



Emergency Vehicle Size and Weight Regulation Guideline



Introduction

Emergency vehicles in general, and fire apparatus in particular, are often heavier and larger than typical commercial vehicles. Few people question the need for emergency vehicles, or their axle capacities, when these vehicles show up at the scene of a fire or other emergency. But before they can get to the scene, these vehicles must be moved from their place of manufacture, often crossing through many States, before being delivered to the local department. While most of their miles will be logged within a few miles of the fire station, some emergency vehicles will have the occasion to travel great distances in support of natural disaster relief or to fight wild fires in neighboring counties or States.

Size and weight regulations applicable to emergency vehicles currently vary widely from one State to the next. This situation can lead to confusion, delays, and inefficiency. In an attempt to begin addressing this situation, the International Association of Fire Chiefs (IAFC) and the Fire Apparatus Manufacturers Association (FAMA) offer this document as a guide to U.S. Federal, State and local officials responsible for creating and enforcing vehicle size and weight laws and regulations.

Why are Emergency Vehicles so Large?

Rescues Require Long Ladders

Aerial device horizontal and vertical reach requirements necessitate large vehicles with total mass sufficient to counterbalance the aerial device. These loads could not be made divisible without dramatically increasing the response time as well as the number of personnel required to reassemble the devices at the scene.

Fire Suppression Requires Lots of Water

Fire suppression relies on the ability to deliver water to the scene. Limiting the capacity of tankers and water tenders would increase the response time. Using a greater number of smaller trucks would increase the number of emergency workers required as well as increase vehicle congestion both at the scene, and on the way there.



National Standards Drive Big Axle Capacity

The National Fire Protection Association maintains performance standards that apply to fire apparatus. NFPA 1901 *Standard for Automotive Fire Apparatus*¹ is adhered to by nearly every fire apparatus purchasing authority in the U.S. This NFPA standard establishes operational and safety criteria for all aspects of fire apparatus including the minimum water, equipment and hose capacity for each type of apparatus. These criteria necessitate the use of high capacity axles. The standard intentionally excludes any reference to vehicle size or weight limitations. Various emergency vehicle configurations and their range of typical sizes and weights are presented in Appendix A.

How Do Federal Regulations Apply?

Federal Regulations Allow State Flexibility

Federal truck size and weight regulations are established in 23 CFR Part 658 – *Truck Size and Weight, Route Designations – Length, Width and Weight Limitations*. This regulation allows States to issue special permits for emergency vehicles as nondivisible loads:

658.5 Definitions

Nondivisible load or vehicle

(1) ...nondivisible means any load or vehicle exceeding applicable length or weight limits which, if separated into smaller loads or vehicles, would: (i) Compromise the intended use of the vehicle, i.e., make it unable to perform the function for which it was intended;... (2) A State may treat emergency response vehicles...as nondivisible vehicles or loads.

658.17 Weight.

(h) States may issue special permits without regard to axle, gross, or Federal Bridge Formula requirements for nondivisible vehicles or loads.



The Federal Highway Administration clarifies this further in their “Questions and Answers about Vehicle Size and Weight” website²:

Are some vehicles and articles defined by regulation as nondivisible?

Yes. States may treat emergency response vehicles, such as firetrucks used to protect persons and property from fires and other disasters that threaten public safety ... as nondivisible.

¹ NFPA 1901 Standard for Automotive Fire Apparatus, 2009 Edition

² See Federal Highway Administration, Questions and Answers about Vehicle Size and Weight, <https://fhwaapps.fhwa.dot.gov/vswp/qa/qa.jsp>.

Fire and rescue vehicles would fall within this definition of a nondivisible vehicle since their lifesaving function would be compromised if necessary components (e.g., ladders or hoses) had to be carried on a second vehicle in order to satisfy a weight limitation.

How do States Accommodate Heavy Emergency Vehicles?

Exemptions or Special Regulations

Many State regulations exempt emergency vehicles from vehicle size and weight regulations (See Appendix B). In most other states the regulations are simply not enforced. Yet some State laws have specific requirements that restrict the size and weight of emergency vehicles, placing undue burden on emergency response personnel and placing barriers on the ability for neighboring States to provide mutual assistance in times of national emergency.

Why Should States Regulations be Consistent?

Patchwork Regulation Hinders Interoperability.

The Department of Homeland Security in their National Preparedness Guidelines defines the need for planned interoperability. "Preparedness is the responsibility of every level of government, every department, and every agency consistent with its authorities. This includes coordinating preparedness activities among partners operating within their jurisdictional borders, as well as across jurisdictional and geographic borders when dictated by identified threats and risk assessments."³ The guidelines stress the need for support across local, state, and tribal borders. Uniformity among states is particularly important given the specialized operating and design requirements of the relatively small number of emergency vehicles.



