicle is used to transport passengers or explosives or other dangerous articles of such type and in such quantity as to require the vehicle to be specifically marked or placarded under the Hazardous Materials Regulations, § 177.823 of this Title, or when operated without cargo under conditions which require the vehicle to be so marked or placarded under the cited regulations: *Provided further, however,* That this section shall not apply with respect to drivers of motor vehicles engaged solely in making deliveries for retail stores during the period from December 10 to December 25, both inclusive, of each year.

(d) In the instance of drivers of motor vehicles used exclusively in the transportation of oilfield equipment, including the stringing and picking up of pipe used in pipelines, and servicing of the field operations of the natural gas and oil industry, any period of 8 consecutive days may end with the beginning of any off-duty period of 24 or more successive hours.

(e) In the instance of a driver who drives motor vehicles solely within the State of Alaska such driver may be permitted to drive not more than 15 hours following 8 consecutive hours off duty and may not be permitted to drive after having been on duty 20 hours following 8 consecutive hours off duty. Such driver shall not be on duty more than 70 hours in any period of 7 consecutive days: *Provided,* That carriers operating every day in a week may permit drivers to remain on duty for a total of not more than 80 hours in any period of 8 consecutive days.

§ 395.6 Sleeper berth, occupation.

No sleeper berth shall be occupied by more than one person at any time.

§ 395.7 Travel time.

When a driver at the direction of a motor carrier is traveling, but not driving or assuming any other responsibility to the carrier, such time shall be counted as on-duty time unless the driver is afforded at least 8 consecutive hours off duty when arriving at destination, in which case he shall be considered off duty for the entire period.

§ 395.8 Driver's daily log.

(a) Except as provided in paragraph (t) of this section, every motor carrier shall require that a driver's daily log, Form MCS–59 set forth below, shall be made in duplicate by every driver used by him or it and every driver who operates a motor vehicle shall make such a log. Failure to make logs, failure to make required entries therein, falsification of entries, or failure to preserve logs shall make both the driver and the carrier liable to prosecution. Driver's logs shall be prepared and retained in accordance with the provisions of paragraphs (b) through (s) of this section.

(b) *Entries to be current.* Drivers shall keep the log current to the time of the last change of duty status.

(c) *Entries made by driver only.* Except that the name and principal place of business address of the carrier may be printed, all entries shall be made by the driver in his own handwriting.

(d) *Date.* Enter month, day, and year for each calendar day on or off duty.

(e) *Total mileage.* Total mileage entered shall be that mileage traveled while driving, on duty but not driving, and resting in a sleeper berth, as defined in § 395.2(g) during the day covered by the log. Mileage while driving shall be shown separately.

(f) *Vehicle identification.* The carrier's vehicle number or numbers or the State and license number or numbers of each vehicle or unit of a combination operated during the calendar day shall be entered.

(g) *Name of carrier.* The name or names of the carrier or carriers shall be that or those for which duty is performed. When work is performed for more than one carrier on the same calendar day, the beginning and finishing time, showing a.m. or p.m., worked for each carrier shall be shown after each carrier name. Drivers of leased vehicles shall show the name of the carrier performing the transportation.

(h) *Driver's signature.* The driver shall certify to the correctness of the log by signing his first name and last name in full and his middle name or middle initial, if any. Below the driver's signature he shall list the initials and last name of each codriver.

(i) *Home terminal.* The driver's home terminal address shown shall be that at which he normally reports for duty.

(j) *Time base to be used.* The log shall be prepared, maintained, and submitted, using the time standard in effect at the driver's home terminal, for a 24-hour calendar day beginning at midnight: *Provided, however,* That if written notification is given by a carrier to the Regional Federal Highway Administrator of the Bureau of Motor Carrier Safety for the region in which the carrier's principal office is located, drivers of any named terminal or terminals of the carrier may prepare logs for a 24-hour period beginning at noon of 1 day and ending at noon of the next succeeding day. For drivers preparing logs on a noon-to-noon basis, the term 7 or 8 consecutive days means the period of 7 or 8 consecutive days beginning at 12:01 p.m., on any day.

(k) *Line 1, Off duty.* Except for time spent resting in a sleeper berth, a continuous line shall be drawn between the appropriate time markers to record the period or periods of time when the driver is not on duty, not required to be in readiness to work, or is not under any responsibility for performing work.

(l) *Line 2, Sleeper berth.* A continuous line shall be drawn between the appropriate time markers to record the period or periods of time off duty resting in a sleeper berth, as defined in § 395.2(g).

(m) *Line 3, Driving.* A continuous line shall be drawn between the appropriate time markers to record the period or periods of time on duty driving a motor vehicle, as defined in § 395.2(b).

(n) *Line 4, On duty not driving.* A continuous line shall be drawn between the appropriate time markers to record the period or periods of time on duty not

driving specified in § 395.2(a) (1), (2), (4), (5), (6), (7), (8), or any other time on duty but not driving as defined by §§ 395.2(a) and 395.7.

(o) *Remarks.* The appropriate time marker and the name of the city, town, or village, with State abbreviation, or place at or near which each change of duty occurs, shall be recorded, such as the place of reporting for work, starting to drive, on duty not driving, and where released from work. Explain the reason resulting in hours exceeding those permitted by § 395.3. Show the transportation performed each day by entering a shipping document number or numbers, or name of a shipper and commodity.

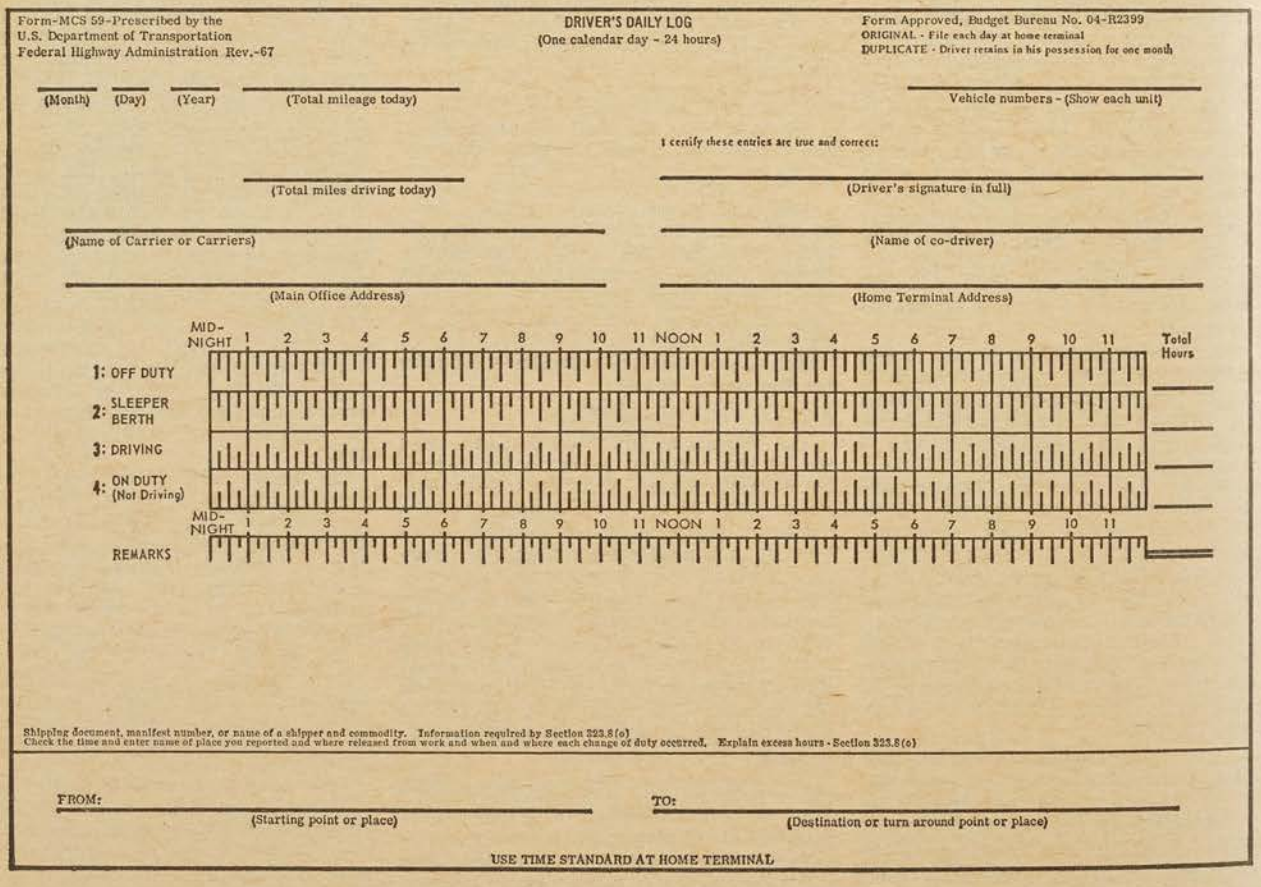
(p) *Total hours.* The total hours in each duty status: Off duty other than in a sleeper berth; off duty in a sleeper berth; driving; and on duty not driving shall be entered, the total of which entries shall equal 24 hours.

(q) *Origin and destination.* The name of the place where a trip begins and the final destination or farthest turn-around point shall be shown at the bottom of the log. If the trip requires more than 1 calendar day, the log for each day shall show the origin and final destination. If a driver departs from and returns to the same place on any day, the destination shall be indicated by entering the farthest point reached followed by the words "and return".

(r) *Filing driver's log.* The driver shall forward each day the original log to his home terminal or to the motor carrier's principal place of business. When the services of a driver are used by more than one carrier during any calendar day, the driver shall furnish each such carrier a copy of the log containing full and complete entries including: The entry of all duty time for the entire day; the name of each such carrier served by the driver that day; and the beginning and finishing time, showing a.m. or p.m., worked for each carrier. Motor carriers when using a driver for the first time or intermittently shall obtain from the driver a signed statement giving the total time on duty during the immediately preceding 7 days and time at which such driver was last relieved from duty prior to beginning work for such carrier.

(s) *Preservation of driver's log.* Daily logs for each calendar month may be retained at the driver's home terminal until the 20th day of the succeeding calendar month and shall then be forwarded to the carrier's principal place of business where they shall be retained for 12 months from date of receipt: *Provided, however,* That a motor carrier may upon written request to and upon receiving consent from the Director, Bureau of Motor Carrier Safety, forward and retain such logs at such regional or terminal offices as are proposed by the carrier and approved by the Director. The driver shall retain a copy of each daily log for 30 days which shall be in his possession while on duty.

(t) *Driver's log, when not required.* The requirements of this section shall not apply: (1) To any regularly employed driver who drives wholly within a radius of 50 miles of the garage or terminal at which he reports for work: *Provided,* That the motor carrier employing such driver maintains and retains for period of 1 year accurate and true records showing the total number of hours the driver is on duty per day and the time at which the driver reports for and is released from duty each day; or (2) to drivers of motor vehicles having not more than 2 axles and whose gross weight, as defined in § 390.10, does not exceed 10,000 pounds, unless such vehicle is used to transport passengers or explosives or other dangerous articles of such type and in quantity as to require the vehicle to be specifically marked or placarded under the Hazardous Materials Regulations, § 177.823 of this Title, or when operated without cargo under conditions which require the vehicle to be so marked or placarded under the cited regulations.



Form-MCS 59-Prescribed by the U.S. Department of Transportation Federal Highway Administration Rev.-67

DRIVER'S DAILY LOG
(One calendar day = 24 hours)

Form Approved, Budget Bureau No. 04-R2399
ORIGINAL - File each day at home terminal
DUPLICATE - Driver retains in his possession for one month

MAY (Month) 1 (Day) 1962 (Year) 440 (Total mileage today)

TRACTOR #12 - TRAILER #12A
Vehicle numbers - (Show each unit)

270 (Total miles driving today)

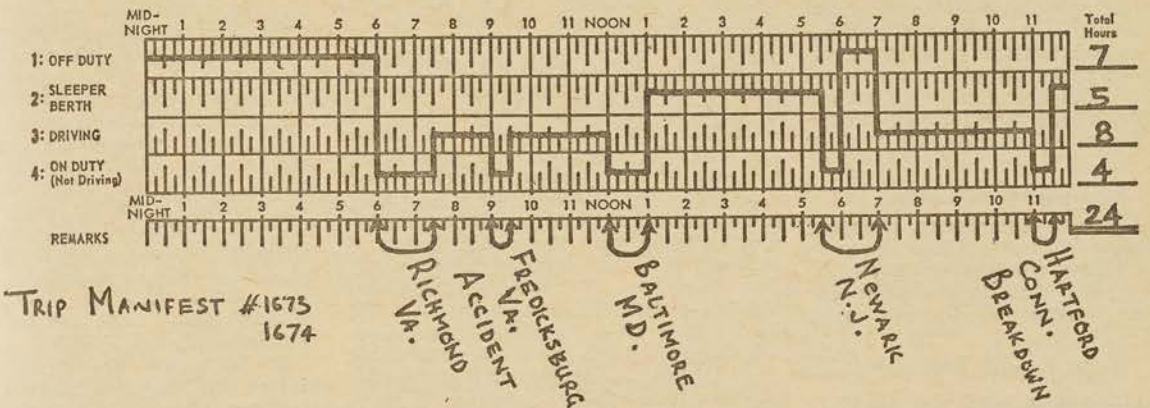
I certify these entries are true and correct: John E. Doe (Driver's signature in full)

X.Y.Z. TRANSPORTATION CO. (Name of Carrier or Carriers)

W.R. SMITH (Name of co-driver)

WASHINGTON, D.C. (Main Office Address)

RICHMOND, VA. (Home Terminal Address)



TRIP MANIFEST #1673
1674

Shipping document, manifest number, or name of a shipper and commodity. Information required by Section 323.8(c)
Check the time and enter name of place you reported and where released from work and when and where each change of duty occurred. Explain excess hours - Section 323.8(c)

FROM: RICHMOND VA. (Starting point or place)

TO: BOSTON, MASS. (Destination or turn around point or place)

USE TIME STANDARD AT HOME TERMINAL

NOTE: *Driver's Daily Log (Form MCS 59).* The Federal Highway Administration will not provide supplies of the log. The log may be incorporated as a part of any daily form used by a carrier, provided it is so ruled that the log appears distinct and separate from other portions of such form. In reproducing the log, dimensions of not less than 5¼ x 7½ inches shall be used. Stocks of logs in the possession of carriers or their suppliers as of the effective date of these regulations may be used, provided the information required by these regulations is entered thereon.

This executed specimen document shows how a driver is to prepare a daily log. It covers a driver's activities on the first day of a trip in which he left Richmond, Va., with a shipment of miscellaneous freight to be delivered in Newark, N.J., and Boston, Mass.

The driver in this instance reported for duty with his co-driver at the carrier's Richmond terminal at 6 a.m., at which time he was given papers for the shipments and instructions for making the trip. The vehicle combination was being loaded at the time he reported for duty and the driver attended the vehicle until the loading was completed. He then made a pretrip inspection of the vehicle (§§ 392.7 and 392.8), made entries upon his driver's log to 7:30 a.m. as "on duty not driving" and started driving at that time (§§ 395.2(a) (1) and (2)). At 9 a.m., in Fredericksburg, Va., he was involved in an accident with an automobile which was damaged to the extent of $250. He remained at the accident scene for one-half hour while the police conducted their investigation. He obtained information relating to the accident (§ 392.40) and performed an inspection of the vehicle (§ 396.6). He then made entries upon his log to 9:30 a.m., showing this stop as "on duty not driving" and started driving at that time (§ 395.2(a)(6)). At 12 noon he stopped near Baltimore, Md., at a truck stop for gas and a meal. He then made entries upon his log to 1 p.m., showing this stop as "on duty not driving." He then entered the sleeper berth while his co-driver assumed the driving duties. At 5:30 p.m., he arrived at the carrier's Newark, N.J., terminal and reported to the dispatcher. He gave to the dispatcher his statement concerning the accident and other information needed to complete a report to the Federal Highway Administration. He was told by the dispatcher that helpers would not have the Newark bound freight unloaded until 7 p.m. He then walked to a nearby diner, leaving the vehicle at the terminal, ate a meal and returned at the specified time. He then made entries upon his log to 7 p.m., showing 5:30 p.m. to 6 p.m. as "on duty not driving" (§ 395.2(a)(6)) and showing 6 p.m. to 7 p.m. as "off duty" due to the fact that the vehicle and its cargo were under the care and custody of the carrier's dispatcher during this time, and then started driving.