State and local governments, with the support of the federal government, are increasingly forming mutual aid agreements that make equipment and personnel available to other states in the event of major emergencies. For example, many emergency vehicles were loaned to the City of New Orleans and other affected regions following Hurricane Katrina, and those vehicles remained in the region

³ National Preparedness Guidelines, Dept. of Homeland Security, Sept 2007, p.3

during the recovery. Uniform standards are necessary to ensure that emergency vehicles can operate in any state where they happen to be deployed.

Do Emergency Vehicles Damage Roads?

Emergency Vehicle Impact to Roads is Limited.

The average number of miles traveled by any configuration of fire apparatus is less than 5,000 miles per year⁴. This means that the effect of total miles traveled on state and federal roads by these heavy vehicles is minimal.

Local Departments Know their Roads and Bridges.

Fire apparatus operators are trained to be intimately familiar with the roads and bridges over which they travel. They carry detailed maps of their coverage zone and plan routes from the fire station to each potential emergency scene. Routes are planned that avoid low over-passes and incompatible bridges. NFPA 1901



Standard for Automotive Fire Apparatus requires a placard in every apparatus that lists the vehicle height and weight in feet and tons to emphasize the importance of watching for bridge and overpass limits.

How Can State and Local Highway Authorities Help?

Expedite the Permitting Process

Emergency vehicles traveling through States for the purposes of mutual aid, delivery, refurbishment, or repair may encounter difficulties in the permitting process. Time is money and delays, confusion, or round-about routes ultimately increase the cost of the equipment to first responders. Permitting authorities can help by streamlining the process, saving money for the public and reducing frustration for all involved.

Engage with Local Fire Chiefs

History suggests that emergency vehicle axle weights have not proven to be a hazard to U.S. infrastructure. Even so, there may be times when the needs of the fire administration and the highway regulations may be at odds. Permitting authorities and enforcement officials who engage with their local departments prior to equipment acquisition can help the Department to meet the emergency

⁴ Fire Apparatus Duty Cycle White Paper, Fire Apparatus Manufacturers Association, 2004, p. 6

response needs of the community without causing friction with the highway department.

Support Emergency Vehicle Regulation Initiatives

The majority of States already provide size and weight exemptions for emergency vehicles. States that currently do not provide exemptions should consider modifying State codes and regulations to include an emergency vehicle and fire apparatus exemption, or work with their fire protection community to reconcile current practice with State rules. The IAFC and FAMA offer the recommend implementing one of the two following options:

Option 1 – General Exemption

Definition

Emergency Vehicle: A vehicle designed to be used under emergency conditions to transport personnel and equipment, and to support the suppression of fires and mitigation of other hazardous situations.

Size and Weight

The provisions of this code governing vehicle size and weight do not apply to emergency vehicles.

Option 2 – Specific Exemption

Definition

Emergency Vehicle: A vehicle designed to be used under emergency conditions to transport personnel and equipment, and to support the suppression of fires and mitigation of other hazardous situations.

Weight

An emergency vehicle may exceed otherwise applicable vehicle weight limits up to the following maximums:

- 24,000 pounds on a single steering axle;
- 33,500 pounds on a single drive axle;
- 62,000 pounds on a tandem axle; or
- 52,000 pounds on a tandem rear drive steer axle; and
- a maximum gross vehicle weight of 86,000 lbs.

Size

An emergency vehicle may exceed otherwise applicable vehicle size limits up to the following maximum values:

Width: 102 in. Exclusive of rear view mirrors, turn signal lamps, handholds for cab entry/egress, splash and spray suppressant devices, load induced tire bulge, a fixed step up to 3 inches deep.

Height: 162 in.

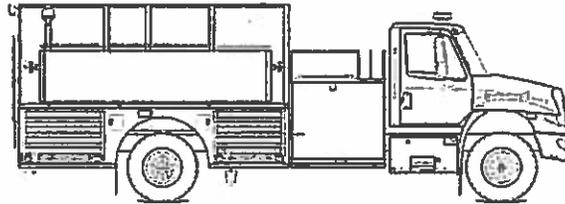
Length: 48 ft. Single Vehicle
 65 ft. Combination Vehicle

Gross Axle Weight Rating

Appendix A

Typical Fire Apparatus Configurations

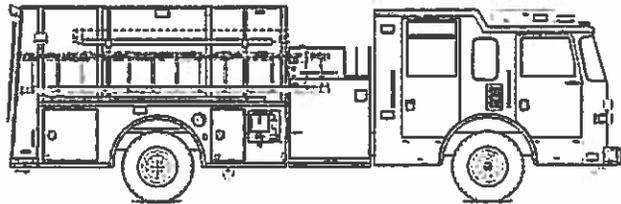
Commercial Chassis Pumper – Single Rear Axle