At 11:00 p.m., the vehicle broke down near Hartford, Conn. He placed warning devices upon the highway (§ 392.26) while the co-driver telephoned the carrier's Hartford shop to ask that a shop man be sent to repair the vehicle. He then waited until the man had completed the repairs. He made entries upon his log to 11:30 p.m. showing this stop as "on duty not driving" (§ 395.2(a)(7)) and entered the sleeper berth for the balance of the calendar day.

The name of the co-driver for this trip is shown directly below the driver's signature (§ 395.8(h)). Additionally, the total miles traveled during the day and the actual miles spent driving are shown on the appropriate lines near the top of the form (§ 395.8(e)).

The total hours for each line show 7 hours off duty; 5 hours in sleeper berth; 8 hours driving and 4 hours on duty (not driving) for the day covered by the log. The sum of these hours shown under the "Total Hours" equals 24 hours.

Under "Remarks" a check on time markers and entries will show that the driver reported for work at Richmond, Va., at 6 a.m., and was on duty (not driving) until he started to drive at 7:30 a.m. The time spent driving is shown on line 3 and the time spent in the sleeper berth on line 2. All stops are shown on line 4. In the lower left hand corner, the driver shows the transportation performed by entering the shipping documents numbers (§ 395.8(o)).

As the destination of the driver on this trip is Boston, Mass., he enters the original starting point and the final destination on the appropriate line near the bottom of the form, thus: "From: Richmond, Va., To: Boston, Mass." The original starting point and final destination are to be shown on the log for each day throughout the trip. If a driver departs from and returns to the same place on any day, the "destination or turn-around point" shall be the farthest point reached before the driver begins his return trip.

Form MCS 59 shall be used by those drivers who prepare daily logs on a noon-to-noon basis, instead of a calendar day, or midnight-to-midnight basis, except that the word "noon" will be shown at the point where the word "midnight" now appears and the word "midnight" shall appear where the word "noon" now appears. The word "calendar" which appears in parenthesis under the phrase "driver's daily log" shall be blocked out. The driver shall enter the date by showing on each log, both dates covered by the noon-to-noon period.

§ 395.10 Adverse driving conditions.

In case of snow, sleet, fog, or other adverse weather conditions, or in case the highways are covered with snow or ice,

or presence of unusual road and traffic conditions, a driver may be permitted or required to drive or operate a motor vehicle, in order to complete his run, for not more than 12 hours in the aggregate following 8 consecutive hours off duty, instead of the limit of 10 hours driving following 8 consecutive hours off duty as provided in § 395.3: *Provided, however,* That no driving shall be permitted or performed after the driver has been on duty 15 hours following 8 consecutive hours off duty. *It is further provided,* That in the instance of a driver who drives motor vehicles solely within the State of Alaska such driver under the aforementioned adverse driving conditions may be permitted to drive or operate a motor vehicle in order to complete his run, which shall be followed by 8 consecutive hours off duty before further driving.

§ 395.11 Emergency conditions.

In case of any emergency, a driver may complete his run without being in violation of the provisions of these regulations, if such run could reasonably have been completed without such violation.

§ 395.12 Relief from regulations.

These regulations shall not apply to any carrier subject thereto when transporting passengers or property to or from any section of the country with the object of providing relief in case of earthquake, flood, fire, famine, drought, epidemic, pestilence, or other calamitous visitation or disaster.

§ 395.13 Drivers declared "Out of Service".

Every field safety specialist, safety supervisor, mechanical engineer, regional safety officer, or safety compliance investigator of the Bureau of Motor Carrier Safety, Federal Highway Administration, is authorized to notify and declare "Out of Service" with the prescribed Form MCS 65, any driver whom he finds at the time and place of examination to have been on duty or to have driven or operated immediately prior to such examination, longer than the maximum period permitted by §395.3, § 395.10, or § 395.11. No motor carrier shall permit or require a driver who has been notified and declared "Out of Service" to drive or operate nor shall any such driver drive or operate, any motor vehicle unless and until such time as he has met the requirements of the specified sections.

PART 396—INSPECTION AND MAINTENANCE

Sec.

396.1 Compliance.
396.2 Inspection and maintenance.
396.3 Lubrication.
396.4 Unsafe operations forbidden.
396.5 Inspection of motor vehicles in operation.
396.6 Damaged vehicles, inspection.
396.7 Vehicle condition report by driver.
396.8 Driveaway-towaway operations, inspections.
396.9 Recommended practices and forms.

AUTHORITY: The provisions of this Part 396 issued under sec. 204, 49 Stat. 546, as amended; 49 U.S.C. 304, unless otherwise noted.

§ 396.1 Compliance.

Every motor carrier, its officers, drivers, agents, representatives, and employees directly concerned with the inspection or maintenance of motor vehicles, shall comply and be conversant with the requirements of this part.

§ 396.2 Inspection and maintenance.

Every motor carrier shall systematically inspect and maintain, or cause to be systematically maintained, all motor vehicles subject to its control, and the accessories required by Part 393 of this subchapter, to be mounted thereon, to insure that such motor vehicles and accessories are in safe and proper operating condition. Such inspections, for buses, shall include a test at least once every 90 days of all push-out windows and emergency doors to determine that they are operating properly and that the windows comply with the requirements of Subpart D of Part 393 of these regulations. A systematic inspection and maintenance record shall be maintained for each motor vehicle controlled by a motor carrier for the period during which such vehicle is subject to the motor carrier's control. Such records shall include, at least: (a) An identification of the vehicle including make, model, serial number, and number of tires, their size, and number of ply; (b) a record of inspection and repairs indicating their date and nature; (c) a lubrication record; (d) a systematic means for indicating for each vehicle the nature and due date of the various inspection and maintenance operations to be performed; (e) if leased, or otherwise contracted for, such records shall also include an identification of the lessor or contractor furnishing the motor vehicle. (Recommend procedure and forms set forth in § 396.9.)

§ 396.3 Lubrication.

Every motor carrier shall institute such procedures as may be necessary to insure that motor vehicles are properly lubricated; that proper action is taken to correct oil and grease leaks; that undue accumulations of grease and oil are investigated, removed, and the cause thereof corrected.

§ 396.4 Unsafe operations forbidden.

No motor carrier shall permit or require a driver to drive any motor vehicle revealed by inspection or operation to be in such condition that its operation would be hazardous or likely to result in a breakdown of the vehicle nor shall any driver drive any motor vehicle which by reason of its mechanical condition is so imminently hazardous to operate as to be likely to cause an accident or a breakdown of the vehicle. If while any motor vehicle is being operated on a highway, it is discovered to be in such unsafe condition, it shall be continued in operation only to the nearest place where repairs can safely be effected, and even such operations shall be conducted only if it be less hazardous to the public than permitting the vehicle to remain on the highway.

§ 396.5 Inspection of motor vehicles in operation.

(a) *Personnel authorized to perform inspections.* Every field safety specialist, mechanical engineer, safety supervisor, regional safety officer, and safety compliance investigator employed in the Bureau of Motor Carrier Safety, Federal Highway Administration, is authorized and hereby ordered, to enter upon and perform inspections of motor carriers' vehicles in operation.

(b) *Prescribed inspection report.* Form MCS 63, Driver-Equipment Compliance Check shall be used to record findings from motor vehicles selected for final inspection by authorized employees.

(c) *Motor vehicles declared "out of service."* (1) Authorized employees shall declare and mark "out of service" any motor vehicle which by reason of its mechanical condition or loading is so imminently hazardous to operate as to be likely to cause an accident or a breakdown. Form MCS 64, "Out of Service Vehicle" sticker, shall be used to mark vehicles "out of service."

(2) No motor carrier shall require or permit any person to operate nor shall any person operate any motor vehicle declared and marked, "out of service" until all repairs required by the "out of service notice" on Form MCS 63 have been satisfactorily completed. The term operate as used in this section shall include towing the vehicle: *Provided, however,* That vehicles marked "out of service" may be towed away by means of a vehicle using a crane or hoist: *And provided further,* That the vehicle combination consisting of the emergency towing vehicle and the "out of service" vehicle meets the performance requirements of § 393.52.

(3) No person shall remove the "Out of Service Vehicle" sticker from any motor vehicle prior to completion of all repairs required by the "out of service notice" on Form MCS 63.

(4) The person or persons completing the repairs required by the "out of service notice" shall sign the "Certification of Repairman" in accordance with the terms prescribed on Form MCS 63, entering the name of his shop or garage and the date and time the required repairs were completed. If the driver completes the required repairs, he shall sign and complete the "Certification of Repairman."

(d) *Motor Carrier's disposition of Form MCS 63.* (1) The driver of any motor vehicle receiving a Form MCS 63 shall deliver such MCS 63 to the motor carrier operating the vehicle upon his arrival at the next terminal or facility of the motor carrier, if such arrival occurs within twenty-four (24) hours. If the driver does not arrive at a terminal or facility of the motor carrier operating the vehicle within twenty-four (24) hours he shall immediately mail the Form MCS 63 to the motor carrier: *Provided, however,* That for operating convenience, motor carriers may designate any shop, terminal, facility or person to which it may instruct its drivers to

deliver or forward Form MCS 63: *Provided further, however,* That it shall be the sole responsibility of the motor carrier that Form MCS 63 is returned to the Federal Highway Administration, in accordance with the terms prescribed thereon and in subparagraphs (2) and (3) of this paragraph. A driver, if himself a motor carrier, shall return Form MCS 63 to the Federal Highway Administration, in accordance with the terms prescribed thereon and in subparagraphs (2) and (3) of this paragraph.

(2) Motor carriers shall carefully examine Forms MCS 63. Any and all violations or mechanical defects noted thereon shall be corrected. To the extent drivers are shown not to be in compliance with the Motor Carrier Safety Regulations, appropriate corrective action shall be taken by the motor carrier.

(3) Motor carriers shall complete the "Motor Carrier Certification of Action Taken" on Form MCS 63 in accordance with the terms prescribed thereon. Motor carriers shall return Forms MCS 63 to the Director, Regional Motor Carrier Safety Office of the Bureau of Motor Carrier Safety, Federal Highway Administration, at the address indicated upon Form MCS 63 within fifteen (15) days following the date of the vehicle inspection.

§ 396.6 Damaged vehicles, inspection.

No motor carrier shall permit or require a driver to drive nor shall any driver drive a motor vehicle which has been damaged in an accident or by other cause until inspection has been made by a person qualified to ascertain the nature and extent of the damage and the relationship of such damage to the safe operation of the motor vehicle, nor shall such motor vehicle be operated until such person has determined it to be in safe operating condition.

§ 396.7 Vehicle condition report by driver.

Except as provided for driveaway-towaway operations in § 396.8, every motor carrier operating more than one motor vehicle shall require its drivers to report and every driver shall prepare such a report in writing at the completion of his day's work or tour of duty, which report shall list any defect or deficiency of the motor vehicle discovered by said driver or reported to him as would be likely to affect the safety of operation of the motor vehicle or result in its mechanical breakdown or shall indicate that no such defects or deficiencies were discovered by or reported to him. Such reports shall be carefully examined, the defects reported thereon shall be checked and the report shall be retained by the motor carrier for a period of at least 3 months.

§ 396.8 Driveaway-towaway operations, inspections.

Every motor carrier, with respect to motor vehicles engaged in driveaway-towaway operations, shall comply with this section in addition to §§ 396.1 to 396.7, inclusive, except that the driver's "Vehicle Condition Report" required by § 396.7 and the maintenance records required by § 396.2 shall not be required for any vehicle which is part of the shipment being delivered. Before the beginning of any driveaway-towaway operation of motor vehicles in combination, the motor carrier shall make a careful inspection and test to ascertain that the tow-bar or saddle-mount connections are properly secured to the towed and towing vehicles, that they function adequately without cramping or binding of any of the parts, and that the towed motor vehicle follows substantially in the path of the towing vehicle without whipping or swerving. Every motor carrier shall maintain practices to insure that following completion of any trip in a driveaway-towaway operation of motor vehicles in combination, and before they are used again, the tow-bars and saddlemounts are disassembled and inspected for worn, bent, cracked, broken, or missing parts. Before reuse, suitable repair or replacement shall be made of any defective parts and the devices shall be properly reassembled.

§ 396.9 Recommended practices and forms.

The following practices and forms are recommended to motor carriers for consideration as one means of establishing the inspection and maintenance practices which are required by §§ 396.2 to 396.8.

(a) *Report of vehicle condition.* As a convenient means of providing for the report required by § 396.7, the "Driver's Vehicle Condition Report" at the end of this paragraph is suggested. The items are arranged in a logical order of inspection. While the regulations do not require a written report of the inspection prior to driving, the form may be adapted for such a report by duplicating the text of the following form and using an appropriate heading. Changes may be made to suit the particular carrier's operations, such as by providing for the recording of more than one inspection on a single form.

DRIVER'S VEHICLE CONDITION REPORT

Name of motor carrier _____
Company vehicle No. _____ (Date)

REPORT AFTER TRIP

	Driver's report [1]	Mechanic's report [1]
Mileage reading on speedometer (insert)		
Before starting engine:		
Oil, if added, insert number of quarts		
Water		
Gasoline, if added, insert number of gallons		
Brake lines to trailers		
Electric lines to trailers		
Drive line		
Coupling devices		
Tires and wheels		
Springs		
Body and load		
Glass		
mergency equipment:		
Fires Extinguishers		
Torches, lanterns, or reflectors		
Fusees		
Flags		
Fuses		
First-aid kit (buses)		
Axe (buses)		

See footnote at end of table.

REPORT AFTER TRIP—Continued

	Drivers report [1]	Mechanic's report [1]
After starting engine (out of cab):		
Fuel system		
Cooling system		
Engine		
Leaks		
Lights:		
Head		
Tail		
Stop		
Clearance and marker		
Reflectors		
After starting engine (in cab):		
Oil pressure		
Ammeter		
Horn		
Windshield wipers		
Parking brakes		
Clutch		
Transmission		
Rear vision mirrors		
Steering		
Service brakes		
Speedometer		
Other items requiring attention		

(Driver's name) _____

[1] Drivers should (✓) items which are satisfactory and (X) items which are not, and explain defects next to the X or if there is insufficient room, at bottom of the form. Items which are marked (X) by the driver must show a (✓) with mechanic's initials indicating correction before continuance of operation and a short explanation of the repairs completed either next to the ✓ or if there is insufficient room, at bottom of form.

(b) *Inspection and maintenance record forms.* (1) Section 396.2 requires that motor carriers maintain systematic inspection and maintenance records but the regulations do not require any particular type of form of records. As a convenient means for providing the systematic inspection and maintenance records required by § 396.2, the following forms are suggested. Other systems recommended by the vehicle manufacturers are suggested as alternative methods.

(2) It is recommended that a cardboard check sheet for each inspection period for each vehicle be placed at a convenient point in the garage. Under the suggested system, when the four

_____ (Name of carrier)

1,000-mile inspection, vehicle No. _____
(After inspection No. 4 perform 5,000-mile check which shall include the fifth 1,000-mile check.)