	Min	Max
Front GAWR	12,000	18,000
Rear GAWR	21,000	31,000
Width (in.)	98	100
Height (ft.)	9	12
Length (ft.)	24	35

max GVW
49K

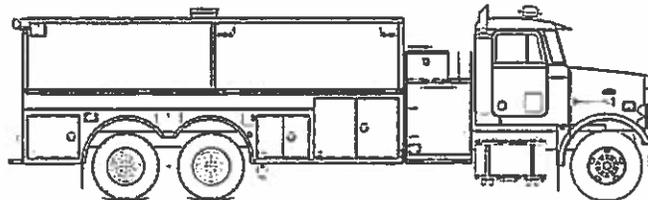
Custom Chassis Pumper – Single Rear Axle



	Min	Max
Front GAWR	18,000	24,000
Rear GAWR	24,000	31,000
Width (in.)	98	100
Height (ft.)	9	12
Length (ft.)	30	34

55K

Commercial Chassis Tanker – Tandem Rear Axle

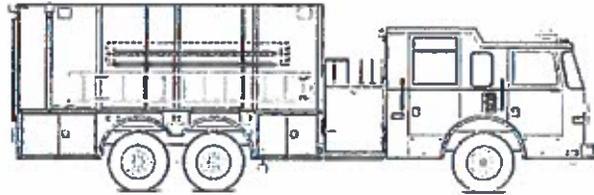


	Min	Max
Front GAWR	12,000	18,000
Rear GAWR	34,000	56,000
Width (in.)	98	100
Height (ft.)	10	12
Length (ft.)	30	40

74K

Custom Chassis Tanker – Tandem Rear Axle

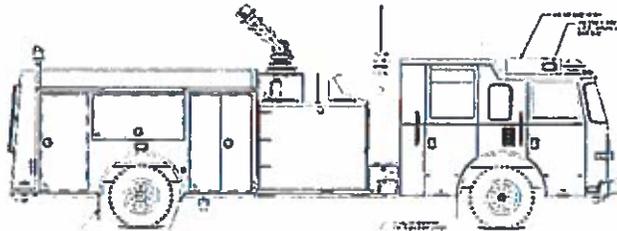
Design Vehicle →



	<u>Min</u>	<u>Max</u>
Front GAWR	18,740	22,800
Rear GAWR	40,000	56,000
Width (in.)	98	100
Height (ft.)	10	12
Length (ft.)	34	40

*GVW
78.8K*

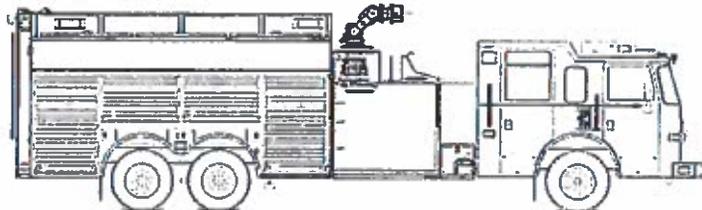
Industrial Foam Pumper – Single Rear Axle



	<u>Min</u>	<u>Max</u>
Front GAWR	20,000	24,000
Rear GAWR	24,000	31,000
Width (in.)	98	100
Height (ft.)	10	12
Length (ft.)	30	36

55K

Industrial Foam Pumper – Tandem Rear Axle

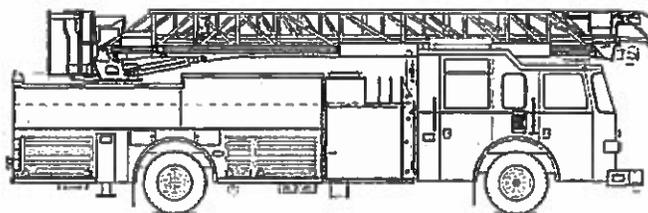


	<u>Min</u>	<u>Max</u>
Front GAWR	20,000	24,000
Rear GAWR	40,000	56,000
Width (in.)	98	100
Height (ft.)	10	12
Length (ft.)	36	40

80K

★

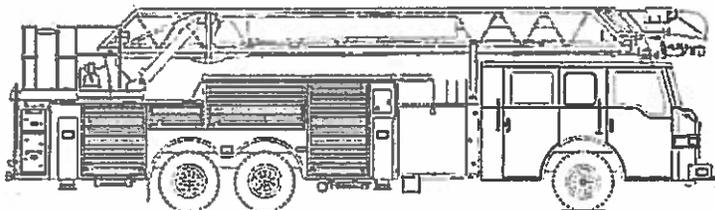
Aerial Ladder – Single Rear Axle



	<u>Min</u>	<u>Max</u>
Front GAWR	20,000	22,800
Rear GAWR	24,000	33,500
Width (in.)	98	100
Height (ft.)	11	12.5
Length (ft.)	36	43

56.3K

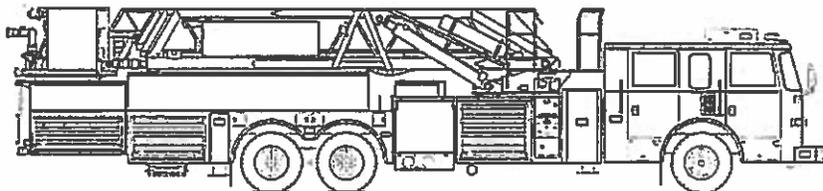
Aerial Ladder – Tandem Rear Axle



	<u>Min</u>	<u>Max</u>
Front GAWR	20,000	22,800
Rear GAWR	34,000	54,000
Width (in.)	98	100
Height (ft.)	11	12.5
Length (ft.)	39	43