Type of inspection [1]		Inspection No. 1	2	3	4
	Speedometer reading				
	Date of inspection				
	Group 1—Axle, front:				
L	Axle and wheel alignment				
AOL	Tie rod assembly, etc				
	Group 2—Axle, rear:				
OL	Differential housing				
L	Radius rods, etc				
	Group 3—Body and cab				
	Group 4—Brakes				
	Group 5—Clutch				
	Group 6—Cooling system				
	Group 7—Electrical system				
	Group 8—Engine				
	Group 9—Frame and springs				
	Group 10—Fuel and exhaust system				
	Group 11—Steering				
	Group 12—Transmission				
	Group 13—Propeller shaft				
	Group 14—Wheels, rims, and tires				
	Group 15—Special equipment				

See footnote at end of table.

(Name of carrier)

5,000-mile inspection, vehicle No.
(After inspection No. 9, perform 50,000-mile inspection which shall include the tenth 5,000-mile inspection.)

Type of inspection [1]		Inspection No.								
		1	2	3	4	5	6	7	8	9
	Speedometer reading									
	Date of inspection									
	Group 1 axle, front:									
H	Axle, center									
TA	Axle and wheel alignment									
H	Brake spider, etc									

[1] A=Adjustment; H=heavy inspection; L=visual check-up; O=oil or grease; R=replace or rebuild; T=test.

NOTE: Have similar forms for the 50,000-mile inspection and the 100,000-mile inspection with type of inspection in accordance with the inspection procedure.

1,000-mile inspections have been completed, the mechanic will know that he should perform the 5,000-mile inspection in accordance with the 5,000-mile inspection card. These forms, especially the mileage intervals, are suitable for the average over-the-road operator but changes may be made to adapt them to the individual operation. The items listed may be too numerous for some operations and in such cases, carriers may select items applicable to their own operations. Carriers may alter the recommended mileage figures to suit their needs or inspection periods may be determined on other than a mileage basis such as time or fuel consumption. The fundamental requirement is that there be a systematic inspection and maintenance system.

PART 397—TRANSPORTATION OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES BY MOTOR VEHICLES [1]

Sec.
397.01 Application of regulations.
397.02 Compliance required.
397.03 Emergency equipment and accessories not prohibited.
397.1 Driving rules.

AUTHORITY: The provisions of this Part 397 issued under 18 U.S.C. 834.

NOTE: Order, June 24, 1944, 9 F.R. 7528 provides that after July 5, 1944, the transportation by motor vehicle in intrastate commerce of liquefied petroleum gases named and described in Parts 172 and 173 of this chapter, in containers other than cargo tanks, by common, contract, and private carriers, shall not be subject to the provisions of the two orders of April 20, 1943 (8 F.R. 6479, 6481), as amended: *Provided, however,* That the containers other than cargo tanks so used shall conform in all respects with those authorized for use under regulations prescribed in Part 178 of this chapter.

[1] As to what articles are included within the term "explosives and other dangerous articles", the motor carrier is referred to the definitions contained in "Part 173—Regulations Applying to Shippers" of the Hazardous Materials Regulations (Parts 171–179 of this Title). As will be noted from said regulations, the term "explosives and other dangerous articles" encompasses the following classes of articles: (1) Explosives, (2) flammable liquids, (3) flammable solids and oxidizing materials, (4) corrosive liquids, (5) compressed gases, and (6) poisons. "Part 172—Commodity List of Explosives and Other Dangerous Articles Containing the Shipping Name or Description of all Articles Subject to These Regulations" (Parts 171–179 of this chapter) is also to be found in the aforementioned regulations.

§ 397.01 Application of regulations.

(a) The regulations in this part shall be applicable to every common carrier by motor vehicle, contract carrier by motor vehicle, and private carrier of property by motor vehicle engaged in interstate or foreign commerce, with respect to the transportation by motor vehicle of explosives and other dangerous articles, as defined in the regulations for transportation of explosives and other dangerous articles by land and water in rail freight, express, and baggage services, and by motor vehicle (highway), and water, including specifications for shipping containers.

(b) Parts 390 to 397, inclusive, of this subchapter, shall be applicable to all motor carriers designated in paragraph (a) of this section, whether or not operating wholly within a municipality or between contiguous municipalities, or within a zone adjacent to and commercially a part of any such municipality or municipalities, to the extent that the motor vehicles and drivers of the aforesaid carriers are engaged in the transportation of explosives and other dangerous articles: *Provided, however,* That Part 394 of this subchapter relating to the reporting of accidents shall not apply to any private carrier of property except as specified in § 394.6 of this subchapter.

§ 397.02 Compliance required.

Every motor carrier and his or its officers, agents, employees, and representatives concerned with the transportation of explosives and other dangerous articles by motor vehicle, shall become conversant and comply with the regulations prescribed in this part; and, to this end, each motor carrier shall instruct such persons.

§ 397.03 Emergency equipment and accessories not prohibited.

The provisions of this part are not to be construed to pertain to the carrying of (a) emergency flares (pot torches), electric lanterns, and fusees intended to be used to protect the motor vehicle so long as the carrying of such equipment is in accordance with §§ 392.8 and 393.95, or (b) well protected and properly installed accessories for operation, such as fuel in fuel tanks or other fuel containers, storage or other electric battery or batteries, or other equipment used in the operation of the motor vehicle: *Provided,* That the carrying of such equipment and accessories is otherwise in compliance with the regulations in this part.

§ 397.1 Driving rules.

(a) *Applicability.* Every motor carrier, and its officers, agents, drivers, representatives, and employees directly concerned with the transportation of explosives and other dangerous articles shall comply and be conversant with the requirements of this section. This section shall be applicable with respect to motor vehicles transporting:

(1) Any quantity of class A explosives, class A poison gas, or class D poison requiring a red radioactive materials label.

(2) 2,500 pounds gross weight (contents and containers) of class B explosives, flammable liquids, flammable solids, oxidizing materials, corrosive liquids, compressed gases, class B poisons, class C poisons, or class D poisons not requiring a red radioactive materials label.

(3) 5,000 pounds or more gross weight (contents and containers) of two or more different classes of dangerous articles set forth in subparagraph (2) of this paragraph.

(4) Cargo tank motor vehicles used for the transportation of dangerous articles, regardless of the amount of dangerous articles being transported, or whether loaded or empty.

(5) Except that paragraphs (b) and (h) of this section shall be applicable without regard to the gross weight of class B explosives being tranported.

(6) Except that this section shall not be applicable with respect to motor vehicles transporting those classes of dangerous articles set forth in subparagraph (2) if such articles are, because of size and kind of containers, exempted from the packaging, marking, and labeling requirement of Part 173 of this chapter, provided such exempted commodities do not have a gross weight (contents and containers) exceeding 5,000 pounds.

(b) *Motor vehicles not to be left unattended at any time.* Motor vehicles transporting class A or class B explosives shall not be left unattended at any time during the course of transportation. Nothing contained in this paragraph shall be construed to relieve the driver of any requirement for the protection of any such motor vehicle when disabled or stopped upon any street or highway as provided in Part 392 of this subchapter.

(c) *Motor vehicles not to be left unattended on streets or highways.* Motor vehicles transporting dangerous articles other than class A or class B explosives shall not be left unattended upon any public street or highway except when the driver is engaged in performing normal operations incident to his duties as the operator of the vehicle to which he is assigned. Nothing contained in this paragraph shall be construed to relieve the driver of any requirement for the protection of any such motor vehicle when disabled or stopped upon any street or highway as provided in Part 392 of this subchapter.

(d) *Avoidance of congested places.* Motor vehicles transporting explosives and other dangerous articles shall be so driven as to avoid, so far as practicable, and, where feasible, by prearrangement of routes, congested thoroughfares, places where crowds are assembled, street car tracks, tunnels, viaducts, and dangerous crossings.

(e) *Reduce refuelings to minimum.* Except for fuel containers for diesel engine fuels, the fuel tank or tanks on

any motor vehicle in which is to be transported explosives, flammable liquids, flammable compressed gases or poisonous gases shall be suitably filled prior to the commencement of transportation, and subsequent refilling shall be reduced to the minimum number necessary. If the engine is provided with an electric ignition system, it shall be turned off and the engine stopped during the refueling process; and if with a magneto it shall be grounded.