76.8K

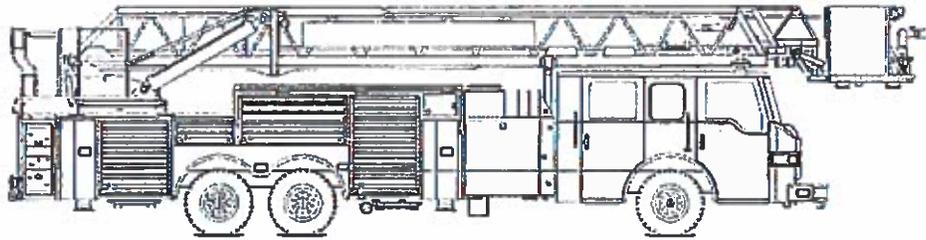
Aerial Platform Mid Mount – Tandem Rear Axle



	<u>Min</u>	<u>Max</u>
Front GAWR	21,500	24,000
Rear GAWR	40,000	62,000
Width (in.)	98	100
Height (ft.)	9.5	11.5
Length (ft.)	46	51

86K

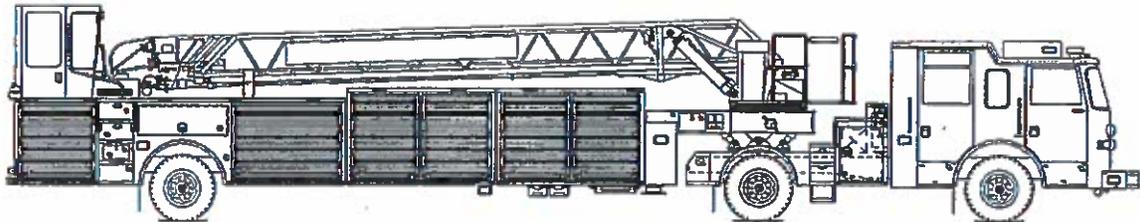
Aerial Platform Rear Mount – Tandem Rear Axle



	<u>Min</u>	<u>Max</u>
Front GAWR	21,500	24,000
Rear GAWR	46,000	62,000
Width (in.)	98	100
Height (ft.)	11.5	13
Length (ft.)	46	48

86K

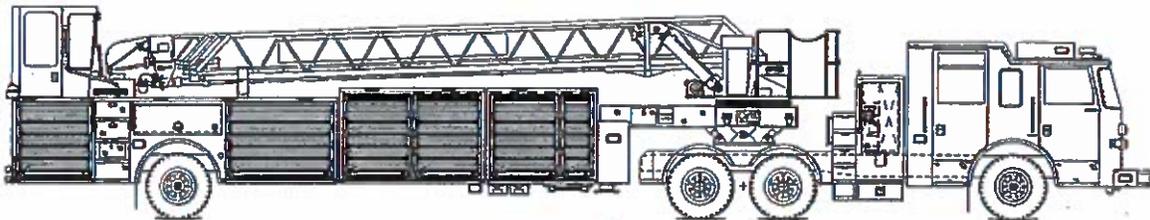
Aerial Ladder – Tiller Single Rear TractorAxle



	<u>Min</u>	<u>Max</u>
Front GAWR	21,500	24,000
Rear GAWR	27,000	31,000
Tiller GAWR	21,500	24,000
Width (in.)	98	100
Height (ft.)	10.5	11.5
Length (ft.)	56	63

79K

Aerial Ladder – Tiller Tractor Tandem Rear Axle



	<u>Min</u>	<u>Max</u>
Front GAWR	21,500	24,000
Rear GAWR	34,000	44,000
Tiller GAWR	21,500	24,000
Width (in.)	98	100
Height (ft.)	10.5	11.5
Length (ft.)	56	63

92K

Appendix B

State Fire Apparatus Size and Weight Regulations

Weight

General Exemption	Specific Emergency Vehicle Regulations	Special Permits Allowed	No Data
Alabama	California	Connecticut	Alaska
Arkansas	New York		Arizona
Colorado	Oregon		District of Columbia
Delaware	Washington		Florida
Illinois			Georgia
Indiana			Hawaii
Iowa			Idaho
Kansas			Massachusetts
Kentucky			Montana
Louisiana			Nebraska
Maine			New Jersey
Maryland			North Carolina
Michigan			North Dakota
Minnesota			Rhode Island
Mississippi			South Carolina
Missouri			South Dakota
Nevada			Tennessee
New Hampshire			Texas
New Mexico			Vermont
Ohio			Virginia
Oklahoma			Wyoming
Pennsylvania			
Utah			
West Virginia			
Wisconsin			
25	4	1	21