(f) *Caution passing fires.* Motor vehicles transporting explosives, flammable liquids, flammable solids, oxidizing materials or flammable compressed gases shall not be driven past fires of any kind burning on or near the highway or other thoroughfare until after having taken due caution to ascertain that such passing can be made with safety.

(g) *No smoking while driving.* Smoking on or about any motor vehicle loaded with or transporting explosives, flammable liquids, flammable solids, oxidizing materials, or flammable compressed gases, or smoking on or about any tank motor vehicle used for the transportation of the liquids described is forbidden.

(h) *Parking in congested places.* Except where the necessities of the operation make impracticable the application of this paragraph, no motor vehicle transporting any class A or class B explosive shall be parked, even though attended, on any public street adjacent to or in proximity to any bridge, tunnel, dwelling, building, or place where persons work, congregate, or assemble.

(i) *Safety matches.* Drivers or anyone else, except passengers on buses, upon a motor vehicle transporting flammable liquids or any tank motor vehicle used for the transportation of such dangerous articles, whether loaded or empty, may carry only matches commonly known as "safety matches."

(j) *Jars, jolts, etc.* Motor vehicles transporting corrosive liquids shall be so driven as to avoid violent jars, jolts, bumps, or sudden accelerations or decelerations in any direction likely to produce shifting or breaking of the content of the motor vehicle.

PART 398—TRANSPORTATION OF MIGRANT WORKERS

Sec.

398.1 Definitions.
398.2 Applicability.
398.3 Qualifications of drivers or operators.
398.4 Driving of motor vehicles.
398.5 Parts and accessories necessary for safe operation.
398.6 Hours of service drivers; maximum driving time.
398.7 Inspection and maintenance of motor vehicles.
398.8 Commission inspection of motor vehicles in operation.

AUTHORITY: The provisions of this Part 398 issued under secs. 203, 204, 49 Stat. 544, as amended, 546, as amended; 49, U.S.C. 303, 304.

§ 398.1 Definitions.

(a) *Migrant worker.* "Migrant worker" means any individual proceeding to or returning from employment in agriculture as defined in section 3(f) of the Fair Labor Standards Act of 1938, as amended (29 U.S.C. 203(f)) or section 3121(g) of the Internal Revenue Code of 1954 (26 U.S.C. 3121(g)).

(b) *Carrier of migrant workers by motor vehicle.* "Carrier of migrant worker by motor vehicle" means any person, including any "contract carrier by motor vehicle", but not including any "common carrier by motor vehicle", who or which transports in interstate or foreign commerce at any one time three or more migrant workers to or from their employment by any motor vehicle other than a passenger automobile or station wagon, except a migrant worker transporting himself or his immediate family.

(c) *Motor carrier.* "Motor carrier" means any carrier of migrant workers by motor vehicle as defined in paragraph (b) of this section.

(d) *Motor vehicle.* "Motor vehicle" means any vehicle, machine, tractor, trailer, or semitrailer propelled or drawn by mechanical power and used upon the highways in the transportation of passengers or property, or any combination thereof, determined by the Commission, but does not include a passenger automobile or station wagon, any vehicle, locomotive, or car operated exclusively on a rail or rails, or a trolley bus operated by electric power derived from a fixed overhead wire, furnishing local passenger transportation in street-railway service.

(e) *Bus.* "Bus" means any motor vehicle designed, constructed, and used for the transportation of passengers: Except passenger automobiles or station wagons other than taxicabs.

(f) *Truck.* "Truck" means any self-propelled motor vehicle except a truck tractor, designed and constructed primarily for the transportation of property.

(g) *Truck tractor.* "Truck tractor" means a self-propelled motor vehicle designed and used primarily for drawing other vehicles and not so constructed as to carry a load other than a part of the weight of the vehicle and load so drawn.

(h) *Semitrailer.* "Semitrailer" means any motor vehicle other than a "pole trailer", with or without motive power designed to be drawn by another motor vehicle and so constructed that some part of its weight rests upon the towing vehicle.

(i) *Driver or operator.* "Driver or operator" means any person who drives any motor vehicle.

(j) *Highway.* "Highway" means the entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular traffic.

§ 398.2 Applicability.

The regulations prescribed in this part shall be applicable to motor carriers of migrant workers, as defined in § 398.1 (b), only in the case of transportation of any migrant worker for a total distance of more than seventy-five miles, and then only if such transportation is across the boundary line of any State, the District of Columbia, or Territory of the United States, or a foreign country.

§ 398.3 Qualifications of drivers or operators.

(a) *Compliance required.* Every motor carrier, and its officers, agents, representatives and employees who drive motor vehicles or are responsible for the hiring, supervision, training, assignment or dispatching of drivers shall comply and be conversant with the requirements of this part.

(b) *Minimum physical requirements.* No person shall drive, nor shall any motor carrier require or permit any person to drive, any motor vehicle unless such person possesses the following minimum qualifications:

(1) No loss of foot, leg, hand or arm,

(2) No mental, nervous, organic, or functional disease, likely to interfere with safe driving.

(3) No loss of fingers, impairment of use of foot, leg, fingers, hand or arm, or other structural defect or limitation, likely to interfere with safe driving.

(4) Eyesight: Visual acuity of at least 20/40 (Snellen) in each eye either without glasses or by correction with glasses; form field of vision in the horizontal meridian shall not be less than a total of 140 degrees; ability to distinguish colors, red, green and yellow; drivers requiring correction by glasses shall wear properly prescribed glasses at all times when driving.

(5) Hearing: Hearing shall not be less than 10/20 in the better ear, for conversational tones, without a hearing aid.

(6) Liquor, narcotics and drugs: Shall not be addicted to the use of narcotics or habit forming drugs, or the excessive use of alcoholic beverages or liquors.

(7) Initial and periodic physical examination of drivers: No person shall drive nor shall any motor carrier require or permit any person to drive any motor vehicle unless within the immediately preceding 36 month period such person shall have been physically examined and shall have been certified in accordance with the provisions of Subparagraph 8 hereof by a licensed doctor of medicine or osteopathy as meeting the requirements of this subsection.

(8) Certificate of physical examination: Every motor carrier shall have in its files at its principal place of business for every driver employed or used by it a legible certificate of a licensed doctor of medicine or osteopathy based on a physical examination as required by Subparagraph 7 hereof or a legible photographically reproduced copy thereof, and every driver shall have in his possession while driving, such a certificate or a photographically reproduced copy thereof covering himself.

(9) Doctor's certificate: The doctor's certificate shall certify as follows:

DOCTOR'S CERTIFICATE

(Driver of Migrant Workers)

This is to certify that I have this day examined _____ in accordance with Section 398.3(b) of the Motor Carrier Safety Regulations of the

Interstate Commerce Commission and that I find him

Qualified under said rules ☐

Qualified only when wearing glasses ☐

I have kept on file in my office a completed examination.

_____ _____
(Date) (Place)

_____
(Signature of examining doctor)

_____
(Address of doctor)

Signature of driver_____

Address of driver _____

(c) *Minimum age and experience requirements.* No person shall drive, nor shall any motor carrier require or permit any person to drive, any motor vehicle unless such person possesses the following minimum qualifications:

(1) *Age.* Minimum age shall be 21 years.

(2) *Driving skill.* Experience in driving some type of motor vehicle (including private automobiles) for not less than one year, including experience throughout the four seasons.

(3) *Knowledge of regulations.* Familiarity with the rules and regulations prescribed in this part pertaining to the driving of motor vehicles.

(4) *Knowledge of English.* Every driver shall be able to read and speak the English language sufficiently to understand highway traffic signs and signals and directions given in English and to respond to official inquiries.

(5) *Driver's permit.* Possession of a valid permit qualifying the driver to operate the type of vehicle driven by him in the jurisdiction by which the permit is issued.

§ 398.4 Driving of motor vehicles.

(a) *Compliance required.* Every motor carrier shall comply with the requirements of this part, shall instruct its officers, agents, representatives and drivers with respect thereto, and shall take such measures as are necessary to insure compliance therewith by such persons. All officers, agents, representatives, drivers, and employees of motor carriers directly concerned with the management, maintenance, operation, or driving of motor vehicles, shall comply with and be conversant with the requirements of this part.