Width

Exempt	96 Inches	102 Inches	No Data
Arkansas	Kentucky	Alabama	Alaska
Delaware		Colorado	Arizona
Illinois		Connecticut	California
Indiana		Florida	District of Columbia
Kansas		Georgia	Iowa
Maryland		Hawaii	Nebraska
Michigan		Idaho	South Carolina
Minnesota		Louisiana	
Mississippi		Maine	
Missouri		Massachusetts	
New Mexico		Montana	
Ohio		Nevada	
Oklahoma		New Hampshire	
Pennsylvania		New Jersey	
Utah		New York	
Virginia		North Carolina	
West Virginia		North Dakota	
		Oregon	
		Rhode Island	
		South Dakota	
		Tennessee	
		Texas	
		Vermont	
		Washington	
		Wisconsin	
		Wyoming	
17	1	26	7

Height

Exempt	Less Than 162 in. (13.5 ft)	162 in. (13.5 ft)	168 in. (14 ft)	No Data
Arkansas	Kentucky	Alabama	Hawaii	Alaska
Delaware	Colorado	Connecticut	Idaho	Arizona
Illinois		Florida	Montana	California
Indiana		Georgia	Nevada	District of Columbia
Kansas		Louisiana	North Dakota	Iowa
Maryland		Maine	Oregon	Nebraska
Michigan		Massachusetts	Washington	South Carolina
Minnesota		New Hampshire	Wyoming	
Mississippi		New Jersey		
Missouri		New York		
New Mexico		North Carolina		
Ohio		Rhode Island		
Oklahoma		Tennessee		
Pennsylvania		Texas		
South Dakota		Vermont		
Utah		Wisconsin		
Virginia				
West Virginia				
18	2	16	8	7

Length

Exempt	40 Feet	45 Feet	48 Feet or Greater	No Data
Arkansas	Alabama	Colorado	North Dakota	Alaska
Delaware	Florida	Connecticut	Washington	Arizona
Indiana	Kentucky (26.5 ft)	Hawaii	Montana	California
Maryland	Massachusetts	Idaho	Wyoming	District of Columbia
Michigan	Nevada	Louisiana		Georgia
Minnesota	New Jersey	Maine		Iowa
Mississippi	New York	New Hampshire		Nebraska
New Mexico	North Carolina	South Dakota		South Carolina
Ohio	Oregon	Texas		
Pennsylvania	Rhode Island	Vermont		
Virginia	Tennessee			
West Virginia	Wisconsin			
Illinois				
Kansas				
Missouri				
Oklahoma				
Utah				
17	12	10	4	8



V C Section 35550 Maximum Weight on Single Axle or Wheels

Maximum Weight on Single Axle or Wheels

35550. (a) The gross weight imposed upon the highway by the wheels on any one axle of a vehicle shall not exceed 20,000 pounds and the gross weight upon any one wheel, or wheels, supporting one end of an axle, and resting upon the roadway, shall not exceed 10,500 pounds.

(b) The gross weight limit provided for weight bearing upon any one wheel, or wheels, supporting one end of an axle shall not apply to vehicles the loads of which consist of livestock.

(c) The maximum wheel load is the lesser of the following:

(1) The load limit established by the tire manufacturer, as molded on at least one sidewall of the tire.

(2) A load of 620 pounds per lateral inch of tire width, as determined by the manufacturer's rated tire width as molded on at least one sidewall of the tire for all axles except the steering axle, in which case paragraph (1) applies.

Amended Sec. 82, Ch. 1154, Stats. 1996. Effective September 30, 1996.

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

[Caltrans](#) > [Traffic Operations](#) > [Office of Traffic Engineering](#) > [Legal Truck Access](#) > [Log Haulers Exemption](#)

Log Haulers Exemptions

Following is a selective paraphrase of the CVC. It is not guaranteed and may be subject to change.

Per California Vehicle Code (CVC) [Section 35552](#), trucks and vehicle combinations hauling logs have the following weight exceptions:

1. The maximum weight of one set of tandem axles is 1,500 pounds more than the standard 34,000 pounds, for a total of 35,500 pounds.
2. The maximum combined weight of two sets of consecutive tandem axles is 69,000 pounds, provided that the gross weight on any one set of tandems does not exceed 35,500 pounds, and that the distance from the first axle to the last axle in the two-tandem set is 34 feet or more.
3. If any gross weights are exceeded, the non-exempted maximum weights in Section 35551 shall be used to determine fines for violations, except that
4. If the total gross weight for two consecutive sets of tandem axles is exceeded, and if the distance between the first and last axle of the sets is 34 feet or more, then the allowed weight on the two consecutive sets shall be considered 68,000 pounds for purposes of determining fines for violations.
5. These weight exempted log haulers shall not operate on the National Network (NN). To determine which routes are NN, click here for the [Truck Route List](#) in Excel and look for NN in the column "Type."

CONTACTS

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Return to the Caltrans "[Legal Truck Access](#)" page.

Revised 12/11/07.

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V C Section 35250 Maximum Height Exceptions

Maximum Height: Exceptions

35250. No vehicle or load shall exceed a height of 14 feet measured from the surface upon which the vehicle stands, except that a double-deck bus may not exceed a height of 14 feet, 3 inches. Any vehicle or load which exceeds a height of 13 feet, 6 inches, shall only be operated on those highways where deemed to be safe by the owner of the vehicle or the entity operating the bus.

Amended Ch. 1287, Stats. 1984. Effective September 19, 1984. Supersedes Ch. 849.

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V C Section 35750 Decreases

Decreases

35750. (a) The Department of Transportation may, in the manner provided in Section 35751, determine the maximum weight of vehicle and load, lower than the maximum weight otherwise permitted under this code which a bridge or other structure with safety to itself will sustain.

(b) The city council or the board of supervisors of a city or county with a population of 1,100,000 or more, as determined by the 1970 federal decennial census, may, in the manner provided in Section 35751, determine the maximum weight of vehicle and load, lower than the maximum weight otherwise permitted under this code which a bridge or other structure under its jurisdiction with safety to itself will sustain.

Amended Ch. 545, Stats. 1974. Effective January 1, 1975.

CALIFORNIA DEPARTMENT OF
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Fire Truck Exemptions

APPROVED -- THE PROPOSED REGULATION WAS APPROVED BY OAL ON JUNE 2, 2010, AND WILL BE EFFECTIVE ON JULY 2, 2010.

To view the new regulation, see the [California Code of Regulations](#) website, Title 21, Division 2, Chapter 7, Sections 1411.1 and 1411.7. Or scroll down to view a copy on this web page, with some links added for convenience.

To view the regulation changes that took place on 7/2/2010, see the mark-up document showing deleted text in **strikeout** and added text in **underlining**:

<http://www.dot.ca.gov/hq/traffops/engineering/trucks/exemptions/proposed-text-of-regulation-mark-up-2010-04.pdf>.

CALIFORNIA CODE OF REGULATIONS

TITLE 21. Public Works
Division 2. Department of Transportation
Chapter 7. Transportation Permits
§1411.1. Definitions.

The following terms when used in this Chapter have the following meaning:

(a) "Department" means the California Department of Transportation.

(b) "Permits" means a Transportation Permit issued by the Department pursuant to [Article 6 \(commencing with Section 35780\) of Division 15 of the California Vehicle Code](#).

(c) "Fire truck" means any fire apparatus defined in [35002\(b\)\(3\) of the California Vehicle Code](#).

NOTE: The definition of "fire apparatus" in the California Vehicle Code changed as of 9/29/10 to include other emergency vehicles. See [35002\(b\)\(3\) of the California Vehicle Code](#) for more details.

(d) "Aerial platform ladder fire truck" means a fire suppression vehicle, or vehicle combination, equipped with an elevating platform that may include a continuous egress route from the elevated position to the ground.

(e) "Aerial ladder fire truck" means a fire suppression vehicle or vehicle combination equipped with a self-supporting, turntable mounted, power operated aerial ladder of two or more sections permanently attached to the vehicle and designed to provide a continuous egress route from the elevated position to the ground.

(f) "Aerial water tower fire truck" means a pumper fire truck equipped with a device consisting of permanently mounted power operated booms and a water way designed to supply a large capacity mobile elevated water stream. The

booms may be of articulating design or telescoping design and may be equipped with a ladder for continuous egress.

(g) "Pumper fire truck" means a single unit fire suppression vehicle equipped with a fire pump, water tank, hose, and equipment designed for sustained pumping operations during fire fighting and supporting associated fire department operations.

Note: Authority cited for Article 9: Section 35795, Vehicle Code. Additional authority cited: Sections 14001, 14007, 14008 and 14010, Government Code and Sections 20 and 50, Streets and Highways Code. Reference: Section 35002, Vehicle Code.

HISTORY

1. New article (§§1439, 1439.1 through 1439.5) filed 11-24-69 as an emergency; designated effective 1-1-70 (Register 69, No. 48).
2. Certificate of Compliance -section 11422.1, Gov. Code, filed 12-31-69 (Register 70, No. 1).
3. Renumbering from section 1439 filed 4-6-70; effective thirtieth day thereafter (Register 70, No. 15).
4. Amendment of subsection (a) filed 8-7-73 as procedural and organizational; effective upon filing (Register 73, No. 32).
5. New subsections (c)-(h) and amendment of Notefiled 8-23-93; operative 9-22-93 (Register 93, No. 35).
6. Amendment of first paragraph and subsection (c) and repealer of subsection (h) filed 6-2-2010; operative 7-2-2010 (Register 2010, No. 23).