(b) *Driving rules to be obeyed.* Every motor vehicle shall be driven in accordance with the laws, ordinances, and regulations of the jurisdiction in which it is being operated, unless such laws, ordinances and regulations are at variance with specific regulations of this Commission which impose a greater affirmative obligation or restraint.

(c) *Driving while ill or fatigued.* No driver shall drive or be required or permitted to drive a motor vehicle while his ability or alertness is so impaired through fatigue, illness, or any other cause as to make it unsafe for him to begin or continue to drive, except in case of grave emergency where the hazard to passengers would be increased by observance of this section and then only to the nearest point at which the safety of passengers is assured.

(d) *Alcoholic beverages.* No driver shall drive or be required or permitted to drive a motor vehicle, be in active control of any such vehicle, or go on duty or remain on duty, when under the influence of any alcoholic beverage or liquor, regardless of its alcoholic content, nor shall any driver drink any such beverage or liquor while on duty.

(e) *Schedules to conform with speed limits.* No motor carrier shall permit nor require the operation of any motor vehicle between points in such period of time as would necessitate the vehicle being operated at speeds greater than those prescribed by the jurisdictions in or through which the vehicle is being operated.

(f) *Equipment and emergency devices.* No motor vehicle shall be driven unless the driver thereof shall have satisfied himself that the following parts, accessories, and emergency devices are in good working order; nor shall any driver fail to use or make use of such parts, accessories, and devices when and as needed:

Service brakes, including trailer brake connections.
Parking (hand) brake.
Steering mechanism.
Lighting devices and reflectors.
Tires.
Horn.
Windshield wiper or wipers.
Rear-vision mirror or mirrors.
Coupling devices.
Fire extinguisher, at least one properly mounted.
Road warning devices, at least one red burning fusee and at least three flares (oil burning pot torches), red electric lanterns, or red emergency reflectors.

(g) *Safe loading*—(1) *Distribution and securing of load.* No motor vehicle shall be driven nor shall any motor carrier permit or require any motor vehicle to be driven if it is so loaded, or if the load thereon is so improperly distributed or so inadequately secured, as to prevent its safe operation.

(2) *Doors, tarpaulins, tailgates and other equipment.* No motor vehicle shall be driven unless the tailgate, tailboard, tarpaulins, doors, all equipment and rigging used in the operation of said vehicle, and all means of fastening the load, are securely in place.

(3) *Interference with driver.* No motor vehicle shall be driven when any object obscures his view ahead, or to the right or left sides, or to the rear, or interferes with the free movement of his arms or legs, or prevents his free and ready access to the accessories required for emergencies, or prevents the free and ready exit of any person from the cab or driver's compartment.

(4) *Property on motor vehicles.* No vehicle transporting persons and property shall be driven unless such property is stowed in a manner which will assure: (i) Unrestricted freedom of motion to the driver for proper operation of the vehicle; (ii) unobstructed passage to all exists by any person; and (iii) adequate protection to passengers and others from injury as a result of the displacement or falling of such articles.

(5) *Maximum passengers on motor vehicles.* No motor vehicle shall be driven if the total number of passengers exceeds the seating capacity which will be permitted on seats prescribed in § 398.5(f) when that section is effective. All passengers carried on such vehicle shall remain seated while the motor vehicle is in motion.

(h) *Rest and meal stops.* Every carrier shall provide for reasonable rest stops at least once between meal stops. Meal stops shall be made at intervals not to exceed six hours and shall be for a period of not less than 30 minutes duration.

(i) *Kinds of motor vehicles in which workers may be transported.* Workers may be transported in or on only the following types of motor vehicles: a bus, a truck with no trailer attached, or a semitrailer attached to a truck-tractor provided that no other trailer is attached to the semitrailer. Closed vans without windows or means to assure ventilation shall not be used.

(j) *Limitation on distance of travel in trucks.* Any truck when used for the transportation of migrant workers, if such workers are being transported in excess of 600 miles, shall be stopped for a period of not less than eight consecutive hours either before or upon completion of 600 miles travel, and either before or upon completion of any subsequent 600 miles travel to provide rest for drivers and passengers.

(k) *Lighting devices and reflectors.* No motor vehicle shall be driven when any of the required lamps or reflectors are obscured by the tailboard, by any part B of Part 393 of this subchapter and all lighting devices required by Subpart B of Part 393 of this subchapter shall be lighted during darkness or at any other time when there is not sufficient light to render vehicles and persons visible upon the highway at a distance of 500 feet.

(l) *Ignition of fuel; prevention.* No driver or any employee of a motor carrier shall: (1) Fuel a motor vehicle with the engine running, except when it is necessary to run the engine to fuel the vehicle; (2) smoke or expose any open flame in the vicinity of a vehicle being fueled; (3) fuel a motor vehicle unless the nozzle of the fuel hose is continuously in contact with the intake pipe of the fuel tank; (4) permit any other person to engage in such activities as would be likely to result in fire or explosion.

(m) *Reserve fuel.* No supply of fuel for the propulsion of any motor vehicle or for the operation of any accessory thereof shall be carried on the motor vehicle except in a properly mounted fuel tank or tanks.

(n) *Driving by unauthorized person.* Except in case of emergency, no driver shall permit a motor vehicle to which he is assigned to be driven by any person not authorized to drive such vehicle by the motor carrier in control thereof.

(o) *Protection of passengers from weather.* No motor vehicle shall be driven while transporting passengers unless the passengers therein are protected from inclement weather conditions such as rain, snow, or sleet, by use

of the top or protective devices required by § 398.5(f).

(p) *Unattended vehicles; precautions.* No motor vehicle shall be left unattended by the driver until the parking brake has been securely set, the wheels chocked, and all reasonable precautions have been taken to prevent the movement of such vehicle.

(q) *Railroad grade crossings; stopping required; sign on rear of vehicle.* Every motor vehicle shall, upon approaching any railroad grade crossing, make a full stop not more than 50 feet, nor less than 15 feet from the nearest rail of such railroad grade crossing, and shall not proceed until due caution has been taken to ascertain that the course is clear; except that a full stop need not be made at:

(1) A street car crossing within a business or residence district of a municipality;

(2) A railroad grade crossing where a police officer or a traffic-control signal (not a railroad flashing signal) directs traffic to proceed;

(3) An abandoned or exempted grade crossing which is clearly marked as such by or with the consent of the proper state authority, when such marking can be read from the driver's position.

All such motor vehicles shall display a sign on the rear reading, "This Vehicle Stops at Railroad Crossings."

§ 398.5 Parts and accessories necessary for safe operation.

(a) *Compliance.* Every motor carrier, and its officers, agents, drivers, representatives and employees directly concerned with the installation and maintenance of equipment and accessories, shall comply and be conversant with the requirements and specifications of this part, and no motor carrier shall operate any motor vehicle, or cause or permit it to be operated, unless it is equipped in accordance with said requirements and specifications.

(b) *Lighting devices.* Every motor vehicle shall be equipped with the lighting devices and reflectors required by Subpart B of Part 393 of this subchapter.

(c) *Brakes.* Every motor vehicle shall be equipped with brakes as required by Subpart C of Part 393 of this subchapter, except § 393.44 of this subchapter, and shall satisfy the braking performance requirements contained therein.

(d) *Coupling devices; fifth wheel mounting and locking.* The lower half of every fifth wheel mounted on any truck-tractor or dolly shall be securely affixed to the frame thereof by U-bolts of adequate size, securely tightened, or by other means providing as least equivalent security. Such U-bolts shall not be of welded construction. The installation shall be such as not to cause cracking, warping, or deformation of the frame. Adequate means shall be provided positively to prevent the shifting of the lower half of a fifth wheel on the frame to which it is attached. The upper half of every fifth wheel shall be fastened to the motor vehicle with at least the security required for the securing of the lower half to a truck-tractor or dolly. Locking means shall be provided in every fifth wheel mechanism including adapters when used, so that the upper and lower halves may not be separated without the operation of a positive manual release. A release mechanism operated by the driver from the cab shall be deemed to meet this requirement. On fifth wheels designed and constructed as to be readily separable, the fifth wheel locking devices shall apply automatically on coupling for any motor vehicle the date of manufacture of which is subsequent to December 31, 1952.