21 CCR § 1411.1, 21 CA ADC § 1411.1
 This database is current through 6/18/10 Register 2010, No. 25
 21 CA ADC § 1411.1

END OF DOCUMENT

CALIFORNIA CODE OF REGULATIONS

**TITLE 21. Public Works
 Division 2. Department of Transportation
 Chapter 7. Transportation Permits
 §1411.7. Fire Trucks.**

(a) Any fire truck may exceed the maximum allowable weights of the Department's Transportation Permit Program, but shall not exceed the following axle weight limits:

Axle Configuration	Max. allowable weight
Single steering axle (front and rear)	24,000 pounds
Single drive axle	31,000 pounds
Tandem axles	48,000 pounds
Tandem rear drive steer axles	48,000 pounds
Tridem axles	54,000 pounds

(b) A fire truck designed to carry a minimum capacity of 1,200 gallons and exceed axle weights authorized in California Vehicle Code Section 35551 or Section 35551.5 shall be permanently marked on the manufacturer's GVW rating plate with the gallonage the fire truck is designed to carry.

(c) Tandem axles shall have a minimum axle spacing of 4 feet and tridem axles shall have a minimum axle spacing of 9 feet as measured from the centerline of the first axle to the centerline of the last axle in the axle group. Tandem axle spacing shall not exceed 8 feet and tridem axles shall not exceed 10 feet as measured from the centerline of the first axle to the centerline of the last axle in the axle group.

Except for front and rear steer axles, all axles within the same loading group shall have a common suspension system that naturally divides weight between all axles in the suspension group equally and equitably, both statically and

dynamically under all loading conditions without any influence from an outside source.

(d) All fire truck axles shall have a minimum of 4 tires per axle, except for front and rear steer axles. Four-tired axles may be equipped with super single tires with a minimum of 18 inches (445 mm) of cross section and 19.5 inches of bead diameter. When super singles are used on a single axle application, the maximum weight on that axle shall be limited to 24,000 pounds. The tires must have a rated capacity marked on the sidewall of the tire as required by the U.S. Department of Transportation, Standard FMVSS 119. The sum of the rated capacities of the tires on the axle shall equal or exceed the axle weight.

(e) Fire truck axle weights shall not exceed the axle manufacturer's rated axle capacity when the axles are equipped with axle components of a corresponding rating.

(f) Fire trucks may exceed width limitations provided in Division 15 of the California Vehicle Code but cannot exceed 120 inches. All fire trucks shall comply with the length, height, and overhang limitations of Division 15 of the Vehicle Code except that single-unit fire apparatus may have a maximum length of 52 feet provided that they travel on roads that can safely accommodate them, and fire trucks defined in sections 1411.1(d), (e) and (f) may have a maximum front overhang of 8 feet from the front bumper provided that the driver's vision to the left and right is not impaired by the projecting or supporting structure. A fire truck with two parts coupled together at an articulation point is defined in this regulation as a "combination of vehicles," regardless of whether the parts detach, and therefore must comply with the length limits for a combination of vehicles in Vehicle Code Section 35401(a).

(g) Fire trucks meeting the requirements of this regulation may operate on State and local roadways without a transportation permit. Fire trucks that exceed the weight requirements of this regulation for tandem or tridem axles may receive transportation permits from the Department to operate on State routes and from local governments to operate on local roads. The permit shall not allow any increase in single axle weights. The permit shall limit tandem and tridem weights to no more than 15 percent over the weights allowed in these regulations. The permit shall allow bridge access only on bridges with a capacity rating that is adequate for the additional axle weights.

(h) Nothing in this Section shall preempt the requirements of Vehicle Code Section 35002(d) and Section 35002(e).

(i) Fire trucks exempted from provisions in Division 15 of the Vehicle Code shall comply with California Vehicle Code Section 24011.

(j) Fire trucks may not travel on a bridge where the weight of the fire truck exceeds the posted maximum bridge weight.

(k) All fire trucks shall comply with the Vehicle Code Chapter 3. Brakes, commencing with Section 26301. In addition, fire trucks purchased on or after January 1, 1994, that exceed the axle weight limits of 22,500 pounds on a single axle or 34,000 pounds on a tandem axle assembly, or where the gross vehicle weight exceeds statutory weight limits shall be equipped with a brake system designed to enhance vehicle control and stability during adverse weather conditions and emergency stops. Each type of fire truck purchased on or after January 1, 1994, that exceeds the axle weight limits of 22,500 pounds on a single axle or 34,000 pounds on a tandem axle assembly, or where the gross vehicle weight exceeds statutory weight limits, prior to sales in California, shall be tested for compliance with the following Performance Tests:

(1) Performance Tests

A vehicle with a brake system that is designed to enhance vehicle control and stability shall be tested for the following "Dry Road, Straight Line Stops" and "Slippery Road, Curved Stops" under the control of the General Test Conditions:

(A) General Test Conditions

The following test conditions are applicable to both the "Dry Road, Straight Line Stops" and the "Slippery Road, Curved Stop" test:

- * Level 12-foot width lane;
- * Vehicle shall be centered in the lane at the initiation of braking;
- * Test driver shall be allowed to steer as necessary during braking;
- * Brake shall be fully applied as rapidly as possible;