(e) *Tires.* Every motor vehicle shall be equipped with tires of adequate capacity to support its gross weight. No motor vehicle shall be operated on tires which have been worn so smooth as to expose any tread fabric or which have any other defect likely to cause failure. No vehicle shall be operated while transporting passengers while using any tire which does not have tread configurations on that part of the tire which is in contact with the road surface. No vehicle transporting passengers shall be operated with re-grooved, re-capped, or retreaded tires on front wheels.

(f) *Passenger compartment.* Every motor vehicle transporting passengers, other than a bus, shall have a passenger compartment meeting the following requirements:

(1) *Floors.* A substantially smooth floor, without protruding obstructions more than two inches high, except as are necessary for securing seats or other devices to the floor, and without cracks or holes.

(2) *Sides.* Side walls and ends above the floor at least 60 inches high, by attachment of sideboards to the permanent body construction if necessary. Stake body construction shall be construed to comply with this requirement only if all six-inch or larger spaces between stakes are suitably closed to prevent passengers from falling off the vehicle.

(3) *Nails, screws, splinters.* The floor and the interior of the sides and ends of the passenger-carrying space shall be free of inwardly protruding nails, screws, splinters, or other projecting objects, likely to be injurious to passengers or their apparel.

(4) *Seats.* On and after November 1, 1957, a seat shall be provided for each worker transported. The seats shall be: securely attached to the vehicle during the course of transportation; not less than 16 inches nor more than 19 inches above the floor; at least 13 inches deep; equipped with backrests extending to a height of at least 36 inches above the floor, with at least 24 inches of space between the backrests or between the edges of the opposite seats when face to face; designed to provide at least 18 inches of seat for each passenger; without cracks more than one-fourth inch wide, and the backrests, if slatted, without cracks more than two inches wide, and the exposed surfaces, if made of wood, planed or sanded smooth and free of splinters.

(5) *Protection from weather.* Whenever necessary to protect the passengers from inclement weather conditions, be equipped with a top at least 80 inches high above the floor and facilities for closing the sides and ends of the passenger-carrying compartment. Tarpaulins or other such removable devices for protection from the weather shall be secured in place.

(6) *Exit.* Adequate means of ingress and egress to and from the passenger space shall be provided on the rear or at the right side. Such means of ingress and egress shall be at least 18 inches wide. The top and the clear opening shall be at least 60 inches high, or as high as the side wall of the passenger space if less than 60 inches. The bottom shall be at the floor of the passenger space.

(7) *Gates and doors.* Gates or doors shall be provided to close the means of ingress and egress and each such gate or door shall be equipped with at least one latch or other fastening device of such construction as to keep the gate or door securely closed during the course of transportation; and readily operative without the use of tools.

(8) *Ladders or steps.* Ladders or steps for the purpose of ingress or egress shall be used when necessary. The maximum verticle spacing of footholds shall not exceed 12 inches, except that the lowest step may be not more than 18 inches above the ground when the vehicle is empty.

(9) *Hand holds.* Hand holds or devices for similar purpose shall be provided to permit ingress and egress without hazard to passengers.

(10) *Emergency exit.* Vehicles with permanently affixed roofs shall be equipped with at least one emergency exit having a gate or door, latch and hand hold as prescribed in subparagraphs (7) and (9) of this paragraph and located on a side or rear not equipped with the exit prescribed in subparagraph (6) of this paragraph.

(11) *Communication with driver.* Means shall be provided to enable the passengers to communicate with the driver. Such means may include telephone, speaker tubes, buzzers, pull cords, or other mechanical or electrical means.

(g) *Protection from cold.* Every motor vehcile shall be provided with a safe means of protecting passengers from cold or undue exposure, but in no event shall heaters of the following types be used:

(1) *Exhaust heaters.* Any type of exhaust heater in which the engine exhaust gases are conducted into or through any space occupied by persons or any heater which conducts engine compartment air into any such space.

(2) *Unenclosed flame heaters.* Any type of heater employing a flame which is not fully enclosed.

(3) *Heaters permitting fuel leakage.* Any type of heater from the burner of which there could be spillage or leakage of fuel upon the tilting or overturning of the vehicle in which it is mounted.

(4) *Heaters permitting air contamination.* Any heater taking air, heated or to be heated, from the engine compartment or from direct contact with any portion of the exhaust system; or

any heater taking air in ducts from the outside atmosphere to be conveyed through the engine compartment, unless said ducts are so constructed and installed as to prevent contamination of the air so conveyed by exhaust or engine compartment gases.

(5) Any heater not securely fastened to the vehicle.

§ 398.6 Hours of service of drivers; maximum driving time.

No person shall drive nor shall any motor carrier permit or require a driver employed or used by it to drive or operate for more than 10 hours in the aggregate (excluding rest stops and stops for meals) in any period of 24 consecutive hours, unless such driver be afforded eight consecutive hours rest immediately following the 10 hours aggregate driving. The term "24 consecutive hours" as used in this part means any such period starting at the time the driver reports for duty.

§ 398.7 Inspection and maintenance of motor vehicles.

Every motor carrier shall systematically inspect and maintain or cause to be systematically maintained, all motor vehicles and their accessories subject to its control, to insure that such motor vehicles and accessories are in safe and proper operating condition.

§ 398.8 Commission inspection of motor vehicles in operation.

(a) *Commission personnel authorized to perform inspections.* The Chief and Assistant Chief of the Section of Field Service and the Section of Motor Carrier Safety, and all field safety specialists, mechanical engineers, safety supervisors, district supervisors, rate agents and safety inspectors employed in the Bureau of Motor Carriers are authorized and hereby ordered, to enter upon and perform inspections of motor carriers' vehicles in operation.

(b) *Prescribed inspection report.* Form MCS 63, Driver-Equipment Compliance Check, shall be used to record findings from motor vehicles selected for final inspection by authorized Commission employees.

(c) *Motor vehicles declared "out of service".* (1) Authorized Commission employees shall declare and mark "out of service" any motor vehicle which by reason of its mechanical condition or loading is so imminently hazardous to operate as to be likely to cause an accident or a breakdown. Form MCS 64, "Out of Service Vehicle" sticker shall be used to mark vehicles "out of service."

(2) No motor carrier shall require or permit any person to operate nor shall any person operate any motor vehicle declared and marked, "out of service" until all repairs required by the "out of service notice" on Form MCS 63 have been satisfactorily completed. The term operate as used in this section shall include towing the vehicle; provided, however, that vehicles marked "out of service" may be towed away by means of a vehicle using a crane or hoist; and provided further, that the vehicle combination consisting of the emergency towing vehicle and the "out of service" vehicle meets the performance requirements of § 393.52.

(3) No person shall remove the "Out of Service Vehicle" sticker from any motor vehicle prior to completion of all repairs required by the "out of service notice" on Form MCS 63.

(4) The person or persons completing the repairs required by the "out of service notice" shall sign the "Certification of Repairman" in accordance with the terms prescribed on Form MCS 63, entering the name of his shop or garage and the date and time the required repairs were completed. If the driver completes the required repairs, he shall sign and complete the "Certification of Repairman."

(d) *Motor carrier's disposition of Form MCS 63.* (1) Motor carriers shall carefuly examine Forms MCS 63. Any and all violations or mechanical defects noted thereon shall be corrected. To the extent drivers are shown not to be in compliance with the Motor Carrier Safety Regulations, appropriate corrective action shall be taken by the motor carrier.

(2) Motor carriers shall complete the "Motor Carrier Certification of Action Taken" on Form MCS 63 in accordance with the terms prescribed thereon. Motor carriers shall return Forms MCS 63 to the District Director of the Bureau of Motor Carriers at the address indicated upon Form MCS 63 within fifteen (15) days following the date of the vehicle inspection.

[F. R. Doc. 68-15287; Filed, Dec. 24, 1968; 8:45 a.m.]