- * Initial brake temperature shall not exceed 250 degrees F (in lining) at the hottest brake, as measured by brake thermocouple installed in accordance with SAE J843;
- * The transmission shall be in the neutral position or the clutch depressed;
- * Test vehicle shall be tested both empty as delivered to the Fire District without the miscellaneous equipment installed by the Fire District, and loaded to the maximum gross vehicle weight rating. Vehicles equipped with tanks for liquid fire retardants shall be tested with tanks 2/3 filled with liquid.
- * Surface Friction - Peak Friction Coefficient (PFC) as determined with an ASTM E 1134 tire on ASTM traction trailer using ASTM E 1337 procedure. Average value of 10 runs spaced evenly over the test surface.
- * Brake Burnish - Burnish brakes as per FMVSS 121 burnish procedure prior to testing (i.e., 500 snubs from 40 to 20 mph at 10 fpsps on a 1.0 mile interval;
- * The brakes shall be adjusted within the manufacturer's recommended tolerances;
- * The tires shall be inflated to the manufacturer's recommended pressure for the load of the tire.

(B) Dry Road, Straight Line Stops

The fire truck shall enter the test lane described in the General Test Conditions with the surface friction and initial speed shown below. Thereafter, the brakes shall be applied as required in the General Test Conditions:

- * Surface friction level-PFC=0.9 (Most dry asphalt and concrete surfaces are at this level);
- * 60 mph initial speed;
- * 3 repeat runs.

(C) Slippery Road, Curved Stops

The fire truck shall enter the test lane described in the General Test Conditions at the surface friction, radius, and initial speed shown below. Thereafter, the brakes shall be applied as required in the General Test Conditions:

- * Surface friction level-PFC=0.5 (wet, sealed asphalt in good condition is usually at or below this level);
- * 500 ft. curve radius (lane centerline);
- * Initial speed to be the lower of 30 mph (48 km/h) or 75 percent of the maximum drive through speed. Drive through speed is the highest speed that the vehicle can be driven through 200 feet (60.8 meter) of the 500 foot radius curve without leaving the lane. The vehicle is to be centered in the lane at the initiation of the drive through test;
- * 3 repeat runs.

(2) Fail-safe Protection and Failure Warning

In the event of an electrical failure in the system installed to enhance the vehicle stability and control, the performance of the basic foundation brakes shall be unaffected. The vehicle shall be equipped so that when the left front, right front, left rear, or right rear brake assembly of the enhanced system fails to function as designed, the operator can tell without the need to connect external test equipment. Upon failure of the system, an amber light(s) shall illuminate on the instrument panel of the vehicle. The system installed to enhance the stability and control shall continue to operate without malfunction when electrical current to the stop light circuit fails.

(3) Test Results

The final stage manufacturers shall test each type of fire truck and show compliance with (k)(1)(B) and (k)(1)(C) when tested under the General Test Conditions of (k)(1)(A) above. Each type of fire truck shall be capable of making a full emergency stop in both the Straight Line Stop and the Curved Stop without any portion of the fire truck leaving the test lane. The test report shall be written in simple terms, and shall include Performance Test results in (k)(1)(B) and (k)(1)(C). The final stage manufacturers shall make the test report available upon written request from State, city, or county

officials.

(l) Manufacturer's Certification.

Each fire truck equipped with a system to enhance stability and control shall be certified by the final stage manufacturer that the additional brake enhancing system is installed and functional.

Note: Authority cited: Sections 35002 and 35795, Vehicle Code. Reference: Sections 35002 and 35780, Vehicle Code.

HISTORY

1. New section filed 8-23-93; operative 9-22-93 (Register 93, No. 35).
2. Amendment filed 6-2-2010; operative 7-2-2010 (Register 2010, No. 23).

21 CCR § 1411.7, 21 CA ADC § 1411.7

This database is current through 6/18/10 Register 2010, No. 25

21 CA ADC § 1411.7

END OF DOCUMENT

CALIFORNIA VEHICLE CODE

SECTION 24011.

Whenever a federal motor vehicle safety standard is established under federal law (49 U.S.C. Sec. 30101 et seq.), no dealer shall sell or offer for sale a vehicle to which the standard is applicable, and no person shall sell or offer for sale for use upon a vehicle an item of equipment to which the standard is applicable, unless: (a) The vehicle or equipment conforms to the applicable federal standard. (b) The vehicle or equipment bears thereon a certification by the manufacturer or distributor that it complies with the applicable federal standards. The certification may be in the form of a symbol prescribed in the federal standards or, if there is no federal symbol, by a symbol acceptable to the department.

BRAKES

Chapter 3 Brakes articles are linked below:

Division 12. Equipment of Vehicles

Chapter 3. Brakes

[Article 1. Brake Requirements 26301-26311](#)

[Article 2. Operations of Brakes 26450-26458.5](#)

[Article 3. Airbrakes 26502-26508](#)

[Article 4. Vacuum Brakes 26520-26522](#)

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